



Ernestina Coast

Maasai demography

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Maasai Demography

**Ernestina Coast
Department of Anthropology
University College London**

**Submitted in fulfilment of the degree of Doctor of Philosophy
University of London
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Chapter One Introduction

This study is a demography of the Maasai, one of the best-known populations in the world. Spear suggests that "Everyone "knows" the Maasai" (1993:1), and everyone knows the Maasai not least because of the large volume of ethnographic writing about them. The Maasai entered the public imagination in the 1880s with the publication of explorer's travelogues by Fischer (1884) and Thomson (1885). Contemporary pictures of Maasai adorn the most unlikely publications, from economic textbooks (for example, Todaro, 1999) to institutional reports (for example, LSHTM, 1998) to websites (for example, World Bank¹). Because of the high degree of visibility of Maasai, reactions to this project normally took one of two forms. Either, that the study must have already been done and that it was simply a question of looking more carefully for the information. Or, that the Maasai receive too much attention from researchers, and as such were not deserving of even more research. Both of these reactions are rooted in a widespread set of assumptions (not necessarily well-founded) about the Maasai.

There are, however, no demographic studies of the Maasai. There is *ad hoc* information, usually produced as a by-product of some other research. For example, Jacobs (1973) suggested a completed fertility of 8 children per woman, based on a guess following prolonged residence in Maasailand. That an anthropologist should make an educated guess about fertility is reasonable enough. What is more surprising is that this figure has been quoted in subsequent demographic research (Roth, 1986; Borgerhoff Mulder, 1992). The absence of demographic information on the Maasai is surprising, not least given the amount of ethnographic research on the Maasai that exists. Why has the demography of the Maasai never been studied? Is it because there is no interest in the population dynamics of the Maasai? Or, is it because the task was considered too difficult?

The first proposition, that there has been no interest in the population dynamics of the Maasai, does not stand up well to inspection. The Maasai in Kenya and Tanzania are the dominant ethnic group around some of the most famous protected wildlife areas in the world, including Amboseli, Masai Mara, Serengeti and Ngorongoro Crater. There is a widely held view that population growth and changing land use are primary drivers of recent pronounced ecological changes in habitat and wildlife changes. Traditional subsistence pastoralists are often seen as causing environmental degradation through overgrazing. They are also perceived as responsible for a decline in wildlife numbers through resource competition and habitat change. The high profile both of these debates and the areas they concern suggests that information on the population dynamics of the Maasai would be of concern².

The second proposition is that no demography of the Maasai has ever been done because it was too difficult. Indeed, Howell suggests, "Making demographic studies of the kind of people that anthropologists classically study can never be easy" (1973:249). Is the absence of Maasai demographic data a function of the difficulty of the task? There is a long history of demographic data collection from populations with low levels of literacy and age knowledge in sub-Saharan Africa. In addition, robust methods of indirect estimation are well established (United Nations, 1983). What evidence,

¹ www.worldbank.org/aids-econ/

² It is acknowledged that other ethnic groups live around these areas, but the Maasai are historically and currently the dominant ethnic group.

therefore, exists to suggest that a demographic survey of the Maasai is too difficult to warrant the effort?

The volume of research about the Maasai contains many references, both direct and indirect, about the problems of collecting data from the Maasai. One of the most colourful is that provided by Talbot:

"It is often difficult to get accurate information about the Maasai from the Maasai themselves. Being ultra-conservative and suspicious, the Maasai appear to regard with mistrust anyone who is pointedly interested in them...Their answers are affected by this attitude...a good example is the Maasai who interpreted for an American anthropologist who spent several months living with the Maasai...After the anthropologist left, the interpreter joyously told people how he had misled the American who had carefully written down the tall tales he had interpreted for him" (1964:116)

Although written nearly four decades ago, Talbot's conclusions about data collection among the Maasai are reiterated elsewhere. References to the difficulties of collecting numerical data (Jacobs, 1973), the lack of use of a western calendar (Spear and Waller, 1993) and a reluctance to count things (although this often refers to livestock), abound for the Maasai. Complex living arrangements that do not lend themselves easily to some standard definition of a household suggested practical difficulties in the administration of a questionnaire survey. Perhaps of most concern to the demographer is the extensive ethnographic evidence relating to the extreme reluctance of Maasai to refer to a dead person. Given that events surrounding birth and death are the raw materials of any demographic study, repeated reference to unwillingness to refer to dead people is not the most auspicious beginning to a demographic survey. The overwhelming impression from the ethnographic literature was that a demographic survey of the Maasai would be extremely difficult. From a demographic perspective, the issues raised by the ethnographies suggested that it was perhaps more a question of getting the *right* person to ask the *right* questions, rather than an inability to ask the question at all.

1.1 Research questions

This study represents the first ever substantive study of the demography of the Maasai in Kenya and Tanzania. Primarily, the aim of this study is to collect, present and analyse data on the demography of the Maasai. To do so requires, first, a survey of existing information for any demographically relevant data, both historical and contemporary. Because most of the information on the Maasai is contained in ethnographies, a series of questions must be addressed: What is an ethnography, and what sort of information can it contain? How can it be of use to a study of demography? What skills are needed by a non-ethnographer in order to be able to use the information?

In common with most of sub-Saharan Africa, Kenya and Tanzania are ethnically very diverse countries. The study of a group of people based on their ethnic affiliation raises many questions about ethnicity, and the implications for demographic study. What are the justifications for, and limitations of, studying a population on the basis of its ethnicity? Ethnic group or ethnicity are commonly used terms, and frequently appear in demographic analyses. Many Demographic and Health Surveys (DHS), for example, routinely collect ethnicity data. What do we understand by these terms, and how can an understanding of ethnicity improve demographic data collection and analysis? Does an

understanding of ethnicity improve demographic explanation, at least in those contexts where ethnicity is meaningful?

Given the ethnographic information, what adaptations or factors must be taken into account in the design, collection and analysis of a demographic survey? Can conventional demographic concepts and techniques be applied to a survey of the Maasai, or are there limitations to the applicability of accepted demographic notions such as marriage, widowhood and childlessness? Having established the contemporary demographic parameters for the Maasai, the task remains to contextualise these results. Do they support or refute existing notions about Maasai demography? How do fertility and mortality among the Maasai compare with the national demographic contexts of Kenya and Tanzania? Is there evidence of a "Maasai demographic regime", or do Maasai in Kenya and Tanzania exhibit different demographic characteristics?

Pastoralist societies in sub-Saharan Africa have long interested demographers and human ecologists, particularly in relation to the fertility of pastoral populations (Henin, 1968; Swift, 1977; Hill, 1985; Roth, 1986a; Randall, 1994). Among researchers, there is a widely held view that pastoralist populations are characterised by lower fertility than non-pastoral populations. Because Maasai have been viewed (and view themselves) as "archetypal pastoralists" (after Spear, 1993:1), this study contributes a major new set of data for the development of discussion about "pastoralist fertility". The incorporation of the Maasai into the wider debate about fertility and pastoralism demands that detailed attention is given to issues surrounding the "construction" of livelihood categories for demography and the implications for analysis.

A second, linked element of preconceptions about pastoralist populations is that they have relatively low rates of natural increase. Notwithstanding that there are no demographic data for the Maasai, an estimate³ of annual natural increase of 2.2% for Maasai in Kenya (Campbell, 1979), has been quoted several times⁴. Given the extremely rapid rates of national population growth in Kenya and Tanzania over the past three decades⁵, this apparent low rate of natural increase is notable. This study explores whether there is any veracity in the low level of population growth ascribed to the Maasai. Throughout this study, the context of population "information" is studied. For example, despite a lack of quantitative data to support the view that the Maasai population was growing at a much slower rate than the national context, why has this idea persisted? More broadly, ideas about "pastoralist" demography are scrutinised for their substantive basis.

1.2 Study context

This thesis must be contextualised within the wider project of which it was a part⁶. The project was a multidisciplinary one, concerned with the long-term outcomes of different land use policies on environment, wildlife and socio-economic indicators in the Serengeti-Mara Ecosystem in Kenya and Tanzania. Maasai have lost considerable areas of rangeland to other forms of land use (particularly fortress conservation) since the turn

³ This figure is not based on empirical research. Rather, "it is an estimate made by Dr...who has spent many years studying health-related issues in Maasailand" (1979:5)

⁴ Sindiga, 1984; Jacobs, 1984; Holland, 1987

⁵ In the late 1970s, population growth in Kenya reached 3.82% *per annum*.

⁶ The impacts of land-use policy on environment, wildlife, demography and socio-economic indicators in east African savannas: the Serengeti Ecological Unit, funded primarily by European Union Grant No. KIC18-CT96-0070. Principal investigator Prof. K. Homewood.

of the century (Campbell, 1985; Homewood and Rodgers, 1984; Homewood, 1995). Since colonial times, and particularly in Kenya, significant proportions of Maasailand have been set aside as national parks or reserves to protect wildlife. Government development efforts have attempted to transform the Maasai economy by land tenure arrangements, education of children, reduced livestock numbers and controlling of transhumance. It was as part of this wider research project that the current demographic study evolved.

The design of this study can be thought of as a natural experiment. That is, in order to understand Maasai demography, it is necessary to collect data in both Kenya and Tanzania. A situation therefore arises of one major controlling factor (ethnicity) whilst varying other factors (including nation-state, service provision, production system). It is an approach worth pursuing because, to echo the words of Hill and Randall, "Natural experiments in the human sphere are not all that common and the chance to look at the behaviour of the same ethnic group living in different circumstances...is too valuable to waste" (1985:39).

As a research design, the natural experiment approach has been used several times in a demographic context, including work by Orubuloye and Caldwell (1975), Lesthaeghe (1977), Grogger and Bronars (1993), and Conrad *et al* (1996). The use of the term "experiment" is perhaps something of a misnomer in the social sciences: it implies total control of dependent and independent variables. In a social science setting, however, there are many confounding factors, and perfect "control" is absent. This caveat notwithstanding, given that the opportunity arose for an approximation to a natural experiment design, it is still a useful (if inexact) framework for analysis.

1.3 Thesis structure

Chapter two examines the nature of ethnographic writing, with specific reference to its utility for demography. The use of ethnographies by demographers to inform their research has a long history. For example, Lorimer's publication of "Culture and Human Fertility", published in 1954 attempted to draw together "a mass of incidental, though generally inconclusive, evidence...in historical, anthropological, sociological and demographic studies" (1954:i). That demographers have failed to exploit fully anthropological information is widely accepted, particularly by those engaged in anthropological demography⁷.

The use of ethnographies necessitates the acquisition of skills not normally associated with demography in order to examine critically the information contained in them. Indeed, some authors have queried whether the skills needed to do quantitative demography and use ethnographies can reside in one person (Hammel, 1990; Basu and Aaby, 1998). This study demonstrates that demographers can and should develop the skills necessary to use ethnographies in order to enrich their demographic research.

Caldwell and Caldwell suggest that "the only innovation for the demographer is the need to master the anthropological writing" (1988:7.2.2) as a starting point to field research. The way in which demographers have used ethnographies in their work is reviewed, and demonstrates the general lack of critical use of ethnographies. This

⁷ Anthropological demography as a sub-discipline not unanimously accepted. Many demographers would prefer to subscribe to the more limited view that demography can be enriched by borrowing from the methods and findings of anthropology rather than by branching out into a new sub-discipline (Basu and Aaby, 1998).

review provides a context for an inspection of the way in which anthropologists regard the demographic use of ethnographies. Acknowledgement is made here to epistemological debates within anthropology and the shift from structural functionalism towards ideas of "agency" and "actors", but no effort is made to enter into this internal dialogue. The task has been described as "not for the faint of heart" (Fricke, 1997:271), and is beyond the scope of this study.

Historical ethnographic data have been little used as a source of information in demography. There is a very rich historical depth of ethnographies relating to the Maasai, dating from the late nineteenth century to the present, from explorers' travelogues to accounts by colonial administrators (and their spouses) and feminist ethnographers. This historic ethnographic record is incorporated throughout the present study.

Chapter three contextualises the demographic study, both in terms of the social organisation of Maasai and the geographic setting of contemporary Maasailand. This section is based on a combination of ethnographic information and personal observations, using Hammersley's (1998) framework for the assessment of ethnographic accounts. Using the broadest terms the social and economic setting of contemporary Maasai in Kenya and Tanzania are sketched in. The wealth of ethnographic information available on the Maasai becomes apparent, written by very different people with different motivations at different points in history. This chapter concludes with a brief overview of the socio-economic data collected during the demographic study. The large-scale of this study combined with cross-border comparability, makes it the first study of contemporary Maasai livelihoods of its kind.

Chapter four outlines the research methodology, and the contribution of ethnographies to the research design and fieldwork. The wealth of detailed, contextual information in ethnographies of relevance to the field demographer, from information on personal conduct to vernacular terms is highlighted in this chapter. Indeed, Caldwell *et al* suggest that "demographers miss a great deal, and undertake much unnecessary work, if they start their research without being saturated with the anthropological, historical, economic and agricultural literature on the region" (1988:27). Of particular interest to this study is the bringing together of all of the disparate historical data on aspects of Maasai demography and population.

The use of large-scale sample surveys, the dominant methodology in demography, has been criticised by anthropologists for "a lack of flexibility, inability to probe sensitive matters, neglect of social, cultural and economic context" (Greenhalgh 1990:92). This study demonstrates how ethnographic information can be integrated successfully into a questionnaire-based study.

The contribution of residence of the researcher during demographic data collection is considered. Basu and Aaby suggest that "curious demographers have much to gain by becoming a part of the field team in a much more anthropological way - by living in the field, talking to people other than survey respondents, and observing behaviour that might initially seem to have little ostensible demographic significance" (1998:3). This approach is not without its critics. Kertzer, for example, has described such approaches as nothing more than "add fieldwork-and-stir" (1997:2). This study does not provide anthropological-style first person accounts of fieldwork, such information would be inappropriate to the aim of the study.

Chapters Five to Ten present the data and analyses. Threaded throughout each of these chapters is relevant ethnographic information. Information that at first might appear irrelevant to a quantitative demographic study had implications for data collection and analysis. The wider implications for the creation of demographic "myths" about groups of people as a result of the ethnographic record are discussed. Other Kenyan and Tanzanian demographic data at a variety of geographic scales are presented alongside the survey data, and provide two opportunities. Firstly, they permit the contextualisation of the survey data and analyses. Secondly, they provide a chance to examine the appropriateness of national census and sample survey data for the study of a sub-group such as the Maasai.

Chapter Eleven considers the evidence, both from this study and elsewhere, for a pastoralist fertility regime in sub-Saharan Africa. For the first time, Maasai fertility data can be incorporated into this debate. Issues of how a population is "classified" for the purposes of demographic analysis are highlighted through the use of different classification schema. The broader context of how and why ideas pertaining to pastoralist demography have persisted are considered, with specific reference to the supposed fertility-reducing effects of high levels of sterility in pastoralist populations.

Two of the aims of this study are to examine and then demonstrate how ethnographic information may be incorporated into demographic analysis. Such an undertaking requires the incorporation of both ethnographic and demographic literature, not to mention historical and other literature. The nature of this endeavour demands that literature is reviewed throughout all of the chapters, rather than confined to one specific chapter devoted to a "Literature Review". Thus, a thematic approach is taken to the literature review, with ethnographic and demographic literature presented alongside each topic.

Throughout the thesis there is an attempt to "situate demography" (after Greenhalgh) in order to be able to understand the driving forces behind demographic outcomes. This involves an approach that draws together both individual and structural factors in a way that incorporates a historical element. The reason for examining the context of demography in greater depth is the need to develop "whole demographies" (Greenhalgh, 1995:12). Broadly speaking, the concept of a whole demography involves consideration of not only social and cultural factors, but also of political and economic frames in order to properly ground demographic outcomes in reality. Closely related is McNicoll's concept of "institutional demography", which emphasises the role of societal structures and their historic influence on contemporary demographic behaviour.

Whilst differing slightly in their foci, the overall approach of Greenhalgh's "whole demographies" and McNicoll's "institutional demography" are very similar. Both are attempts to incorporate factors that are not amenable to "standard" quantitative demographic analysis. This approach is demonstrated most clearly in the consideration of fertility differentials between the two Kenyan study sites. The approach throughout these chapters is one of multiple approaches to a study of demography, that is "No single analysis will tell the whole story" (Fricke 1997:21).

Chapter 2 Ethnography and Demography

The primary aim of this study is the demography of the Maasai, and the first step was a search for data and information already available on this topic. While searches for *data* on the demography of the Maasai drew a blank, there was a wealth of information available on the Maasai, mainly in the form of ethnographies, together with colonial documents. The next step was to identify ways in which this information could be of use to a study of the demography of the Maasai. What skills are needed by a non-ethnographer in order to be able to use the information? More broadly, have demographers used ethnographies? If they have used ethnographies, *how* have they used them, and what has been the reaction of anthropologists? Finally, the utility of using ethnic group as an organising principle for a demographic study will be explored.

2.1 Ethnographies of the Maasai

Table 2.1 attempts to summarise the major ethnographies relating to specifically to the Maasai, but it should be underlined that this is not a full bibliography of all ethnographies of the Maasai. The richness of the Maasai ethnographic record is complemented by the existence of several ethnographies written by Maasai (Ole Sankan, Ole Saitoti, Kipuri, and Sicard).

For a demographer beginning a study of the demography of the Maasai, the question is "What to do with all of this information?" The temptation with an ethnography is to "read" it at face value. However, it soon became apparent that specific tools and skills are necessary if one is to incorporate ethnographic information into a demographic study. Jacobson's description of how ethnographies are commonly read provides some insight into "How *not* to read an ethnography":

Readers may understandably approach an ethnography as if it were a simple account of a people, society, or culture. They may assume that an ethnographic monograph portrays directly, in an unfiltered fashion, the subject with which it is concerned. They may read an ethnography as if it were a documentary or journalistic story, an example of straight reportage. When they read this way, however, they miss much of the meaning of the monograph and the significance of the ethnography it contains." (1991:1)

Table 2.1: Ethnographies of the Maasai

Author	Year	Title
Fischer	1884	Dr Fischer's journey in the Masai
Thomson	1885	Through Masailand
Sheldon	1892	Adventures among the Masai and other tribes of east Africa
Baumann	1894	Durch Maasailand zur Nilquelle
Hinde	1901	The last of the Masai
Hollis	1905	The Maasai
Hollis	1910	A note on the Masai system of relationship and other matters connected therewith
Merker	1910	Die Masai
Shelford	1910	Notes on the Masai
Sandford	1919	An administrative and political history of the Masai Reserve
Leakey	1930	Some notes on the Masai of Kenya Colony
Fox	1930	Furher notes on the Masai of Kenya Colony
Whithouse	1933	Masai social customs
Fosbrooke	1948	An administrative survey of the Maasai social system
Jacobs	1965b	A chronology of the pastoral Maasai
Jacobs	1965a	The traditional political organisation of the pastoral Maasai
Koenig	1965	The Masai story
Jacobs	1970	Maasai marriage and bridewealth
Llewelyn-Davies	1974	Maasai women
Ole Sankan	1976	The Maasai
Berntsen	1976	The Maasai and their neighbours
Kipuri	1978	Engagement and marriage among the Maasai
Jacobs	1979	Maasai inter-tribal relations: belligerent herdsmen or peaceable pastoralists?
Waller	1979	The Lords of Africa: the Maasai in the mid nineteenth century
Llewellyn-Davies	1981	Women, warriors and patriarchs
Galaty	1983	Ceremony and society: the poetics of Maasai ritual
Kipuri	1983	Oral literature of the Maasai
Llewelyn-Davies	1984	The women's olamal
Arhem	1985	Pastoral man in the garden of Eden
Ole Saitoti	1986	The worlds of a Maasai warrior
Talle	1987	Women as heads of houses
Talle	1988	Women at a loss
Spencer	1988	The Maasai of Matapato
Waller	1988	Emutai: crisis and response in Maasailand, 1883-1902
Kipuri	1989	Maasai women in transition
Kituyi	1990	Becoming Kenyans: socio-economic transformation of the pastoral Maasai
Ole Saitoti	1991	Maasai
Rigby	1992	Cattle, capitalism and class
Llewelyn-Davies	1993	Memories and dreams
Matampash	1993	The Maasai of Kenya
Spear & Waller	1993	Being Maasai
Oddie	1994	Enkop ai: my life with the Maasai
von Mitzlaff	1994	Maasai women
Ibrahim & Ibrahim	1995	Pastoralists in transition
Helmut	1995	Nachocho
Sicard	1998	A tale of a Maasai girl

With this caution in mind, the following sections address what an ethnography is and how an ethnography should be read.

2.2 Ethnography

An ethnography is the product of doing ethnography or ethnographic research. An ethnographer *does* the ethnography and then writes *an* ethnography. That is, ethnography is both a method of data collection *and* a type of data or information. Study of the use of the term *ethnography* in both anthropological and demographic texts shows that methods of data collection and the data itself are often subsumed under one label. The issue is not merely semantic; it underlines a basic need for clarification. As Atkinson and Hammersley point out "Definition of the term ethnography has been

subject to controversy. For some it refers to a philosophical paradigm to which one makes a total commitment, for others it designates a method that one uses as and when appropriate. And, of course, there are positions between these extremes" (1998:110).

2.2.1 Ethnography as method

Jessor includes participant observation, unstructured interviews, informal survey, case study, and hermeneutic analysis of text within his definition of ethnography. He highlights many different approaches but one common thread - "a common concern with the interpretation of meaning and with understanding the point of view of the Other" (1996:6). He further underlines this point by stating that "the terms *ethnography*" and "*qualitative method*" refer to a congeries [sic] of approaches and research procedures rather than to any singular, self-contained, unique method" Jessor (1996:5). Indeed, Hammersley simply describes ethnography as "the most basic form of social research" (1998:2).

In an attempt to answer the question "What is ethnography?" Hammersley and Atkinson's review summarises six main themes: the eliciting of cultural knowledge; a detailed investigation of patterns of social investigation; the holistic analysis of societies; an essentially descriptive undertaking; a form of story-telling; and the development and testing of theory (1983:1). It is therefore unsurprising, given this background, that Hammersley and Atkinson themselves suggest that ethnography "is simply one social research method, albeit a somewhat unusual one, drawing as it does on a wide range of sources of information" (1983:2). Perhaps more revealing is their subsequent revision of their answer to the question "What is ethnography?" to; "we shall interpret the term "ethnography" in a liberal way, not worrying much about what does and does not count as examples of it...we would not want to make any hard-and-fast distinction between ethnography and other sorts of qualitative inquiry" (1998:1).

Fricke, an anthropologist who has been at the forefront of the development of the recent debate on the inter-relationship between anthropology and demography, summarises ethnography as "a general methodological orientation wedded to a concept of culture" (1997:826). He goes on to describe ethnography as characterised by a "methodological free-for-all", including surveys, focus groups and the "painfully underdefined" participant observation. There is a multitude of types of participant observation, beyond the scope of the present discussion. A general understanding of participant observation involves the researcher participating in people's routine lives and speaking the vernacular language adequately, for a length of time and collecting whatever information is of relevance to the research question. Spradley suggests five "types" of participation, summarised in Table 2.2.

Table 2.2: Typology of Participant Observation

	Description
Nonparticipation	No involvement with the people or activities studied.
Passive	Ethnographer is present at the scene of action but does not participate or interact with other people to any great extent. The ethnographer needs only to find an "observation post" from which to observe and records what goes on. If the passive participant occupies any role in the social situation, it will only be that of "bystander", "spectator", or "loiterer".
Moderate	Ethnographer seeks to maintain a balance between being an insider and an outsider, between participation and observation.
Active	Participant seeks to do what other people are doing, nor merely to gain acceptance but to more fully learn the cultural rules for behaviour.
Complete	The highest level of involvement for ethnographers - the study of a situation in which they are already ordinary participants.

Source: Spradley (1980)

Information may be collected by any one or combination of those mechanisms used in daily life: watching, listening, participating, and questioning. The use of the word "participation" may be misleading, as demonstrated by Bleek's description of ethnographic fieldwork.

"The kinds of things in which I was interested were... family quarrels, suspicions of witchcraft, sexual relationships, and birth control practices, including induced abortion...My participation in sexual relationships was slight, in birth control insignificant, and in witchcraft non-existent" (1987:315)

Ethnographic methods rely substantially or partially on participant observation. The very epistemology of ethnography involves the potential for multiple interpretations of "reality". An event can be interpreted in many different ways, and it is this approach that underlines participant observation. It is perhaps the large variation in what is meant by this term that makes non-ethnographers (particularly those working in a largely quantitative context) so suspicious of and uncomfortable with ethnography.

2.2.2 Ethnography as a type of data

The first writing of ethnography is accredited to Herodotus (5BC), although ethnography as a "professional" field did not emerge until the early Twentieth Century, with Malinowski's (1922) account of the life of Trobriand Islanders. Spradley states that "Ethnography is the work of describing a culture. The central aim of ethnography is to understand another way of life from the native point of view" (1980:3). Hammersley suggests that ethnography is currently in a "crisis of fragmentation (1998:18). Whilst frank, such revelations are less than helpful for the researcher wanting to use ethnographies. For, if ethnographers cannot decide amongst themselves exactly what ethnography is, then what chance for the non-ethnographer? There is, however, one constant thread in all discussions of the nature of ethnography, and that is its principal (although highly variable) research method: participant observation. What is of interest here, however, is the end product of the data collection: the ethnography⁸. What does an ethnography include? Spradley (1980) suggests a typology of six "levels" of ethnographic writing (Table 2.3).

⁸ Whilst it is recognised that ethnographies may take several forms, including written, filmed and sound recorded, the focus here is on the written form.

Table 2.3: A typology of ethnographic writing

Level of writing	Description
Universal	All statements about human beings, their behaviour, culture or environmental situation.
Cross-cultural descriptive	Statements about two or more societies. Assertions that are true for some societies but not necessarily for all societies.
General statement about a society or cultural group	Appears to be specific, but remains quite general.
General statements about a specific cultural scene	Many statements about a specific cultural scene Descriptive statements about a particular scene or group, but even so, are still general in nature. Even when expressed by an informant and used in an ethnography as a quotation from an informant, they represent an abstraction.
Specific statement about a cultural domain	Ethnographer begins to make use of all of the different terms in one or more cultural domains.
Specific incident statements	Takes the reader immediately to the actual level of behaviour and objects, to the level of perceiving these things. Instead of merely being told what people know, how they generate behaviour from this knowledge, and how they interpret things, the reader has been shown this cultural knowledge in action.

Source: Spradley, 1980

Spradley's schema involves a nested hierarchy of writing, from the most general to the most specific, but all of which he identifies as types of ethnographic writing. Atkinson identifies two main types of ethnography: "Nouveau Ethnography" and "straightforward versions of plain-speaking ethnographic realism" (1992:v). Atkinson's *Nouveau Ethnography* includes many forms of writing, including "confession-like first-person accounts, dialogic two-person encounters and travel logs [*sic*] from far-distant lands or neighbourhood bars" (*op cit.*). Regardless of the presentation style, Atkinson concludes that ethnographies "still rest their slender or fat truth claims on the old ethnographic chestnut that having been there provides warrant to hold forth on what one makes of it" (*op cit.*). An example of Atkinson's *Nouveau Ethnography* used in a demographic context is Bleek's account of demographic data collection in Ghana. This is an example of the confessional style of ethnography in which the "inside story" of the research is told. Such reports may include incidents that are potentially discrediting for the researcher. However, the effect is usually to demonstrate that the researcher has had direct contact with the people and settings described⁹.

Ethnographies of the Maasai may be used as an example of the changing nature of ethnographies in general. Denzin describes ethnographies as having passed through four "historical moments" (Denzin, 1997): the traditional (1900 to World War II), modernist (World War II to the mid-1970s), blurred genres (1970-1986) and, crisis of representation (1986 to present)¹⁰. Each of these genres is present several times in the Maasai ethnographic record. The nature of each of these genres is summarised in Table 2.4.

⁹ Geertz describes such styles as "the diary disease" (1988:9).

¹⁰ Denzin includes a fifth moment, represented by the present, which is defined and shaped by previous crises.

Table 2.4: Denzin's "Historical moments" of ethnographies

Historical moment	Period	Description
Traditional	1900-World War II	Qualitative researchers wrote "objective" colonial accounts of field experiences. They were concerned with offering valid, reliable, and objective interpretations in their writings. The other who was studied was alien, foreign and strange.
Modernist	World War II-mid-1970s	Rigorous, qualitative studies of important social processes, including deviance and social control.
Blurred genres	1970-1986	Functional, positivist, behavioural and totalising approaches to the human disciplines gave way to a more pluralistic, interpretive, open-ended perspective. All anthropological writings were interpretations of interpretations. The observer had no privileged voice in the interpretations.
Crisis of representation	1986-present	Research and writing became more reflexive and called into question issues of gender, class, and race. The erosion of classic norms in anthropology (objectivism, complicity with colonials, social life structured by fixed rituals and customs, and ethnographies as monuments to a culture). Critical, feminist and epistemologies of colour increasingly important.

To summarise the preceding review of "What is an ethnography?" the following statement can be made. An ethnography can take a variety of written forms, based upon a wide range of research methods that will include some kind of participant observation. "Reality" or "the field" is represented by the ethnographer to the reader (or viewer) of the ethnography. Underlying this representation is the premise that there is not one reality, there are only multiple interpretations of "reality". There is therefore what Atkinson terms "a tension between the complexity of social life and the modes of representation - both for the writer and reader" (1992:2). Figure 2.1 highlights the stages in the production and subsequent use of an ethnography.

Whilst necessarily reductive, Figure 2.1 underlines the complexities involved in both doing, writing and reading ethnography. The ethnographer implicitly imposes an interpretation in trying to make an ethnography readable. The reader then uses her own "toolbox" of skills in order to understand the ethnography. Regardless of the style of writing employed by the ethnographer, Atkinson suggests that "Cutting across all styles is a paradox: The more readable an account the less faithful it will seem to those who live in or closely attend to the world described, and *vice versa*." (1992:v). That is, the written ethnography involves a representation of reality as interpreted by the ethnographer, and not simply a description. Here, parallels may be drawn with Geertz's (1973) distinction between *thin* and *thick* description. Jacobson (1991) equates the former with the image taken by a camera - an accurate yet superficial representation of reality. In contrast, thick description involves interpretation and synthesis by the ethnographer, which (to continue with the photographic metaphor) could be equated to a filter over the camera lens. In addition, an ethnography will contain that information that has been selected by the ethnographer in order to support an argument and/or theoretical perspective. The following section considers what "tools" are available to the reader of an ethnography, and attempts to address the question "How *should* an ethnography be used?"

2.3 How should an ethnography be used?

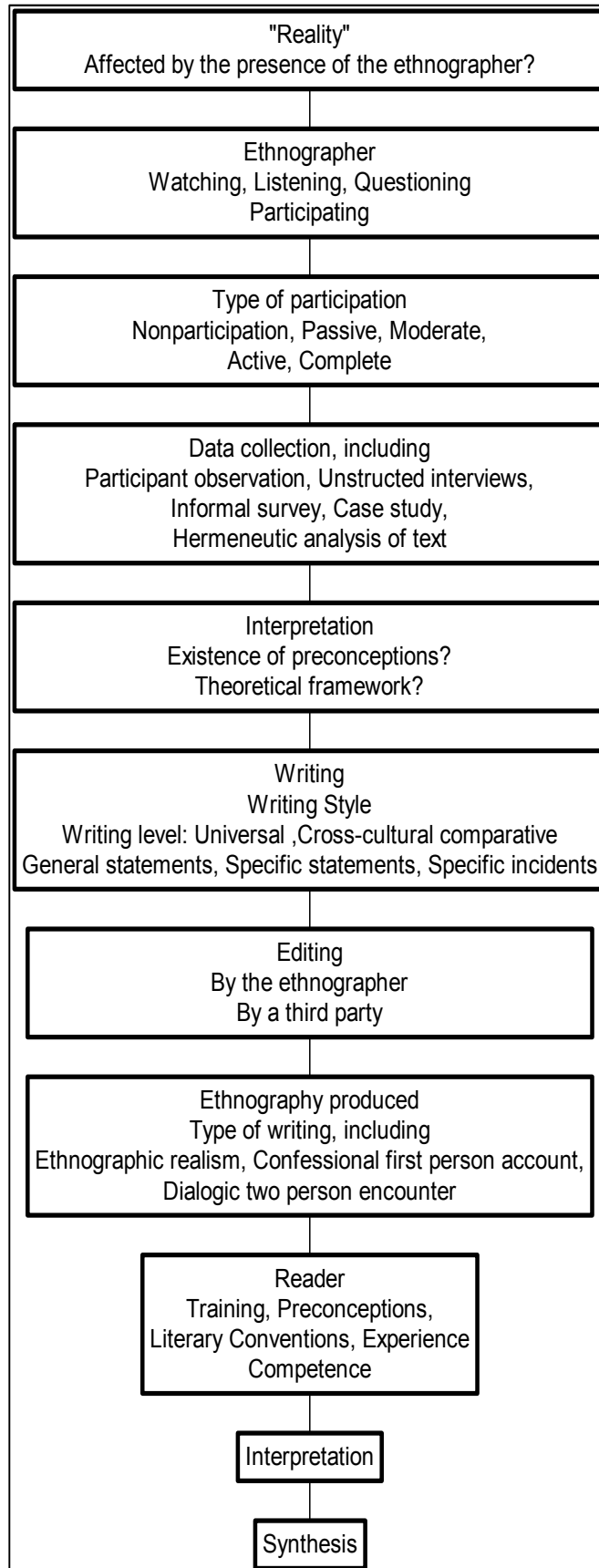
Ethnographic writing has a long history, and the number of ethnographic publications testifies to the success of the endeavour. What is most revealing, however, is the small amount of discourse with respect to how an ethnography should be used - how it should be read and assessed? Are there any standards by which an ethnography can be assessed? If there are standards, then how should they be used? Indeed, should ethnographies be assessed at all¹¹?

Jacobson suggests three ways in which the claims made in an ethnography may be evaluated. Firstly, an ethnography can be compared with "accounts of other societies that are similar...thereby providing a framework for evaluating its interpretation" (1991:11). Secondly, the reader can compare the account with other ethnographies of the same society, "the strategy here is to place one ethnographic account within a context of others' observations on the same society" (*op cit.*). Finally, Jacobson suggests an "internal" evaluation of the ethnographer's interpretation. That is, "the reader tests the fit between the ethnographer's interpretations and the evidence presented within the ethnographic account" (*op cit.*). The first two of these methods involves comparison with materials outside or beyond the limits of the specific ethnography being studied. The latter involves an "internal check" of the consistency between evidence and representation.

Hammersley (1998) develops a framework for the assessment of ethnographic accounts, which has at its base one of the most basic tenets of research: validity. Hammersley argues that the traditional quantitative-qualitative or positivist-naturalist divide is unproductive for research, and the result of this rejection of the classic epistemological divide is a framework that embraces a notion of validity in order to read and assess qualitative work (in this instance, ethnography). Validity is taken here to refer to the degree to which the method for collecting information results in accurate information (Madrigal, 1998). Hammersley proposes a schema which is based on "judgements of the likelihood of error" (1998:67), which involves two concepts and three steps. The two concepts are of plausibility and credibility. Plausibility he defines as "whether or not it [a knowledge claim] is very likely to be true given what we currently take to be well-established knowledge". Credibility refers to "whether it seems likely that the ethnographer's judgement of matters relating to the claim are accurate given the nature of the phenomena concerned, the circumstances of the research, the characteristics of the researcher, and so on" (*op cit.*).

¹¹ For example, Smith (1989) The nature of social and educational inquiry.

Fig 2.1: Schematic representation of ethnography production and use



The three steps proposed by Hammersley are as follows. Firstly, one asks the question "How plausible is the knowledge claim?" He suggests that there are rarely cases where one is able to accept knowledge claims without needing to know some background information about motivation and evidence. Secondly, the credibility of the knowledge claim should be assessed. Again, Hammersley argues that there are very few occasions on which credibility can be accepted immediately. Finally, when it is decided "that a [knowledge] claim is neither sufficiently plausible nor sufficiently credible, we will require evidence to be convinced of its validity" (1998:67). The evidence's validity is assessed by examining the plausibility and credibility of the evidence itself. In summarising the disadvantages of this approach, Hammersley includes: there is no guarantee that judgements will be correct; there is no way of knowing for certain whether they are correct; and, judgements will not necessarily be consensual, as opinions as to what is plausible and credible will differ. Different people's interpretation of what is "correct" will vary substantially. However, Hammersley points out that his approach does not preclude the "possibility of cumulative knowledge" (1998:68).

Hammersley's approach is attractive for two reasons. The first is pragmatic; for the non-ethnographer seeking an approach to effectively read and assess ethnographic work, Hammersley provides a practical, step-by-step approach. In a field notoriously impenetrable for the non-expert, this is a blessing. The second attraction is epistemological. Hammersley explicitly rejects the imperative of the dichotomy¹², and replaces it with a framework which simultaneously incorporates a core principle of "scientific inquiry" (i.e.: validity) with an iterative, judgement-based schema (credibility and plausibility). The use of ethnographies must therefore begin with the acceptance that an ethnography is the interpretation of reality as produced by that ethnographer. That is, "an ethnographic account constitutes the researcher's interpretation of what he or she has observed and/or heard" (Jacobson, 1991:3). Indeed, Jacobson suggests that the reader must ask *Why* the ethnographer was doing the ethnography in the first place. The discussion so far has related to the theoretical and "best practice" components of ethnography. The following sections examine the use of ethnography in demography.

2.4 Demographers and ethnography

In 1981, a workshop on the Anthropology of Human Fertility at the National Academy of Sciences was held. The outcome of the workshop was an important (and under-quoted) chapter called "Effects of culture on fertility: Anthropological contribution" by Levine and Scrimshaw (1983). Levine and Scrimshaw's paper has much in common with the "micro-demographic" and "quasi-anthropological demography" associated with Caldwell. Levine and Scrimshaw emphasise the methodological contribution of anthropology, namely, ethnographic fieldwork. They described ethnography as "a single anthropologist (or a couple) in direct and prolonged contact with individuals of the population under study, using various techniques and perspectives to record social behaviour patterns in their natural contexts - ecological, socio-economic, linguistic, and cultural." (1983:682). Caldwell has been described as "the leading voice" (Kertzer and Fricke, 1997:12) within demography for the application of anthropological methods. As early as the late 1960s, Caldwell began to investigate the use of what he was to subsequently call "unconventional" methods for the collection of demographic data. Dissatisfaction with a survey methodology, and the attendant tendency "to obtain normative responses or reflections of the rules, particularly on sensitive topics"

¹² Positivist versus naturalistic; qualitative versus quantitative, etc.

(Caldwell & Hill, 1988:4) led to the evolution of the micro-approach. Caldwell is almost universally accredited with the development of a "micro-level", "quasi-anthropological" or "anthropological" approach (*op cit.* 1988:2). He is one of the few demographers to explicitly address and welcome the use of ethnographies for and by demographers. The following quote is taken from a review of Kertzer and Fricke's (1997) Anthropological Demography.

"The person to whom the field demographers appeal for explanation turns out not to be an anthropologist at all but a type of researcher from earlier times, the ethnographer, or an extinct species, the cultural-structuralist anthropologist of the British school. If anthropologists no longer count ethnographers among their numbers, then demographers will have to reinvent them" (Caldwell, 1998:159)

This study is primarily concerned with what can be achieved by using what is already available. The focus is therefore on ethnographies, the culmination of ethnographic fieldwork. How can they be used by demographic enquiry in order to achieve a thicker demography (after Fricke, 1997)? Reference to and use of ethnographies in demographic research are legion, and usually take the form of some brief reference to "secondary sources of qualitative information such as ethnographic accounts can be drawn upon" (Knodel, 1998:58). The paucity of literature relating to the assessment and reading of ethnographic research must in part explain the demographer's lack of attention to ethnographic interpretation.

A survey of demographic journals¹³ from 1970-1997 supports Hammel's (1990) view that the use of ethnographies by demographers has far to go in terms of "how to read" the ethnography. The majority of articles making use of, or some reference to, ethnographies do so with little (explicit) critical use of the nature of the ethnography. Typical references include statements such as "It is not difficult to find ethnographic testimony" (Reher 1995:529); "My impressions from the ethnographic literature" (Turke 1989:80); "Ethnographic research...documents similar phenomena" (Desai & Jain 1994:128); "which I assume on the basis of the ethnographic record" (Turke 1991:698); "a pattern consistent with ethnographic evidence" (Budd & Guinnane 1991:515); "ethnographic work...also emphasises this point" (Duncan & Hofmann 1990:519); "Evidence from ethnographic studies suggests that" (Eggebeen *et al* 1990:222); "Most information comes from ethnographic data describing" (Tucker, 1986:308); "Evidence from ethnographic and other studies suggest that" (Suchindran *et al* 1985:483), and so on. Issues of validity, credibility and plausibility surrounding the quoted ethnographies are absent from all of the above examples. There is, of course, the argument that an ethnography that has survived peer review is a credible source of information, removing the onus from the reader to explore validity, credibility and reliability. However, to accept a published ethnography at "face value" ignores the extreme variety in what constitutes an ethnography (and indeed), an ethnographer. For example, the writers of early ethnographic accounts included missionaries, explorers, colonial administrators (and their spouses) - and the reliability of such accounts varies considerably, as does their motivation for writing the ethnography in the first place¹⁴.

A further basic flaw of many of the references to ethnographies is simply the age of the referred works. This is not to deny the usefulness of historical ethnographies in constructing a chronological comparison. Rather, the use of ethnographies written two

¹³ Population (English summary), Population and Development Review, Population Studies

¹⁴ The "ethnographer" might have misinterpreted what they saw, or might have had an ulterior motive in portraying a particular stance.

or three decades prior to the research suggests a lack of attention to issues of agency and change. Examples, drawn from the demographic literature, are included in Table 2.5.

Table 2.5: Examples of demographic research using dated ethnographies

Author	Year of demographic research	Year of ethnography
Hogan <i>et al</i>	1985	1962, 1964
Morgan & Rindfuss	1984	1963
Malhotra	1991	1961, 1969
Borgerhoff-Mulder	1989	1939, 1947, 1963, 1967, 1972, 1979, 1988
Tucker	1986	1959

One study that acknowledges explicitly the time difference between the research and the quoted ethnographies is that by Fricke *et al*, who state "our sources for ethnographic and survey data are often separated by approximately two decades" (1986:505). Indeed, in the same refreshingly frank article, they go on to note the drawbacks of using ethnographies which refer to villages different to those in which their survey was carried out. There are a few examples of demographers addressing issues, which could be referred to as credibility and plausibility, acknowledging inconsistencies and limitations of the ethnographic record, summarised in Table 2.6.

Table 2.6: Examples of demographic research acknowledging ethnographic limitations

Author(s)	Year	Quote
Caldwell <i>et al</i>	1992	"The exact situation is often ambiguous, as can be seen in the Abomey area of Dahomey (now Benin). Bohannon (1968) reported that, if a girl was found not to be a virgin on marriage, she had to name her seducer, who would then be fined. But Herskovits (1938) had found that pre-marital sexual relations were not rare among women in the society, but that even the girls who did indulge claimed, apparently successfully, on marriage to be virgins" (p.402) ¹⁵
Rindfuss & Morgan	1983	"it is always possible in relying on ethnographic literature that one is dealing with the unusual rather than the ordinary...Most of the ethnographic literature suggesting a relationship between coital frequency and how the marriage was contracted describes the relationship from the woman's perspective, and is silent regarding the husband" (p. 270)
Caldwell & Caldwell	1977	The postpartum period of sexual abstinence has conventionally been referred to as the "sex taboo" or just the "taboo". This usage certainly implies sanctions that go well beyond rational decision based on the available evidence and such interpretation has been reinforced by attestations to very different lengths of abstinence among peoples in almost identical circumstances - attestations that may well be based on the shakiest of foundations

However, the small number of references by demographers to ethnographic contradictions is testament to the low priority accorded to a critical use of ethnography by demographers. What is perhaps most obvious about the use of ethnographies by the demographic community is that their contribution is reduced to a "supporting role". That is, the ethnographic evidence is normally referred to in support of conclusions drawn by the author based largely on other data.

2.5 Anthropologists' critiques of demographer's use of ethnographies

The debate surrounding the production, writing and reading of ethnography is symptomatic of a wider epistemological shift within anthropology, away from the structural-functionalist description of the "Other", towards ideas of "agency" and

¹⁵ But it may be seen, even from this example, the use of two ethnographies, separated by 30 years in their publication, and by 24 and 54 years from the date of the demographic research.

“actors”. The “classic” ethnography is implicitly associated with the British structural-functional school. The following section examines the criticisms by the anthropological community on the use of ethnographies by demographers. Kertzer and Fricke suggest that some demographers “confine anthropology’s contribution to... a multitude of highly nuanced community studies” (1997:17). Demographers then go on to use the ethnographies in order to create “novel variables suitable for testing via subsequent demographic surveys” (*op. cit.*). Kertzer and Fricke suggest that “the value of an anthropological study is a direct function of the size of the population to which it can be...generalized”, and conclude that demographers tend to use ethnography as a tool for survey design and/or improvement, and little else.

Hammel’s “Theory of culture for demography” makes little explicit reference to the utility of ethnographies for demographers. However, one can be left in little doubt as to how he views the demographic community’s use of ethnography

“The use of culture in demography seems mired in structural-functional concepts that are about 40 years old, hardening rapidly, and showing every sign of fossilisation” (1990:456)

However, Hammel is one of the few commentators regarding the anthropology-demography debate to explicitly address “*How to do the ethnography*”.

“A guiding principle in ethnographic work is that more information can be gathered by intensive exploration of a few cases than by superficial examination of many. It is important that the few cases be representative. Two important problems of ethnographic work are that it takes some local experience to learn what representativeness means, and that it is seldom possible to use random sampling techniques to achieve it...there are now few societies lacking some form of written expression, and none lacking a folklore that might have been already recorded by others. Such sources, never of course to be taken literally, may be instructive if carefully evaluated...Ideally the ethnography should be conducted by the investigator in the native language, preferably in the local dialect rather than in some standard national language or lingua franca” (1990:471)

He concludes, “Teamwork with an ethnographer experienced in the area may be the only practical solution, if the ethnographer can be taught to count” (1990:472). If one were to design a “job description” based on Hammel’s review, the individual would require the following attributes: technical demography skills; fluency in another language; prolonged residence in the study context; and, skills of textual analysis. No mean feat. Hammel’s emphasis is on ethnography as a type of data collection. He suggests that demographers can make progress by collecting information from key informants about specific behavioural events. The value of this is “not so much that the informants speak to the investigator, but that they speak to one another and can be overheard” (1990:475). Hammel gives much less credence to the use of existing ethnographies by demographers. Given the uncritical way in which most demographers have used ethnographies this is, however, unsurprising.

Demographers therefore tend to be criticised by anthropologists for using “reports of social norms or behaviour in support of the influence of social structure” (Lockwood 1995:25) and for failing to “ask about whether structure, norms, and actions really fit together in the way implied” (*op. cit.*). For the demographer, the role of the ethnographer in “constructing” the reality of the ethnography tends to be ignored. The ethnography is taken at face value as a valid representation of reality. It is at this

juncture that anthropologists' misgivings about demographers and ethnography are probably justified.

Ethnography as both method and information has been used extensively in demographic inquiry. Ethnographic methods within demographic fieldwork achieved currency with the publication of Micro-Approaches to Demographic Research (Caldwell *et al*, 1988). The reaction of anthropologists has, largely, been favourable to this development. The incorporation of ethnographies for interpretation has a much longer history, and has attracted far more critical reaction from anthropology, particularly the lack of attention by demographers to both contemporary debates within anthropology and the critical use of ethnographies.

2.6 Ethnography limitations

There are, of course, limits to the usefulness of ethnographies for demographic enquiry. Kreager, in his discussion of the potential support that ethnographic research may provide to demographic theorising, states "Published ethnography, as a source of data, contains relatively little discussion of demographic implications as such" (1982:237), a theme continued by Lockwood (1995). However, this implies that the demographer should be able to simply turn to an ethnography for an answer to a question. This returns to the key issue of what is an ethnography, who has written it, and why they have written it.

Much of the criticism of the use of ethnographies by demographers has originated from outside the demographic community *per se*. However, many demographers have suggested the greater inclusion of ethnographies within demographic research¹⁶. Ethnography is essentially "the work of describing a culture" (Spradley 1980:3)¹⁷. Here, culture is taken to refer to "a set of beliefs and practices common to a group defined by characteristics such as region or language, other than the standard economic and social variables. That is, cultural practices and beliefs are those that transcend socio-economic variables to embrace a whole regional group for example and, conversely tend to differ between different regional groups of similar socio-economic status" (Basu, 1992:2).

2.7 Cultural proxies

Much of the demographic use of ethnographies as a representation of culture refers to "cultural proxies". That is, some indicator used as shorthand for culture, such as religion, ethnic group, language, and place of residence. For example, Lesthaeghe's study of the decline in fertility in historical Belgium uses language (Walloon versus Flemish) as proxy for cultural boundaries. The use of such proxies, described by Kertzer as "a laundry list of traits" (1997:144), has been a major component of anthropologists' dissatisfaction with the demographic use of ethnographies. Their use is attractive for demographers for one main reason: they tend to be relatively easy to collect and quantify. A question in a household survey asking an individual to list the languages they speak fluently should be relatively unproblematic¹⁸, as is the coding of such a variable. Further, demographers tend to deal with cultural "aggregates" such as ethnic, linguistic or geographical groupings again making cultural proxies an attractive

¹⁶ See, for example, Chidambaram and Pullum (1981), Geronimus (1987), Awusabo-Aware (1988), Fein (1990), Meekers (1991, 1992), Pollak & Watkins (1993), Magnani *et al* (1995), and Larsen (1995).

¹⁷ Similarly, Atkinson suggests "ethno-graphy - the writing of culture" (1992:5).

¹⁸ Especially compared to the sensitive questions that form the demographer's domain e.g.: "How many of your own sons have died?"

option. The major drawback to such an approach is that these "aggregates" are then seen as discrete entities, without blurred boundaries or edges. The potential for shifting of boundaries across both time and space must be acknowledged, even if it cannot be incorporated.

Demography has its own intellectual and methodological history, one that tends to be associated largely with the quantitative end of the quantitative-qualitative continuum. A particular focus of this study is on the practical integration of ethnography in demography i.e.: the *how* rather than the *why*? To this end, the integration must therefore be palatable and accessible to demographers. Can the case not be made for using cultural proxies, providing that they are appropriate to the research question? The following section explores this idea, using ethnic group as an example of a cultural proxy.

2.7.1 Ethnic group as cultural proxy

The concept of ethnicity is a relatively recent one, having achieved currency in the study of ethnic conflict¹⁹. There have been many definitions and conceptualisations of "ethnic group", including (Handelman, 1977; Schermerhorn, 1978; Tonkin *et al*, 1989; Eriksen, 1993). Hutchinson and Smith (1996) suggest six main features of ethnic groups, present to varying degrees:

1. a common proper name, to identify and express the "essence" of the community;
2. a myth of *common ancestry*, a myth rather than a fact, a myth that includes the idea of a common origin in time and place, and that gives an *ethnie*²⁰ a sense of fictive kinship;
3. shared *historical memories*, or better, shared memories of a common past or pasts, including heroes, events, and their commemoration;
4. one or more *elements of common culture*, which need not be specified but normally include religion, customs, or language;
5. a *link* with a *homeland*, not necessarily its physical occupation by the *ethnie*, only its symbolic attachment to the ancestral land, as with diaspora peoples;
6. a *sense of solidarity* on the part of at least some sections of the *ethnie*'s population

Tonkin *et al* state that ethnicity "is ... a term that invites endless and fruitless definitional argument among those professional intellectuals who think that they know, or ought to know, what it means" (1989:11). Hutchinson and Smith's (1996) framework is used as the organising principle behind the conceptualisation of ethnic group in this study. In subsequent sections it will become clear that "Maasai" is an example of an ethnic group. Further "Maasainess" has very real meaning for both members and non-members of that group, both historically and currently. This is not to create some static notion of "Maasai". Indeed, by definition there can be no absolute "boundaries" to an ethnic group, whether over time or space.

Much of the debate surrounding the use of an ethnically specific approach is concerned with the ideas of multiple identity. That is, the many different affiliations of an individual with other kinds of groupings such as gender, region, class, and religion. For example, in modern East Africa, an individual can identify with their ethnic group (e.g.:

¹⁹ For example, the term "ethnicity" was first recorded in a dictionary in the *Oxford English Dictionary* of 1953. It is a derivative of the Greek term *ethnos*. (Hutchinson and Smith, 1996)

²⁰ "As the English language has no concrete noun for *ethnos* (Gr.), or *ethnie* (Fr.), the French term is used here to denote an "ethnic community" or "ethnic group" (Hutchinson and Smith, 1996:4)

Maasai), their age set, their gender, their political affiliation²¹, and with a nation-state (Kenya or Tanzania). The influence of ethnicity in non-western societies has (had) a profound influence on the creation (and destruction) of nations and the distribution of resources. For example, the colonial powers in Africa both drew the boundaries of new states with little regard for ethnic identities, and at the same time actively created special roles for certain ethnic groups. The history of the Maasai, their interaction with colonial powers and post-Independence governments is a particularly clear exemplar of this (Chapter Three). The continued prominence of ethnicity in sub-Saharan Africa despite social and economic globalisation (à la Giddens) has not reduced ethnicity “to the folkloristic margins of society” (Hutchinson and Smith, 1996:13), even amongst African urban elite.

Is the use of "ethnic group" as a cultural proxy a practical one? Ethnicity can provide a very practical cultural proxy for demographers for five reasons. Firstly, in an ethnically diverse context, most individuals will know and be willing to state their ethnic group²². Secondly, the development or translation of appropriate demographic terminology is more reliable in a context where the researcher is not relying on some *lingua franca*, but on a language used by all members of that group. If the translation of terms is reliable, then the potential comparability of the information is increased. Thirdly, depending upon how information is to be collected, ensuring that the ethnicity of the enumerator or interviewer is the same as the respondent will have implications for data quality. Fourthly, an ethnic-specific understanding of the organisation of the respondents will allow for the development of appropriate research instruments. For example, a standard United Nations definition of a household may not be appropriate in a setting where the basic unit of production is an extended polygynous family²³. Finally, there are few ethnic groups in the world today for which written ethnographies do not exist.

The limitations of ethnicity as cultural proxy must be acknowledged. Firstly, in situations where ethnic groups are not sharply differentiated, or where ethnic affiliation has no tangible day-to-day meaning for individuals, then ethnicity cannot be used as a cultural proxy; for example, in a rapidly urbanising context. Throughout sub-Saharan Africa, however, "ethnic frameworks are necessarily the most important determinants of the degree of adaptation to modern conditions" (Gaisie, 1990:613). Secondly, any ethnic group will contain individuals who are unsure about their ethnic affiliation, for example, in the situation of offspring from an inter-ethnic marriage²⁴. Finally, there are situations where an individual will deliberately conceal or alter their ethnic affiliation^{25,26}.

Ethnicity has received surprisingly little specific attention in the demographic literature until recently. Brockerhoff and Hewett's study of ethnicity and child mortality in sub-Saharan Africa is a conspicuous exception. They conclude "Neglect of mother's

²¹ Although in Kenya in particular, there is often a strong association between political affiliation and ethnic group.

²² Obvious exceptions to this statement include situations where an individual actively conceals their ethnic identity, for example, for fear of persecution.

²³ See Greenhalgh (1982) for a detailed discussion of this topic.

²⁴ Although in most situations there tend to be clearly defined norms as to whether an individual assumes the ethnicity of their mother or father.

²⁵ Although it may be possible to crosscheck statements with information about an individual's maternal language, for example.

²⁶ Lying informants are an inevitability whenever individuals are asked personal questions and are a fact of life for demographic inquiry.

ethnicity, in particular, as an influence on child survival is remarkable in light of the countless studies that have emphasised the central importance of maternal characteristics and behaviour for child health in Africa" (1998:3). In their literature review, they find many examples²⁷ where the analysis demonstrates large ethnic variation in early age mortality, but note that "these findings went unexplained" (1998: 4).

Can ethnicity be used in demography as a cultural proxy? In those contexts characterised by sharp differentiation between ethnic groups, such an approach is both possible and attractive. An ethnic group has a common proper name, a myth of common ancestry, shared historical memories, one or more elements of common culture, a link with a homeland, and a sense of solidarity (Hutchinson and Smith, 1986). Assuming a critical and current understanding of the components of that ethnicity or ethnicities, then ethnic group can provide a useful framework for organising research, in a context where ethnic group has pertinence. The key point is that the demographer pays due cognisance to understanding what it means for an individual to be a member of that ethnic group.

2.8 Discussion

The preceding suggestions have focused on ethnography as information and paid little attention to the inclusion of ethnography as method into demographic research. This is not to deny the many useful ways in which ethnography, conducted integrally to the demographic inquiry can be useful. Indeed, the assumption is made that the demographer will be present at the time of the data collection. It is hard to see how the demographer can avoid some degree of participant observation²⁸ during the fieldwork, no matter how transitory. The conducting of ethnographic data collection alongside or nested within a demographic survey has been advocated many times (LeVine and Scrimshaw, 1983; Caldwell & Caldwell, 1988; Axinn *et al*, 1991). However, because of the many forms of method that might be described as ethnographic, it was not the intention to describe each in detail with reference to demographic research.

The emphasis here is on the use that can be made of ethnography that already exists, rather than new ethnography. Ethnographies of the Maasai will be referred to throughout the study, at all stages of the research process, from design to execution to analysis and interpretation. It is not, however, the intention to examine each ethnography of the Maasai, in chronological or some other order. Rather, reference to ethnographies will be made throughout the following chapters, using Hammersley's (1998) critical framework. The next chapter draws together the ethnographic literature on the Maasai in order to contextualise the demographic study.

²⁷ Tabutin and Akoto (1992), Hill and Randall (1984), Cantrelle and Livenais (1980), Clark *et al* (1995)

²⁸ Reference is made here to Spradley's typology of participant observation

Chapter 3 **Maasai and Maasailand**

This chapter contextualises the demographic study both in terms of the social organisation of Maasai and the physical setting of Maasailand. Central to this study is an understanding of Maasai ethnicity²⁹. Firstly, what is meant by "to be Maasai" is described, including acknowledgement of the difficulty of this task. Secondly, the physical (climate and topographic) setting of the study is described. Thirdly, the "structural" components of Maasai society (household, clans, etc.) and the role of individuals (wives, husbands, dependants, etc.) are outlined. Fourthly, in order to provide an historical overview of the demographic data available on Maasai, chronological accounts of numbers of Maasai are provided, from early explorers to modern-day censuses. Finally, this section provides an up-to-date account of current Maasai socio-economic conditions. Because this study is unique in its cross-border comparison of Maasai, it provides an opportunity to examine the contemporary socio-economic situation of Maasai in both Kenya and Tanzania.

3.1 **To be Maasai?**

It is accepted by many of those who have studied the Maasai - anthropologically, linguistically, historically - that the widely accepted notion of the Maasai as a self-contained ethnic unit is misleading. Nevertheless it is "tempting" as Homewood and Rodgers suggest, "to assume that they form a self-contained ethnic unit with a separate origin" (1991:61). The historical background and linkages of the Maasai with other groups originally viewed as "non-Maasai" have been well documented and supported. Ties (economic, structural, social, marital, linguistic) with other non-pastoral but Maa-speaking groups have been identified by a number of authors (Spencer, 1973; Berntsen, 1979; Galaty, 1981; Spear and Waller, 1993). The traditional notion of the Maasai as an independently functioning ethnic unit, which practices no agriculture, has now largely been discarded³⁰.

In the introduction to his ethnography *The Maasai of Matapato*, Spencer observed "Writers had tended to note that the Maasai do this or that, rather than noting, for instance, that the Purko Maasai do this or the Kisonko Maasai do that" (1988:2). Whilst acknowledgement is made here of subtle differences between clans and sub-clans, such a discussion is beyond the scope of this study. There are, for example, ceremonial, decorative and clothing variations between the different clans. However, in terms of the broader social organisations and major demographic behaviour, the similarities are far greater than the sum of the detailed differences.

It is acknowledged that the Maasai are not a homogenous group, and that different authors will produce slightly different accounts of Maasai social structure. This summary attempts to underline those features that are pertinent to a description of Maasai social organisation at the broadest level. The majority of ethnographic descriptions, based on long-term participant observation tend to be, by the nature of the fieldwork, restricted to either Kenyan or Tanzanian study sites. With the exception of Spear and Waller's "*Being Maasai*", ethnographies of the Maasai do not include both countries. The implications of what it means to be Maasai for national demographic data collection, both historical and contemporary, are illustrated in Section 3.6.

²⁹ Ethnicity and ethnic affiliation are interchangeable terms in this study.

³⁰ Much of the impetus for the traditional description of the Maasai comes from Jacob's classic study of Maasai political organisation (1965a).

3.2 Maasailand

This section details the physical, political and socio-economic setting of this study. A consideration of what is meant by "Maasailand" is followed by a brief examination of those historical factors that have shaped contemporary Maasailand. The experiences of Kenyan and Tanzanian Maasailand are compared, with an identification of common contemporary issues for Maasai, albeit enacted in very different nation states. The physical (topographical, geological and climatological) setting of Maasailand is described.

3.2.1 Extent of Maasailand

Maasailand is not a tangible entity, to be defined by exact cartographic points. Rather, it is a widely accepted expression of the area traditionally inhabited by the Maasai, and today still dominated by the Maasai ethnic group. Spear and Waller (1993) suggest those areas in which Maasai language (Maa) was dominant define the extent of Maasailand. In this respect, Maasailand was at its greatest extent towards the end of the nineteenth century (Homewood, 1995:331).

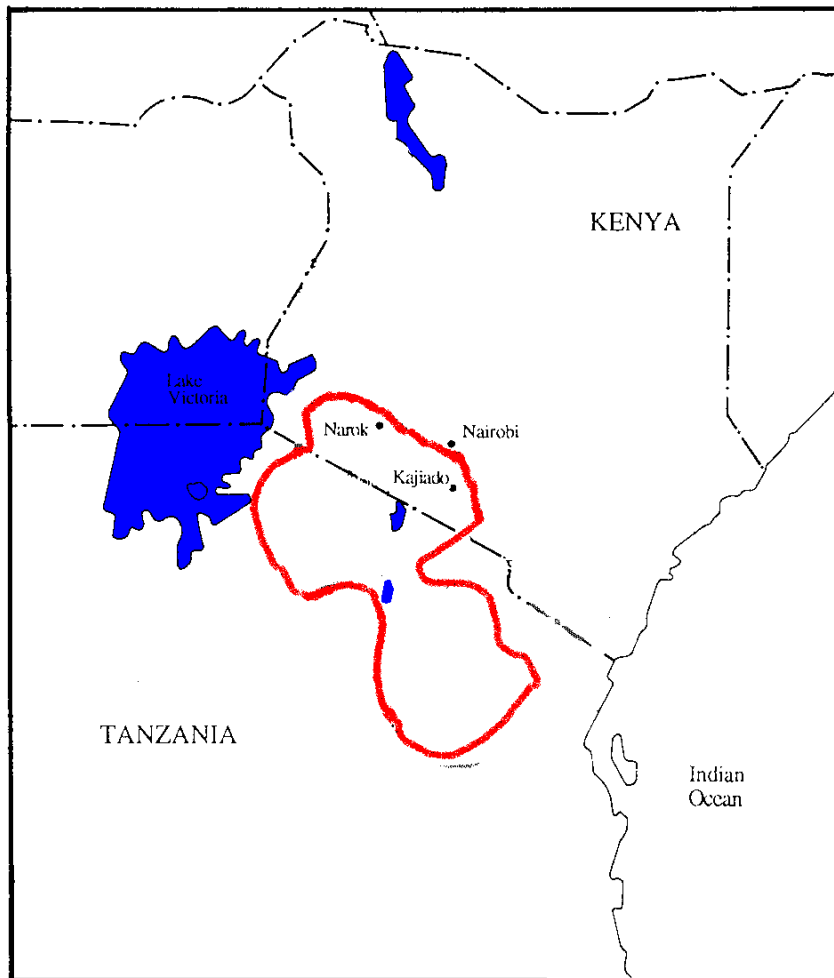
The contemporary extent of Maasailand is greatly reduced, particularly in Kenya (Map 3.1). The diminution of the area of Maasailand is the result of many factors. These include the demarcation of the Tanzania-Kenya international border, colonial settlement and policies, post-independence land-tenure practices and what will be termed broadly "conservation". Contemporary Maasailand in Kenya may be roughly equated with Narok and Kajiado district borders, which together cover an area of 39,618km². In Tanzania, Maasailand is much less easily identifiable, but includes much of Arusha Region (Ngorongoro and Monduli Districts), and that area known as Maasai Steppe to the south of the Pangani River.

3.2.2 Physical geography and climate

The following descriptions are meant to be no more than superficial, giving an overview of the physical environment in which the majority of Maasai live. Western levels the charge that "many accounts of pastoral societies are prefaced by an outline of the environmental setting, but little use is made of this information" (1982:183). However, ignoring the physical context, however brief the description, would prevent an understanding the setting of this study. The reasons are twofold. Firstly, the nature of the Maasai production (and by extension social) system has, until recently, been overwhelmingly shaped by physical geography. Secondly, competing interests in those natural resources contained in Maasailand have shaped many of the contemporary issues in Maasailand. The concentration of wildlife on the Serengeti Plains and the subsequent demarcation of Serengeti and Maasai Mara National Parks is one example. The first part will detail those features of the physical environment that apply to all of the study areas in general. The second part will highlight specific environmental features of the individual study areas.

Rainfall is highly seasonal and extremely variable, at both annual and inter-annual levels. This is a feature of all predominantly semi-arid areas. Rainfall may be seen as the principal limiting factor in this environment, its level and distribution determining biomass production and water (both ground and surface) availability. Rainfall in Maasailand is theoretically bimodal. The long rains fall between March and May while the short rains fall between October and December. In reality it is not unusual for some areas, for example the Ngorongoro Conservation Area, to experience a single rainy season per year (Homewood and Rodgers, 1991).

Map 3.1: Extent of Maasailand (after Homewood, 1995)



The Maasai identify five broad climatic annual "seasons", detailed in Table 3.1. Exceptional climatic episodes are part of the oral history of the Maasai, a factor noted both during this fieldwork and by other authors (Southgate and Hulme, 2000).

Table 3.1: Maasai seasons

Calendar months	Description	Maa name
November, December	Short rains	<i>Ilkisirat</i>
January, February	Short dry season (Sun months)	<i>Aladalo</i>
March, April, May	Long rains (New Year)	<i>Alari</i>
June	End of long rains (End of New Year)	<i>Kurum Ari</i>
July, August, September, October	Long dry season	<i>Alameyu</i>

Source: Pers. Ob.

Climatic episodes featured very strongly in the event history calendars used in age estimation during the fieldwork, for example, "*Olameyu le nkuma sikitoti*", (The drought leading to the famine of yellow maize) in 1960. Indeed, during the fieldwork period, the whole east African region experienced extreme rainfall, caused by the El Niño weather phenomenon.

All of the study sites may be placed within the structural framework of the Rift Valley system. The geological history of the area has a marked impact on the varied landscapes of the study sites. Landscapes range from steep-sided volcanic mountains with altitudes above 2,000m (e.g.: Ngorongoro Crater Highlands) to flat valley floors with altitudes of 500m (e.g.: Magadi). The rule that, *inter alia*, temperature declines by 1⁰C with every 260m gained in altitude provides some indication as to the variations in temperature maxima and minima experienced in Maasailand. The geomorphological superstructures of the area have a profound influence in edaphic conditions and hence vegetation. For example, soil types range from fertile brown soils with a high mineral and organic content in volcanic upland areas to friable, poorly structured ash-derived soils in the plains.

3.3 Maasai structural organisation

The following description highlights those elements of a Maasai lifestyle that may be considered common to either country. It must be remembered that the creation of the Kenya-Tanzania international border occurred long after the original settlement of Maasailand by Maasai. Therefore, this section will detail those aspects of lifestyle and social organisation that are commonly accepted to represent the Maasai. This account is based both on a survey of ethnographic work and personal observation during fieldwork. It must be underlined that this study is concerned with Maasai ethnicity at the broadest level. Where appropriate, this description will include background substantive data from this study³¹ (for example, household size and structure, building type, etc.) Maasai socio-political organisation may be represented hierarchically (Fig. 3.1). The following section outlines the broad features of each hierarchical unit, beginning with the smallest level, the sub-household.

3.3.1 Sub-household/ House (*enkaji*)

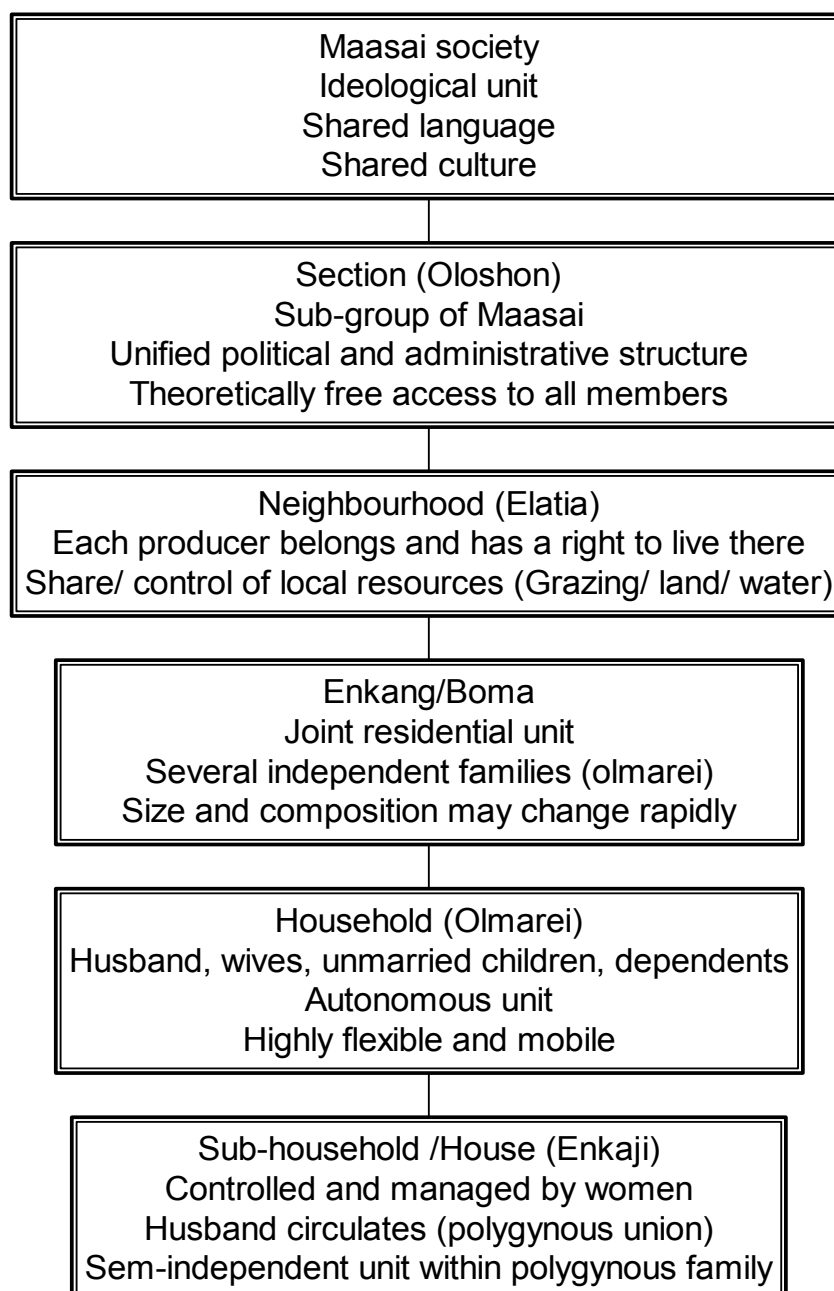
Houses are traditionally made from a mixture of dung and mud, smeared on a wooden framework. Every married woman eventually has her own house, and it is her responsibility to build and maintain it. A newly married woman, on moving to her husband's family, will stay with her mother-in-law (or some other female member of the household) until her own house is completed. The house is built for herself, her

³¹ Hereafter referred to as the Single Round Demographic Survey (SRDS).

children, any dependants and (periodically) her husband. Talle (1987) views the Maasai house as a physical structure which “shelters and symbolically embodies a matrifocal unit of consumption and resource sharing” and calls women “heads of houses”. At the level of the house, Maasai women possess relatively high levels of autonomy in terms of domestic affairs and the family economy. Food is cooked and served within the house, with little cooked food sharing between sub-households.

Houses that belong to the same family (*olmarei*) of a man, his wives and their dependants are grouped together within the larger joint residential unit of the *enkang*. The layout of wives' houses tends to follow a set pattern. The first wife occupies the first house on the right hand side as one enters the gate, the second wife builds her house on the left, a third wife will build her house on the right hand side, after the first wife, and so on.

Fig 3.1: Schematic representation of Maasai social organisation (After Grandin, 1991)



Recently there have been changes in traditional Maasai houses. An examination of housing types in areas that are still predominantly inhabited by the Maasai, shows that "modernisation" of housing has become common (Ndagala, 1982). This "modernisation" takes the form of rectangular structures with corrugated iron or thatched roofs are becoming more common (Kipuri, 1989). The phenomenon of changing house styles also represents a shift away from houses being associated solely with women. The change towards iron roofs requires money in order to buy the building materials. It is therefore more likely to be a man who is able to make the purchase. In addition, the need to measure and cut materials means that specialists in housebuilding are brought in from outside the family unit. It is becoming increasingly common for a man to build himself a house, as a status symbol, and not necessarily for the use of his family³². Almost half of enumerated households in Koyaki Group Ranch possessed at least one building with an iron roof, compared with only 8% of households in Olkirmatian-Shompole Group Ranches. Levels of ownership of iron-roofed buildings are very low (3.6%) at the Tanzanian study sites³³.

The degree of permanence of building structures has important implications for production system, particularly for a transhumant society such as the Maasai. The presence of an iron-roofed house may be both a cause and an effect of increasing levels of sedentarisation. As a cause, a permanent structure will require year-round residence by at least some members of the household. The increased levels of permanent buildings, particularly in Koyaki Group Ranch, may represent an effect of changing livelihoods, away from traditional transhumant pastoralism towards formal employment and/or cultivation.

3.3.2 Household (*olmarei*)

The household as an enumeration unit is described in Section 4.1.2. Here, the features of an *olmarei* are described more fully. The household, in physical terms refers to the collection of houses about a communal gate. Each married man will have a gate, used by his wives and dependants. The gate carries the name of the man and a separate gate³⁴ is a symbol of his autonomy as a cattle owner and founder of a family³⁵. Grandin describes the household as "the primary unit of production" (1991:21). It is the centre of livestock ownership, and is essentially autonomous in its decision-making.

At the country-level, households in Tanzania are generally smaller than in Kenya (Table 3.2), although it should be noted that household size in Olkirmatian-Shompole Group Ranches (Kenya) is very similar to Tanzanian levels.

³² Although Kipuri suggests that "in cases where a man builds a western style house but has several wives, the favourite one normally is asked to move into the western house" (1989:306)

³³ It should be noted, however, that the building of "permanent" accommodation is subject to very strict rules in NCAA, which has its own set of planning and building regulations. In addition, pressure from the NCAA has led to the adoption of grass-roofed houses instead of the traditional mud/dung *enkaji*.

³⁴ Illustrative of this is the saying, quoted from Kipuri (1989) "one entrance does not suffice two elders" *meishaa ilmoruak aare kishomi* (1989:82)

³⁵ The use of "gate" metaphors is very common in Maasai. For example, loss of female virginity is referred to as her acquisition of "gates".

Table 3.2: Household (*olmarei*) size, by major study site.

	Mean	Median	Mode	Minimum	Maximum	n
Kenya						
Koyaki GR	12.9	10.0	6.0	2	63	182
Olkirmatian-Shompole GR	9.2	7.0	6.0	1	80	453
All	10.3	8.0	6.0	1	80	634
Tanzania						
Endulen-Esere	8.7	7.0	5.0	2	88	502
Irkeepus	10.6	8.0	6.0	2	56	231
Meshilli	8.2	7.0	3.0	1	33	186
All	9.1	7.0	5.0	1	88	920

Source: SRDS Data

The largest enumerated household comprised 88 people, at Endulen-Esere village, Tanzania. It should be noted, however, that such large individual households are relatively rare, normally belonging to a very powerful individual. Similarly, while single-person households were recorded in both Kenya and Tanzania, they are also very rare³⁶.

3.3.3 *Enkang (Boma, Manyatta)*

The *enkang* may be described as a joint residential unit composed of several households. Homewood and Rodgers describe the *enkang* as the "Maasai ideal" (1991:37), allowing for co-operation over grazing and herding decisions. The rationale for membership of a particular *enkang* is not necessarily based on familial affiliation. The overall composition may change periodically, and it is unusual for members of the same immediate family to live together. The one exception to this norm is the case of the extended family in which married sons live together in their father's *enkang* until his death.

Traditionally *enkangs* were composed of 6-12 households (Jacobs, 1965a), but there appears to be an increasing tendency towards one household *enkangs*. Several authors (Ndagala, 1982; Grandin, 1991; Potkanski, 1993) have noted this trend. The reasons given for this apparently widespread trend are varied. It should be noted that *enkang* size is one feature that may be strongly determined by national or regional policies, as in the case of *ujamaa* (villagisation) in Tanzania.

Potkanski suggests that the process of movement towards one household *enkang* is more common among wealthier families as a "result of ecological factors, since the number of animals staying together in one homestead should not be too many" (1993:31). He goes on to suggest that a secondary contributing factor towards single family *enkangs* is an increasing tendency towards the "individualisation of social life" (*op. cit.*), especially for wealthier families. Grandin (1991), with specific reference to Kenya proposes land sub-division, the change towards individual land ownership and greater levels of sedentarisation as crucial in facilitating the trend towards fewer households per *enkang*. Table 3.3 summarises all of the existing information available on the number of households per *enkang* in this study.

The influence of changing external influence on *enkang* size may be seen clearly in Tanzania. For example, *ujamaa* caused a decline in average *enkang* size in the 1970s as people were moved to comply with the policy of permanent settlement. Homewood

³⁶ A total of three single person households were enumerated in total, representing 0.2% of all households included in the SRDS (n=1,555).

suggests that the later reversal of this initial decline implies that "families...split up to fulfil the imposed requirements of *ujamaa* village membership, while retaining access and rights to a broad range of pasture resources, then reverted when the pressure relaxed" (1995:342). It would appear from the limited evidence available that individual *enkang* size is decreasing.

Table 3.3: Number of households per *enkang*, 1950s-present, Kenya and Tanzania.

Year(s)	Tanzania		Kenya
1950			6.2 ³⁷
1960s	7-9 ³⁸	4.0 ³⁹	5.1 ⁴⁰
1970s	2.5 ⁴¹	1.7 ⁴²	2.7 ⁴³
1978		3.2 ⁴⁴	
1980	5.3 ⁴⁵		2.5 ⁴⁶
1983			1.8
1984	7-5 ⁴⁷		
1985			1.3
1993	3-5		
1998 ⁴⁸	4.1		2.6

However, the factors responsible for this change are varied, ranging from national policies (e.g.: *ujamaa* in Tanzania) to local issues of land tenure and subdivision. The SRDS collected information on *enkang* composition, allowing for the first time a comparable cross-border survey on *enkang* size (Table 3.4).

Table 3.4: Number of households per *enkang*, by major study site.

	Mean	Median	Mode	Minimum	Maximum	n
Kenya						
Koyaki GR	2.8	2.0	1.0	1.0	8.0	182
Olkirmatian-Shompole GR	2.6	2.0	1.0	1.0	10.0	453
All	2.6	2.0	1.0	1.0	10.0	635
Tanzania						
Endulen-Esere	4.4	3.0	1.0	1.0	19.0	502
Irkeepus	3.3	3.0	3.0	1.0	7.0	231
Meshilli	4.1	4.0	4.0	1.0	11.0	186
All	4.1	3.0	1.0	1.0	19.0	919

Source: SRDS Data

At the country level, Tanzanian *enkangs* are composed of more households than in Kenya. This overall pattern concurs with the data summarised in Table 3.3. In both districts in Kenya, single-household *enkang* are the most common. Extreme variations in *enkang* size are found at Endulen-Esere (Tanzania), where the modal *enkang* is a single-household unit, but one *enkang* with 19 households was enumerated.

³⁷ Njoka (1979) quoted in Grandin (1991)

³⁸ Jacobs (1978) quoted in Homewood (1995) (Tanzanian Maasailand)

³⁹ Arhem (1985) (NCA)

⁴⁰ Njoka (1979) quoted in Grandin (1991)

⁴¹ Ndagala (1982) (Monduli)

⁴² Arhem (1985) (NCA)

⁴³ Njoka (1979) quoted in Grandin (1991)

⁴⁴ Arhem (1985) (NCA)

⁴⁵ Ndagala (1982) (Monduli)

⁴⁶ Grandin (1986) (Kajiado)

⁴⁷ Potkanski (1993) (Ngorongoro)

⁴⁸ SRDS Data

3.3.4 Neighbourhood (*elatia, enkutot, emparnat*)

Individual *enkangs* are grouped (although not necessarily spatially) into neighbourhoods or localities. These localities control local resources necessary for the operation of the production system; namely, grazing and water. Grandin (1991) suggests that the neighbourhood will often contain a core nucleus of population, with a regular inflow/outflow of other members. It is possible that within a locality, individual families may possess superior rights to a particular resource, for example, to a water source.

Each Maasai belongs to an area in which he has a right to reside. This description focuses essentially on men, as women move to their husband's home upon marriage and have no right to cattle ownership. A man does not have to gain permission to live in his locality, but would have to gain permission from the members of another area, should he choose to live there. Each neighbourhood has its own "local governance" (Southgate and Hulme, 2000) structure, composed of councils of elders⁴⁹.

3.3.5 Section (*oloshon*)

Unlike the preceding categories of Maasai social organisation, the section to which a Maasai belongs has both tangible and intangible meaning. A Maasai is associated primarily with his section, essentially a sub-group of the Maasai with a "unified political and administrative structure" (Grandin, 1991), each with its own political, social and cultural identity (Evangelou, 1984). Before the advent of land demarcation and subdivision, particularly in Kenya, each section had claim to a particular spatially defined territory, which was held communally. Theoretically, each section possessed enough water and grazing resources to support its population. Spencer (1990) describes sections as self-contained ecological units, and Kipuri refers to them as "natural communities" (1989:77). Membership of a section provides an individual and his family with (theoretically) access to the inputs necessary for a pastoralist production system: namely pasture, water and salt. Livestock, on the other hand, are acquired and distributed via non-spatial social organising principles (namely, clan or other kinship ties). In reality, identifiable natural features such as a watershed or a geological feature often bound sections.

Maasai do not cross into another section unless forced to do so by extenuating circumstances such as drought or disease, but special permission must first be sought from the members of that section. The contemporary distribution of sectional territories inevitably does not coincide with current administrative and political boundaries. This has led to tensions, particularly in Kenya, where Group Ranches have been superimposed across traditional section boundaries.

3.4 Non-spatial social organisation

Grandin suggests that the structural "relations based on proximity alone would lead to the aggregation of people in localised areas" (1991:22). Therefore the systems of Age Sets⁵⁰ and Clans "cut across" the hierarchical social organisation of the Maasai.

3.4.1 Clan (*olgilata*)

A clan is a group of people who recognise descent from the same ancestor. Amongst the Maasai, clans are patrilineal; a child belongs to the clan of his father and remains a member for life. Membership of Maasai clans is possible for non-Maasai through ritual

⁴⁹ This Maasai governance operates within formal administrative structures in both Kenya and Tanzania.

⁵⁰ See Section 3.5.1.2.

incorporation. The Maasai clan system is complex and incompletely understood by external authors. For example, Spencer (1988) suggests that there are no less than eleven descriptions of Maasai clan formation. Jacob's (1965a) classic description suggests a total of seven Maasai clans and up to 100 sub-clans, although as Homewood and Rodgers stress "it is probably misleading to attempt a rigid classification" (1991:45).

Southgate and Hulme suggest, "while serving an important role in certain areas of dispute resolution the clan has tended to fulfil a relatively minor economic and political role" (2000:8). The unity of a clan is symbolised by common cattle brands and clan members have very strong mutual aid obligations to share cattle in cases of individual need. It is unlikely, however, as some authors have suggested (Fosbrooke, 1948; Jacobs, 1965a) that cattle possessed by individual clan members belong to the whole clan. Whilst this is undoubtedly an ideological statement, in reality it is immediate family rather than fellow clansmen who will provide cattle in times of need.

Because clans are not based on a spatial rationale, in each locality it is possible to find members of each clan, although there are varying levels of membership per clan. The clan system may therefore be seen as an alternative to the section system in terms of a sphere of political and social influence. Whilst women are excluded from the political and social influence attached to the age-set system, they have access to their own clan mates in times of need. The SRDS did not collect clan information; the dominant clans represented in the study are Purko (Narok, Kenya), Loodilikani (Kajiado, Kenya), Salei and Ngorongoro (NCA, Tanzania).

3.5 Individual roles

The Maasai have a strong division of responsibilities, roles and labour between age groups and sexes. This section will describe the main lifestages for men and women in Maasai society. There are regional variations in both the nature of the lifestages and the rituals or customs associated with them. This description will be limited to an overview of the major phases and will not refer to the well-documented rituals associated with them (Spencer, 1988; Spear and Waller, 1993). Particular attention will be paid to issues of marriage, household formation and sexual activity.

3.5.1 Males

Any consideration of male social roles among the Maasai must place at its core the Age Set system. This forms the second of the non-spatial social organisation (together with clans) in Maasai society. An age set is composed of a group of contemporaries, united by their communal circumcision. An age set provides a man with a further network of social and political allies, supplementary to that provided by his clan and immediate family. Because the formation of the newest age set relies upon the relinquishing of power by the age set immediately preceding it, there is an in-built lifelong tension and opposition between the two adjacent sets. This results in affinities and allegiances being sought with the age set once-removed.

3.5.1.1 Herdboy/ child

Until around the age of puberty, a male child's responsibilities are for herding. Herding begins at a very young age, at about 4 years, and responsibility for stock increases with age. When a boy begins herding, some animals are given to him, although his mother keeps them for him, and their milk is used for the household. A boy will continue to

collect livestock at various points throughout his life, and will remain in his mother's home until he is circumcised.

3.5.1.2 Warrior (*murran*)

Approximately every 15 years, each section produces a new age set. The precise timing of the decision to form a new age set depends on the strength of opposition from the existing youngest age set relative to the emerging age set. Over a period of time, all of the boys (who have usually reached puberty) are circumcised and incorporated into the newest age set. Because of the length of time between age set formations, members of an age set can vary quite substantially in age. It is possible for a particularly young boy to be incorporated into the age set if his father is elderly and has no circumcised sons. Within each age set of *murran* there are junior and senior warriors with differing norms for dress, behaviour and responsibilities.

Circumcised young men are now junior warriors and are unable to occupy the same house as their fathers. Traditionally, the period of warriorhood was associated with the establishment of *manyattas*, a warrior camp to protect their neighbourhood. This tradition, although referred to and still to a certain extent symbolically adhered to, has decreased in importance. This is especially so in Kenya where increased levels of participation in formal education combined with land subdivision prevents the establishment of *manyattas*. Despite the decline in importance of *manyattas*, it is still common for *murran* to travel long distances, visiting age mates and other *enkangs*. Historically, men who were still *murran* could not marry, as this was seen as the prerogative of elders. In contemporary Kenyan Maasailand, however, this chronological ability to marry appears to be reducing in importance⁵¹. The ethnographic record provides differing accounts of the ability of *murran* to marry. For example, Fosbrooke's (1948) account of Maasai social organisation states that out of a total of 582 *murran*, 28 per cent of them were already married.

Murran are expected to be sexually active, despite the normative prohibition on their marrying. There are strict rules forbidding a *murran* having sexual relations with a married woman. This is because she will inevitably be the wife of a man in a superior age set, and for the *murran* to have sex with an elder's wife could be seen as a threat to the gerontocratic organisation of Maasai society. The acceptable sexual partners of the *murran* are young, unmarried girls. This is not to deny that sexual relations between married women and *murran* take place, for the anthropological evidence is overwhelming (Talle, 1987; Mitzlaff, 1994; Llewelyn-Davies, 1978)⁵².

Throughout *murran*hood and progression to elderhood, young men acquire livestock, either as gifts or as payment for work. *Murran* are exempt from day-to-day herding duties, as traditionally they were expected to be available for duties of protection of livestock and property. This role has been systematically undermined, as a result of both administration (both colonial and post-independence) and socio-economic pressures. For example, *murran* in Kajiado district had their heads forcibly shaved by the colonial administration in an effort to reduce their "visibility" and hence potential power within the community.

Many of the more recent ethnographies refer to *murran*hood as if it were a full-time occupation for Maasai of that age group. However, this is probably an overemphasis of

⁵¹ Present at two weddings where the groom was still a *murran* (Pers. Ob.).

⁵² Women sing about their *murran* lovers when they are working (Pers. Ob.).

the symbolic role of *murr*anhood, rather than a true reflection of contemporary Maasai lifestyle. Using the SRDS data, it is possible to explore the day-to-day "importance" of *murr*anhood, albeit superficially. In the collection of occupation data in the SRDS, which was a free-answer question, it was possible for an individual to reply "*murr*an".

Table 3.5: Numbers of individuals who described either their main or secondary occupations as *murr*an, by major study site.

	Men aged 15-30 years	<i>Murr</i> an	
		%	n
Kenya			
Koyaki GR	285	0	0
Olkirmatian-Shompole GR	539	16	84
All	824	10	84
Tanzania	982	14	135

Source: SRDS Data

Whilst still very important symbolically and socially, the "active" role of being a *murr*an (e.g.: defending property) is no longer important on a day-to-day basis⁵³. Although there are no comparable historical data, it is likely that if similar data had been collected two or three decades ago, many more men would have replied that their primary or secondary occupation was "*murr*an". Indeed, not a single individual reported themselves as being a *murr*an at the Koyaki Group Ranch study site, the location with the highest levels of economic diversification and formal employment opportunities. The data are cross-sectional, however, and it should be noted that many individuals might have reported themselves as *murr*an at a different time in the year. This is because periodic large-scale age-set *murr*an events do take place, and form an important part of the social calendar. If one of these events had recently taken place, then higher numbers of *murr*an would probably have been reported.

3.5.1.3 Elder

Men cease to be *murr*an when the subsequent age set is created, and become junior elders. Together with the age set spokesman, the elders constitute the decision-making body for the locality. Elders are described by Grandin as "primarily managers and supervisors" (1991:71), with responsibility for decisions on residence location, herd movement and splitting, grazing and herding, maintenance of watering points, veterinary care, sale and slaughter of cattle.

Ideally, a man should marry once he has become an elder. When a man marries, his new household is not regarded as independent until it has acquired its own gate in an *en*ka*ng*. This is an event that may not take place until the death of his father, unless the couple moves away from the father's *en*ka*ng*. Such a move may take several years to complete, and until such time the husband must defer to his father's authority.

3.5.2 Females

A brief review of the literature concerning the individual-level social organisation of the Maasai highlights the fact that Maasai society is both gerontocratic and patriarchal in its structure. Talle states that "women...are regarded as social minors" (1987: 51). Women do not have formal age sets like the men, although they too pass through specific stages in their lifecycle and do play a ritualistic part in male age set ceremonies. Rather than a woman's life being marked by a specific ritual ceremony, it is instead a gradual

⁵³ Although *murr*an may still be called upon, increasingly for political purposes.

transition based upon age. Women tend to be classified with certain age sets, according to the age group of *murran* with whom they associated whilst young girls.

The combination of the age set system with patrilineal descent is viewed by many authors as detrimental to women, forcing them into subjugation to men throughout their life - wives to husbands and mothers to sons (Llewelyn-Davies, 1978; Talle, 1987; Spencer, 1988). Kipuri, on the other hand (herself a Maasai) describes these accounts as “reductive”, and containing “major flaws” (1989:67), constrained by an economically deterministic viewpoint. Instead, Kipuri summarises the structural elements of Maasai social organisation as “mutual dependence” and “mutual obligations” (1989:97) between men and women.

Most ethnographies summarise the three main phases of a woman’s life as *entito* (young girl up to clitoridectomy), *esiankiki* (married women with young children) and *entasat* (older woman with circumcised children) (for example, Talle, 1987). I shall use a different framework, dividing females into pre-circumcision, circumcised and married.

3.5.2.1 Pre-circumcision girls (*entito*)

Young girls undertake some herding, although it tends to be of smallstock and calves rather than cattle. The majority of their tasks involve young-stock management, preparation for milking, and domestic tasks. Pre-pubescent girls are the sexual partners of the *murran*, but these early sexual partners rarely form the basis of future marriage partners.

3.5.2.2 Circumcised girls

Unlike males, where circumcision takes place at a public ceremony and in a large cohort group, girls tend to be circumcised individually⁵⁴. Circumcision occurs at puberty and the undertaking of clitoridectomy for females indicates both physical maturity and a change in the girl’s social status. She is now ready for marriage and childbearing. Female circumcision is almost universal among the Maasai, and is considered essential for correct sexual behaviour and fertility. For example, Kramer (1980) states that 95.5% of ever married Maasai women in a sample (n=134) were circumcised. After circumcision, girls cease to be the sexual partners of the *murran*. The most recent quantitative data on female circumcision amongst the Maasai are those collected during the 1998 Kenya DHS, the results of which are shown in Table 3.6.

The DHS data are useful in providing substantive information on the sensitive topic of female circumcision. However, the sample sizes are very small, particularly the number of respondents’ eldest daughters that have been circumcised. Further, most respondents will be aware of the negative image of female circumcision within the wider national context. It is therefore quite possible that the data in Table 3.6 represent an underestimation of the current extent of female circumcision among the Maasai.

⁵⁴ Although Meegan reports at least one large-scale ceremony at which approximately 300 girls were circumcised in one day (Pers. Comm.).

Table 3.6: KDHS (1998) data on female circumcision, Maasai respondents (n=82)

	%
Respondents circumcised (n=70)	85.7
Plan to have eldest daughter circumcised (n=33)	75.8
% daughters informed about the procedure (n=14)	42.9
Person who performed circumcision (n=14)	
Nurse/ midwife	7.1
Circumcision practitioner	92.9
Place of circumcision (n=14)	
Own home	78.6
Another home	14.3
Other	7.1
Instrument used (n=13)	
Own razor	61.5
Shared razor	23.1
Scalpel	7.7
Other	7.7

3.5.2.3 Married women

Girls are married usually within one year of circumcision, normally to a pre-determined partner (Chapter Six). Women rarely have legal access to property; their rights to livestock ownership have to be mediated through men - fathers, husbands, and sons. The only material good to which women have absolute right is the milk off-take from those animals allotted to her by her husband.

A woman gains prestige ultimately by the number of children she bears and the way in which she cares for them, although she never has legal claim to her children. Children, especially sons, represent a woman's chief source of material acquisition through milking rights from animals held in trust. Married women make all major domestic decisions relating to childcare, food preparation, collection of water and fuelwood and house building and maintenance. It is also relatively common for women to undertake informal economic activities, for example, selling excess milk during the wet season. If the household practices agriculture, then women will carry out some agricultural tasks. Agriculture tends to be one of the few areas of Maasai production systems where men and women both provide labour, albeit for different tasks.

3.6 Maasai total population

It is useful for any large-scale population survey (whether conducted randomly or otherwise) to know the total size of the baseline population in which the survey is conducted. An idea of the total population provides some guide as to the "representativeness" of the survey. The following section describes all of the available sources (historical and contemporary) of Maasai population totals. All available sources of information have been used in this description, from colonial administrative accounts to contemporary censuses. The result of this review is that there are no reliable estimates of total numbers of Maasai. What becomes clear, from both historical and contemporary counts, is the lack of precision about who is included as "Maasai".

3.6.1 Historical estimates of Maasai totals

In terms of actual numbers of Maasai, the accounts of early travellers and colonial administrators provide little information. Any historical accounts of the numbers of Maasai must be situated within an understanding of the perceptions of the colonial

administration(s) about the Maasai⁵⁵. It can be seen, particularly in Kenyan Maasailand, that issues of numbers of Maasai (more specifically population density) were instrumental in the way in which the colonial administration dealt with them. There was a strongly held view that pre-1880, the Maasai were at their greatest extent, both numerically and in terms of influence. For example, Tignor writes “in the mid nineteenth century the pastoral Maasai may have been at the apex of their power” (1976:13). Following a series of events, including rinderpest and bovine pleuropneumonia (1880s), smallpox (1883-90), and famine (1890-1), the general consensus was that many Maasai died during this period and that their numbers greatly declined. This sentiment is summarised by Tignor, “There were certainly many British officials who felt that the Maasai reluctance to embrace change was the result of a declining civilisation, one that had lost its vitality at the end of the nineteenth century” (1976:16). Indeed, the British administration believed that without their intervention, following the Berlin Treaty in 1884, the Maasai would have become extinct as a tribe. This general opinion can be found in several early twentieth century writings. The Kenya Land Commission observed that “but for British protection the Maasai would have become a factor of comparatively minor importance and their country might gradually have been occupied by other tribes”⁵⁶. The 1921 Maasai Reserve Annual report observed, “The Maasai are a decadent race and have survived through being brought under the protection of British rule. But one that could certainly have been exterminated by the more virile and numerous African tribes”⁵⁷.

Given the colonial preoccupation with the imminent extinction of the Maasai, it is perhaps unsurprising that in 1904 the British administration drew up a formal treaty, creating the Southern and Northern Masai Reserves. These areas were to “be enduring as long as the Masai as a race shall exist”. Such an agreement could hardly be expected to last for long, given the colonial belief that the Maasai were declining in number. As early as 1902, Johnston had reported that “it is said...that...the Masai females are becoming increasingly sterile⁵⁸”. He attributed this to the increased use of prostitutes by Maasai men, associated with the arrival of the Mombassa-Uganda railway through Maasailand. Such reports are contrasted with contemporary reports from Merker (1910) (German East Africa) who had in fact reported that gonorrhoea was quite rare among the Maasai, and that fertility was very high⁵⁹. However, it is possible that conditions between colonial Tanzania and Kenya were very different. The British colonial interest in traditional Maasailand in Kenya was great, both for the high potential agricultural land for the European settlers, and the route of the newly developed Mombassa-Uganda railway line. In Tanzania, the Maasai were far more distant from the German administrators, who had a relatively smaller interest in their territory than the neighbouring British.

In the Kenya colony, the Maasai tradition of sexual relations between the *murran* and pre-pubescent girls continued to shock the colonial administrators. For example, Eliot

⁵⁵ It is acknowledged that this account is inevitably skewed towards Kenya. Fewer reports relating to the Maasai are available from the then German administrators in Tanzania, issues of translation notwithstanding.

⁵⁶ Quoted from Tignor (1976:16)

⁵⁷ Quoted in Kuczyinski (1948)

⁵⁸ Quoted from Kuczyinski (The Uganda Protectorate Vol. ii p.829)

⁵⁹ Merker questioned 87 “old women”, who reported a total of 548 children, an average of 6.3 children per woman. Although no information is given on the age of these “old women”, Merker’s information must be assumed to represent completed fertility, a reflection of past or pre-C20th fertility. There is no information on the location of Merker’s “fertility survey”.

(1905) stated that “it is extraordinary that a custom which must be disastrous for the physical well being of the race, and is doubtless responsible for its decrease in numbers, should be tolerated”. The 1930-1 Medical Survey of Maasai Province concluded that “Gonorrhoea and all its sequelae and complications is practically universal...it is the most common sterilising disease of women and the Masai themselves know that large numbers of their womenfolk were sterile but did not know the cause” (1931:26).

Further demographic aspects of the Maasai, beyond the perception of high levels of sterility caused by sexually transmitted diseases, were strongly held by the colonial administrators. The overriding impression was of a group who “live under conditions of indescribable filth in an atmosphere of moral, physical and mental degradation. A large proportion of them are diseased or deformed. The infant mortality is appalling and the birth rate an extraordinarily low one”⁶⁰ (Masai Annual Report 1921). As early as 1904, Merker (1910) reported that child mortality among the Maasai in German East Africa was high. The 1930-1 Medical Survey of Maasai Province echoed these views,

“Sterility before marriage and after miscarriage has resulted in a greatly decreased birth rate ... a child mortality approaching 500 per 1,000 does not leave a margin for increase but on the contrary is bringing about a steady decrease...A Maa custom gives the child a very bad start in life. During the last three months of pregnancy all Masai women have to go on a starvation diet. Their bad start while yet in utero must be a terrible handicap when at birth they have to contend with gastric disorders from highly unsuitable food, diseases imbibed from fly-polluted milk and lack of sufficient sunlight. Lack of cleanliness brings in its train scabies, sores and infections to the skin. Thus attacked, internally and externally, the wonder is that any of them survive” (1931:42)⁶¹.

The rate of natural increase of the Maasai following the creation of Maasai Reserves (Northern and Southern) in Kenya surprised the British administrators. They had assumed that the combination of sterility and high early age mortality would lead to an eventual decline of the Maasai. The gradual expansion of the Maasai beyond the confines of the Northern Reserve, combined with increasing pressure from the settlers for the high potential agricultural land led to an agreement in 1911 to remove all Maasai from the Northern Reserve to make room for the settlers⁶². The Northern Reserve Maasai (estimated at 10,000 individuals) were forcibly moved to the Southern Reserve. An examination of Sandford’s (1919) description of the history of the Maasai provides an example of the varying reports of Maasai total numbers. Within the one volume, estimates of Maasai vary from 32,000 in 1915 (1919: 85) to 42,000 in 1918 (1919:109) to 41,900 in 1919 (*op cit.*)⁶³. In keeping with many colonial endeavours, the counting of specific tribes was in order to ascertain the potential available labour force. Sandford, for example, states that

⁶⁰It must be noted that no data or methods are provided to support these statements.

⁶¹ Quoted from Kuczynski (1948).

⁶² The Maasai, with help from British sympathisers, appealed against this agreement due to the fact that the 1904 agreement was to remain “as long as the Maasai endure as a race”. The case was dismissed with costs, as the Maasai were declared not to be British subjects.

⁶³ Sandford’s original index includes reference to population statistics for the Maasai contained in an appendix (IV p.226), but this appendix was missing from the final edition. Sandford’s 1918 estimate of total Maasai provides a breakdown by clan: Purko 6,500; Loita 5,000; L’Otayok 800; Salei 600; Siria 1,200; Il Damat 900; Kakonyukye 3,500; L’Odo Kilani 1,200; Ngurman 400; Matapatu 2,400; Sighirari 1,900; Il Dala lekutuk 700; Kaputiei 2,600; Sighirari 2,800; Uasin Gishu 1,400.

“With regard to the potentialities of the Masai as a tribe, it must be borne in mind that the total population of the Masai in the Masai reserve numbers no more than 43,000. Of these, it may be assumed that about 20,000 are males of all ages, while some 4,500 are Muran. Taking the proportion normally maintained among other native tribes for which more accurate statistics are obtainable, it is found that approximately 10,000 males are boys under the age of the Muran class, while the remaining 5,500 are elders. It will thus be seen that the tribe under consideration is relatively small in regard to population, and that, therefore, specialisation will be necessary if the attributes of the tribe are to be utilised to their fullest capacity... “Sufficient as already been said of the conservatism and slothfulness which are the dominating characteristics of the Masai. The state of idleness in which both young and old live has proved a barrier to progress which has resisted all efforts made in the past to introduce development on civilised lines” (1919:109)

The 1930s represent the last period prior to the development of full national censuses in the 1960s when data were collected on the Maasai. In 1931 the Tanganyika Census of the Native Population estimated there to be 31,168 “natives” resident in Masai District (Northern Province)⁶⁴. The 1938 Masai Province Report in Kenya reported 39,623 individuals resident in the then closed Masai Province. From the 1930s onwards, interest in the Maasai appears to have waned considerably, as evidenced by the lack of information relating to them. With the exception of data relating specifically to the population of the Ngorongoro Conservation Area (Section 3.6.2.3), there are few population-level data relating to the Maasai until the 1960s, in both Kenya and Tanzania. The colonial administration in Kenya collected Poll Tax from Maasai, from which Table 3.7 is produced.

Table 3.7 Estimates of number of Maasai in Kajiado and Narok Districts, Kenya, 1927-1948

	Narok	Kajiado	Total
1927	-	14,474	
1928	-	14,878	
1930	-	16,708	
1931	-	17,543	
1932	-	17,710	
1933	33,610	13,686	57,296
1934	24,884	-	-
1935	19,375	-	-
1936	29,528	-	-
1938	21,601	-	-
1939	20,178	12,525	32,703
1940	20,386	13,969	34,355
1941	23,773	-	-
1942	24,236	-	-
1943	24,564	16,215	40,779
1944	22,993	17,666	40,659
1945	23,654	18,191	41,845
1946	27,374	18,527	45,901
1948⁶⁵	34,810	25,478	69,288

Source: Sandford, quoted in McKay (1950)

⁶⁴ Equivalent to 1.7 people per square mile. Fifty children per 100 adults were recorded, although “It would be unwise to deduce too much from this classification...Special considerations apply to the Masai who are entirely nomadic...therefore disregarded” (Census of the native population, Tanganyika Territory pp. 7-8)

⁶⁵ From the 1948 Population Census

Table 3.7 is presented more as a demonstration of the unreliability of such records, rather than authoritative estimate of the Maasai population in the first half of the Twentieth Century. Indeed, McKay presents the figures with the disclaimer "For what they are worth" (1950:452) and notes that the "Officer in Charge, Masai, considers that the 1948 figures are within 15 percent of being correct, and the District Commissioner, Narok, with five years' experience of the Masai sates that in his opinion they are certainly not decreasing in numbers, but are, if anything, maintaining a slight annual increase" (*Op. Cit.*).

3.6.2 Post-1960 estimates of Maasai population

The differing nation-state ideologies of Kenya and Tanzania are demonstrated by an analysis of the availability of ethnicity data. Put simply, in the post-Independence era, ethnicity data are available for Kenya and absent in Tanzania. Post-Independence, Socialist Tanzania has placed emphasis on an individual's membership of the state rather than of a tribe or ethnic group. An individual is first Tanzanian and secondly has an ethnic affiliation. In Kenya on the other hand, individual ethnic affiliation remains extremely important. This is perhaps most clearly demonstrated in the political and economic dominance of the ethnic group to which the President belongs, for example Kenyatta (1963-78) was a Kikuyu and Moi (1978-present) is a Kalenjin.

There are a few (unsubstantiated) estimates of the total number of Maasai in both Kenya and Tanzania. For example, Kipuri (1998) suggests that Maasai "number approximately one million" and Talle suggests that "their total population amounts to some 300,000 people" (1987:52), but neither study provides information on how the estimates were obtained, nor on who is included in the category "Maasai".

3.6.2.1 Kenya

Kenya conducted national censuses in 1962, 1969, 1979, 1989 and 1999⁶⁶. With the exception of 1969, ethnicity data were collected as part of the census schedule. These data are summarised at both the national and district (Narok and Kajiado) level in Table 3.8 and Map 3.1.

Table 3.8: Number of Maasai, Kenya census data, 1962-1989.

	Kenya	Kajiado	Narok
1962			
Maasai as % of total administrative population	2%	78%	79%
Total Maasai	154,079	78,887	86,472
1979			
Maasai as % of total administrative population	2%	63%	56%
Total Maasai	241,395	93,560	118,091
1989			
Maasai as % of total administrative population	2%	57%	47%
Total Maasai	377,089	146,268	188,303

The Maasai are numerically the largest group of pastoralists in Kenya⁶⁷. In Narok and Kajiado, the "Maasai districts", the proportion of population accounted for by Maasai

⁶⁶ 1999 Census data unavailable to date.

⁶⁷ Grandin (1991) states "The Maasai are the second biggest group of pastoralists in Kenya, after the Somali (1991:21). No reference is given for her data. There are issues surrounding the relative numerical importance of individual ethnic groups, with Somali sometimes being subdivided into sub-groups in the census enumeration. This practice, of manipulating ethnic totals for political purposes, has been widely reported in the 1999 Kenya census.

has declined substantially over the last 30 years. Indeed, by 1989, Maasai accounted for less than half of the district population in Narok.

Although no data are yet available from the 1999 census, it is expected that Maasai now account for less than half of the Kajiado district population. In both Narok and Kajiado, non-Maasai ethnic groups are increasing proportionately more rapidly than the Maasai. Is this because of differential rates of natural increase between the ethnic groups, or is it because of in-migration of other ethnic groups into the districts?

Table 3.9: Intercensal population growth rates, Kenya 1969-79, 1979-89

	1969-79	1979-89	
	Total	Total	Maasai
Kenya	3.37	3.36	4.46
Rift Valley Province	3.83	4.30	4.57
Kajiado District	5.51	5.52	4.47
Narok District	5.18	6.39	4.67

Source: Kenya (1979, 1989)

An examination of intercensal district population growth rates (Table 3.9) suggests that in-migration is the cause. Intercensal district population growth rates for Narok and Kajiado are much higher than the national average, suggesting that in-migration is occurring.

At the national level, rates of intercensal growth for the Maasai are extremely high, at 4.46% *per annum* for 1979-1989. This a relatively crude account of the rate of Maasai population growth, due to the fact that "being Maasai" on a census sheet might not necessarily represent accurately an individual's ethnicity. Indeed, some authors have suggested the possibility of shifts in self-identification in Kenyan censuses (Kituyi, 1990; Spear and Waller, 1993; Campbell, 1999). For example, Campbell suggests that "although in the past they would have identified themselves Maasai, today many recount that they are of their mother's ethnic group" (1999:388). Such issues of reporting would tend to depress estimates of Maasai population growth. However, at the national level, it is unlikely that such reporting errors will affect the rate of growth by more than one or two decimal points.

One further possibility to account for the high levels of intercensal Maasai population growth for the period 1979-1989 is that the census increased its coverage of the Maasai over this period. However, there are two reasons for discounting this suggestion. Firstly, there is no reason why coverage of the Maasai should have improved substantially more than that of other ethnic groups⁶⁸. Secondly, due mainly to issues of cost, census coverage probably declined over this period (Blacker, Pers. Comm.).

An examination of data sources relating to rates of Maasai population growth provides a good example of how an unsubstantiated statement can become accepted as fact. Campbell (1979) examines the relationship between resources, land-use and population growth in Kajiado District, Kenya. In order to make projections of population density and to make statement about resource availability, Campbell uses an annual rate of increase of 2.2% for Maasai. This figure is not based upon any empirical research, and despite the substantive inadequacy of this information, it has been cited several times,

⁶⁸ Although it is possible that increasing levels of sedentarisation could contribute to improved coverage levels.

usually in the context of the assumed low population growth rates of pastoralists (see Chapter Eleven).

In summary, the Kenyan census data on Maasai rates of natural increase must be treated extremely cautiously. The intercensal Maasai growth rate of 4.46% *per annum*, derived from ethnicity data, suggest a population with very high fertility combined with very low mortality. Issues of coverage, self-identification and results manipulation cannot be ignored. Based upon an unsubstantiated statement (Campbell, 1979), Kenyan Maasai rates of natural increase have been presupposed to be considerably lower than the national level. At the district level, immigration by non-Maasai into traditionally Maasai areas continues to contribute to high levels of population growth in Narok and Kajiado Districts.

3.6.2.2 Tanzania

Tanzania has conducted 3 national censuses since Independence (1967, 1978, and 1988⁶⁹). The last time that ethnic group totals were published was the 1967 census. A total of 79,649 Maasai were recorded in 1967, 73% of whom lived in the Masai/Monduli District⁷⁰. Data on ethnicity have not been published in any subsequent censuses. The reason for this is rooted in the strong socialist ideology of the emergent Republic of Tanzania. Ethnicity (in administrative terms) has been officially subsumed under a national identity, although it may remain a major factor in an individual's life. As a result, it is not possible to estimate accurately how many Maasai there are in Tanzania.

Table 3.10: Census data, Tanzania 1978-1988

	1978	1988	Intercensal change
Tanzania	17,512,610	23,174,336	2.8
Arusha Region	926,223	1,351,675	3.8
Ngorongoro District	47,031	67,457	2.9
Ngorongoro Ward ⁷¹	*5,867	7,692	2.7
Nainokanoka Ward	6,999	12,108	5.5
Kakesio Ward	2,110	1,880	-1.2
Loliondo Ward	5,017	9,105	6.0
Olmalambo Ward	*5,097	6,015	1.7
Sale Ward	1,369	2,215	4.8
Arash Ward	*4,031	5,864	3.8
Digodigo Ward	5,350	6,753	2.3
Oldonyosambu Ward	1,422	2,072	3.8
Soitsambu Ward	*3,720	5,037	3.0
Pinyini Ward	*1,670	3,501	7.4
Endulen Ward	*4,379	5,215	1.8

Source: Tanzania 1988 (Tables 1; 3)

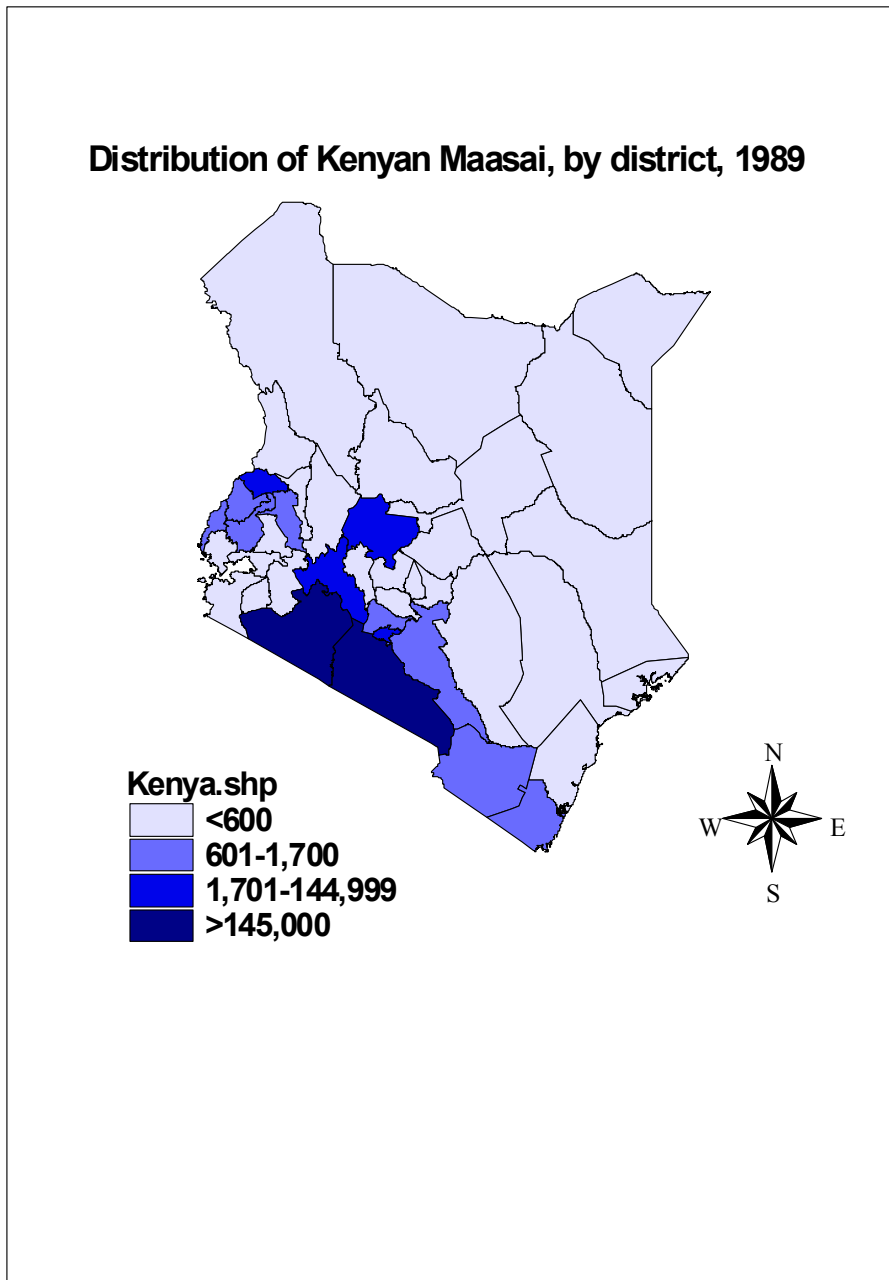
* Ward contained "Migratory Population"

⁶⁹ The 1998 census has been postponed.

⁷⁰ Now broadly equated with Arusha Region.

⁷¹ A ward is composed of villages. It must be noted that the number of villages in each ward listed changed between 1978 and 1988.

Distribution of Kenyan Maasai, by district, 1989



Map 3.2: Number of Maasai per district, Kenya, 1989

Source: Kenya Census Data, 1989

In 1978 the Tanzanian census schedule included a category of "migratory" population. One could therefore assume that those populations with a "migratory" classification in those areas that are traditionally Maasai are transhumant Maasai. However, no information is provided in the census literature about exactly how this classification is applied. It is therefore not possible to use these data to estimate total Maasai population levels. Further, this "migratory" classification was not continued in the 1988 census.

The extreme variation in intercensal population totals at the ward level (Table 3.10) can be attributed to a combination of two factors. Firstly, the number of villages per ward changed considerably between 1978 and 1988, and it is therefore possible that some of the net population change represents boundary changes. Secondly, the majority of individuals in Ngorongoro District rely on pastoralism for their livelihood. They will therefore transhume in response to localised ecological conditions, which will have a large effect on a *de facto* census enumeration.

3.6.2.3 Ngorongoro Conservation Area (NCA)

The fieldwork for this study in Tanzania was carried out in Ngorongoro Conservation Area (NCA). This administrative region has carried out periodic "headcount" surveys of total population in the area. With the exception of NCAA staff and a limited number of in-migrants, it can be assumed that the majority of population enumerated in these *ad hoc* surveys was Maasai. All available data to date are shown in Table 3.11. However, it must be underlined that there are substantial methodological variations between the different surveys, which must play some part in the resultant derived totals. Indeed, Kijazi *et al* state that, for methodological and political reasons "Extreme caution is required in interpreting the figures provided by these censuses" (1997:172).

Table 3.11: Population Counts, Ngorongoro 1954-1999

Date	Total	Source	Notes
1954	10,633	Grant (1954)	Included the Serengeti area prior to the establishment of Serengeti National Park Physical count of individuals End of prolonged drought period and outbreak of East Coast fever resulting in high levels of transhumance, therefore under-enumeration very likely
1966	7,387	Dirschl (1966)	
1970	5,435	Arhem (1981)	
1974	12,665	Kurji (1981)	Enumeration only of "known" residences, therefore under-enumeration likely
1977	16,705	Makacha <i>et al</i> (1986)	Enumeration only of "known" residences, therefore under-enumeration likely
1978	17,982	Kurji (1981)	
1980	14,645	Ecosystems Ltd (1980)	Aerial survey of occupied <i>enkangs</i> , multiplied by an average number of residents per <i>enkang</i>
1987	22,637	Perkin (1987)	Physical count of each person present at time of enumeration Under-enumeration due to transhumance following the start of the rainy season Under-estimation due to ban on cultivation combined with rumours about the forcible removal of Maasai from the NCA
1993	37,352	NCAA (1993)	Over-estimation of individuals due to incentive for land title registration for cultivation
1994	42,508	Natural Peoples World (1995)	Over-estimation due to information that the results would be used to design an emergency livestock restocking programme for destitute and very poor families
1999	51,621	NCAA (1999)	Estimated that 97% of the total population are Maasai

A common feature of all of these censuses is the poor reliability of the data, due to both internal and external factors. For example, Kijazi *et al* state that the 1987 census was "conducted at a time when relationships between the NCAA and NCA residents were particularly strained.... Previous talk of the feasibility of removing the Maasai from the NCA entirely are also likely to have discouraged NCA residents from accurately reporting total numbers in the NCA at this time" (1997:174).

Table 3.12: Inter-count rate of annual population change, NCAA data

Period between counts	Inter-count population change ⁷² (% p.a.)
1954-1966	-3.0
1966-1970	-7.7
1970-1974	21.2 ⁷³
1974-1977	9.2
1977-1978	7.4
1978-1980	-10.3
1980-1987	6.22
1987-1993	8.4
1993-1994	12.9
1994-1999	3.9

Concerns of data reliability and validity for the NCAA data are confirmed when the inter-count annual rates of population growth are calculated (Table 3.12). There are extreme variations in annual rates of change, reflecting both methodological and broader political considerations (for example, the banning of cultivation). The most recent NCAA census enumerated 51,621 individuals, of whom it is estimated that over 97% are Maasai (NCAA, 1999).

3.7 Maasai socio-economic conditions

The economic and social conditions of the Maasai have changed throughout their history, in response to a myriad of factors operating over a variety of spatial and temporal scales. In recent decades the influence of nation states, monetisation of the traditional economy, formal education, land tenure changes and demographic factors have all played a part in shaping the current socio-economic situation of Maasai in Kenya and Tanzania.

As highlighted by Spear “‘Maasai’ and ‘pastoralism’ have become so closely linked in the historical and ethnographic literature...that Maasai are commonly viewed as prototypical pastoralists” (1993:2). To read literature relating to the Maasai, one would be left with an unclear idea of how they currently derive their living. Maasai are variously referred to as pastoralists (Talle, 1994; Grandin *et al*, 1991; Holland, 1987; Hedlund, 1980; Jacobs, 1979; Sindiga, 1992a), “pastoralists (with) some degree of mobility” (Galaty, 1992), a “specialised pastoral community” (Galaty & Bonte, 1992), “nomadic pastoralists” (Kipuri, 1998), as including “sedentary agriculturists...[and]...nomadic pastoralists” (Asiema and Situma, 1994). Data collected as part of the demographic study provide a current “snapshot” of Maasai livelihoods. It may seem counter-intuitive to present some of the results from the survey prior to a description of their collection (Chapter Four). However, the primary focus of this study is the demography of the Maasai. The socio-economic data that were collected as a by-product of the demographic study are most appropriately presented here as a contextualisation of the demographic study.

⁷² Calculated using an exponential growth rate. Due to a lack of information on the precise date of each enumeration, it has been assumed that each count took place at the same time of year.

⁷³ In the early 1970s, NCA was declared a Ranching Association and scheduled for large-scale livestock development inputs. This led to very high levels of in-migration into the area before the plans were shelved (Homewood and Rodgers, 1991).

3.7.1 Transhumance⁷⁴

The importance of transhumance for pastoralism as part of a strategy to cope with the high degree of inter-annual variability in the savanna ecosystem has been well documented (for example, Behnke and Scoones, 1993). Several authors note increasing levels of sedentarisation by the Maasai, including Grandin (1991), Fratkin (1994) and Rutten (1998). Reasons for the increasing sedentarisation include individual land tenure, the erection of fences, and increased use of education services.

All individuals aged over 6 years were asked whether they had been on transhumance for more than one week in the twelve months preceding the interview. It is recognised that the survey was cross-sectional in its design, and is not necessarily a reflection of the inter-annual variation in transhumance. The results from the survey in absolute terms are therefore only representative of the situation at the time of the survey. Of interest here is the *relative* practise of transhumance between the different study sites.

There is extreme variation in transhumance both between and within the study sites (Table 3.13). For example, over 90% of households in Irkeepus did not report one household member who practises transhumance, compared with Olkirmatian/Shompole Group Ranches where over one third of all households transhume as an entire household.

Table 3.13: Percentage distribution of household-level transhumance, by study site

	Transhumance		
	None	Partial ⁷⁵	Whole household
Kenya			
Koyaki GR (n=182)	69.3	30.2	0.5
Olkirmatian-Shompole GR (n=448)	42.5	22.5	35.0
Total	50.2	24.8	25.0
Tanzania			
Endulen-Esere (n=500)	4.8	68.0	27.2
Irkeepus (n=229)	92.5	6.6	0.9
Meshilli (n=186)	2.2	96.2	1.6
Total	26.2	58.3	15.5

Source: SRDS Data

The influence of the ecological context must be taken into account. Of all the study sites, Olkirmatian/Shompole is the driest and therefore more exposed to inter-annual rainfall variability. However, the influence of changing land tenure situations must also be noted. Olkirmatian and Shompole Group Ranches are not in the process of subdivision of land, and communal grazing committees continue to operate. In comparison, the distribution of individual title deeds to land is well under way in Koyaki Group Ranch. That individual ownership of land is incompatible with transhumance has long been recognised. The extremely low levels of transhumance in Irkeepus might represent a combination of the ecological conditions in the area (cool, wet uplands) and the cultivation of vegetables for sale to a nearby tourist lodge, both of which reduce the need to transhume.

⁷⁴ Transhumance here refers to periodic (normally seasonal) movement with livestock to obtain water and grazing, but also includes movement with livestock for the purpose of selling animals.

⁷⁵ At least one member of the household went on transhumance.

3.7.2 Tourism

The importance of international tourism for Kenyan and Tanzanian economies is well established. For example, the revenue from international tourism is estimated to contribute 12% of Kenya's Gross Domestic Product. Two of the study sites are adjacent to major international tourist destinations: Masai Mara Game Reserve (Koyaki Group Ranch) and Ngorongoro Crater (NCA sites). That most Maasai are marginalised from the income generating opportunities provided by tourism is noted (Kipuri, 1998; Akama, 1999). It must be made clear that the present discussion excludes measurement of the actual income derived from tourism. Further, because involvement in tourism here is limited to occupations, indirect sources of tourist-related income cannot be addressed⁷⁶.

To what extent are individual Maasai involved in the tourism business? Very few people derive all of their income from tourism alone. In NCA 0.2% of all individuals aged over 15 were employed full-time by the tourism industry. In Koyaki just 1.3% of the sample population were full-time tourism employees. Of course, these figures are no more than the most cursory description of employment opportunities within tourism. However, they do reinforce the view that the majority of Maasai living near to tourist attractions is not benefiting directly⁷⁷. Particularly in Koyaki, it was interesting to note that individuals with full-time jobs in tourism tended to be clustered in the same households. There are marked differences in the opportunities afforded by the tourism industry for men and women, as summarised below.

Table 3.14: Tourism-related employment opportunities, by sex.

	Tourism employment opportunities
Men and women	Cultivate and sell vegetables to lodges; Lodge entertainment (singing and dancing); Work in cultural <i>manyatta</i> .
Men	Game ranger/ warden; Campsite/ lodge guard; Lodge room cleaner; Keep bees and sell honey to lodges; Trader in beadwork; Tourist guide; Tour driver
Women	Make beadwork; Sell beadwork directly to tourists.

Other indirect sources of tourism-related income include the making and selling of beadwork (both to traders and direct to tourists) and the sale of honey to tourist lodges⁷⁸. "Cultural bomas" operate in Talek, Irkeepus and Meshilli but the advantages tend to accrue only to a few selected individuals. Indeed, much of the "gate fee" charged from tourists to go to cultural bomas is often diverted at source by the tour guides (Personal Observation; Kipuri, 1998)

3.7.3 Cultivation

Early accounts by travellers and colonial administrators of the Maasai tended to portray an image of "pure" pastoralism, reliant on livestock products for subsistence (For example, Hollis, 1905; Merker, 1910; Leakey, 1930; Fosbrooke, 1948). However, such accounts have been largely discredited, and references to cultivation by Maasai have a long history (Berntsen, 1979). For example, Spear notes that pre-C18th "many Maasai practised a mixed agro-pastoral economy" (1993:131). The trading of livestock for

⁷⁶ Substantial returns from tourism for a few individuals have been noted, particularly from the leasing of land to tourist developments in Narok District. (Pers. Ob., Thompson Pers. Comm.)

⁷⁷ Although it should be noted that the financial opportunities available to local Maasai in the study areas are greater than those available to communities living near to other protected areas in Kenya and Tanzania, due mainly to the size of the tourist revenue generated by these two protected areas.

⁷⁸ In Irkeepus and Meshilli (NCA) in response to NGO equipment and training provision.

grain has been described extensively (Dahl and Hjort, 1976; Swift, 1986), together with detailed studies of Maasai diet which demonstrate the role played by non-livestock products (Arhem, 1985; Nestel, 1986; Bekure *et al*, 1991).

That subsistence-grown and bought grain play a (major) role in contemporary Maasai diets is clear. However, the development of cash crop cultivation by Maasai has received less attention. Throughout all of the study sites, cash and subsistence cultivation were present to varying degrees. There are great variations (determined both by policy and agro-ecological potential) in the type of cultivation that predominates in each study site location (Table 3.15).

Table 3.15: Major cultivation types, by study site

	Cultivation types
Kenya	
Koyaki G R	Subsistence grain cultivation + Some larger-scale wheat cultivation
Olkirmatian G R	Mainly commercial cultivation for export market + Small amount of subsistence grain cultivation + Perennial rain-fed irrigation
Shompole G R	Subsistence gain cultivation + Some irrigation from Shompole swamp
Tanzania	
Meshilli	Subsistence grain and bean cultivation
Irkeepus	Vegetables for sale to tourist lodge
Endulen-Esere	Subsistence grain cultivation

Source: SRDS Data

Cultivation land for cash crops predominates in two locations: Olkirmatian (Kenya) and Irkeepus (NCA). Elsewhere, the cultivation is more sporadic, reflecting inter-annual weather variations. For example, in Olkirmatian over the last decade there has been the rapid development of cash-crop cultivation specifically for the export market. The presence of perennial water sources allowing for rain-fed irrigation at the foot of the Nguramen escarpment combined with good road access to Nairobi (less than 3 hours) help to explain this development. A similar example is drawn from Irkeepus (NCA) where ecological conditions (cool uplands with >1,000mm precipitation *per annum*) combined with demand from tourist accommodation have driven the development of small-scale *ad hoc* vegetable cultivation.

Table 3.16 shows the percentage distribution of cultivation at the household level at the time of the survey and ten years previously. Taken at face value, the results from the study sites in NCA would imply a massive and very rapid uptake of cultivation. However, the results are an artefact of the fact that 10 years prior to the survey cultivation was illegal within NCA⁷⁹.

⁷⁹ Although it should be noted that cultivation continued to be practised. However, the highly politicised nature of the cultivation ban meant that individuals tended to deny any previous cultivation. Aerial photography provides conclusive evidence for the continuation of cultivation over this period.

Table 3.16: Percentage of households reporting cultivation by time period and study site

	Cultivated 10 years ago	Currently cultivate
Kenya		
Koyaki GR (n=182)	15.9	31.3
Olkirmatian-Shompole GR (n=448)	20.1	51.8
Total	18.9	45.9
Tanzania		
Endulen-Esere (n=500)	1.1	98.2
Irkeepus (n=229)	5.7	76.4
Meshilli (n=186)	0.0	76.3
Total	1.9	88.2

Source: SRDS Data

What the survey results show is a high level of involvement of Maasai households in some form of cultivation, both subsistence and commercial. Over 88% of the NCA households and 45% of the Kenyan households reported current cultivation. Maasai cultivate for a wide range of reasons, from *ad hoc* subsistence cultivation of beans designed to complement a pastoral subsistence strategy to intensive rain-fed irrigation of export cash crops with a sophisticated system of marketing and transportation.

3.7.4 Occupation

The data are produced as a result of combining an individual's response to questions on primary and secondary occupation. The questions were framed very loosely, and referred to the amount of time an individual spends on a particular occupation, rather than any consideration of the amount of income derived from that activity. The answers were not precoded at the time of interview. Enumerators were instructed to write down individuals' responses, which were then coded after data entry. The data contained in Table 3.17 refer only to individuals aged 15 years and above⁸⁰.

Table 3.17: Percentage distribution of occupation category for individuals aged above 15 years, by study site.

	Kenya			Tanzania			
	Koyaki GR (n=1,088)	Shompole/Olkirmatian GR (n=1,932)	All	Endulen-Esere (n=2,118)	Meshilli (n=752)	Irkeepus (n=1,108)	All
Pastoralist	68.5	60.0	62.9	1.5	69.5	34.1	26.6
Agropastoralist	2.1	14.6	10.2	80.5	28.4	53.4	60.8
Pastoralist + Other activity	20.0	15.1	16.9	16.7	0.2	10.2	0.5
Agropastoralist + Other activity	0.1	0.0	0.1	0.1	0.8	1.5	10.9
Cultivator	0.2	8.3	5.4	0.3	0.2	0.8	0.4
Business Owner	3.8	0.3	1.5	0.3	0.5	0.0	0.3
Employee	5.3	1.7	3.0	0.6	0.4	0.0	0.5

Source: SRDS Data

The distribution of occupations is highly variable between study sites, reflecting both economic opportunities and ecological influences. In the Kenyan study sites as a whole, the opportunities for and necessities for diversification away from "traditional" pastoralist activities are greater than in Tanzania. However, it should be noted that for the majority of individuals, pastoralism still plays some part in their livelihood, albeit in combination with some other activity.

Women tend to have far less diversified income sources than men do. One of the main ways in which it is widely acceptable for a Maasai woman to earn cash income is to sell

⁸⁰ And does not include students in the total.

milk that is surplus to household requirements (Table 3.18). The ability to sell milk varies widely according to season, year and household requirements. In order to be able to sell milk, not only does there have to be a supply, but also a demand. The relatively high proportion of women who sell milk in NCAA reflects the presence of a large non-pastoral community and well-defined market places (For example, Endulen and Macao).

The making and selling of beadwork by women also reflects the presence of an opportunity. The Koyaki study site, close to the Maasai Mara with high levels of foreign tourists, has a ready market for beadwork. The majority of women make the beadwork whilst only a few women actually sell the work directly to tourists, either at park gates or at cultural bomas. Most beadwork is sold by middlemen to tourist shops and traders, although no direct data on this were collected.

Table 3.18: Percentage of women deriving some income from milk and beadwork sales

	Milk selling	Beadwork
Koyaki GR (n=608)	0.2	20.5
Olkirmatian/ Shompole GR (n=989)	4.4	0.3
NCA (n=2,148)	20.8	0.9

Source: SRDS Data

The only other significant source of income for the women studied was shopkeeping. This often involved very small shops attached to the home where a very limited stock of essentials were sold (fat, flour, medicines, sweets). However, it is likely that most of these shops are owned and financed by a husband or male relative, and women simply attend to the shops.

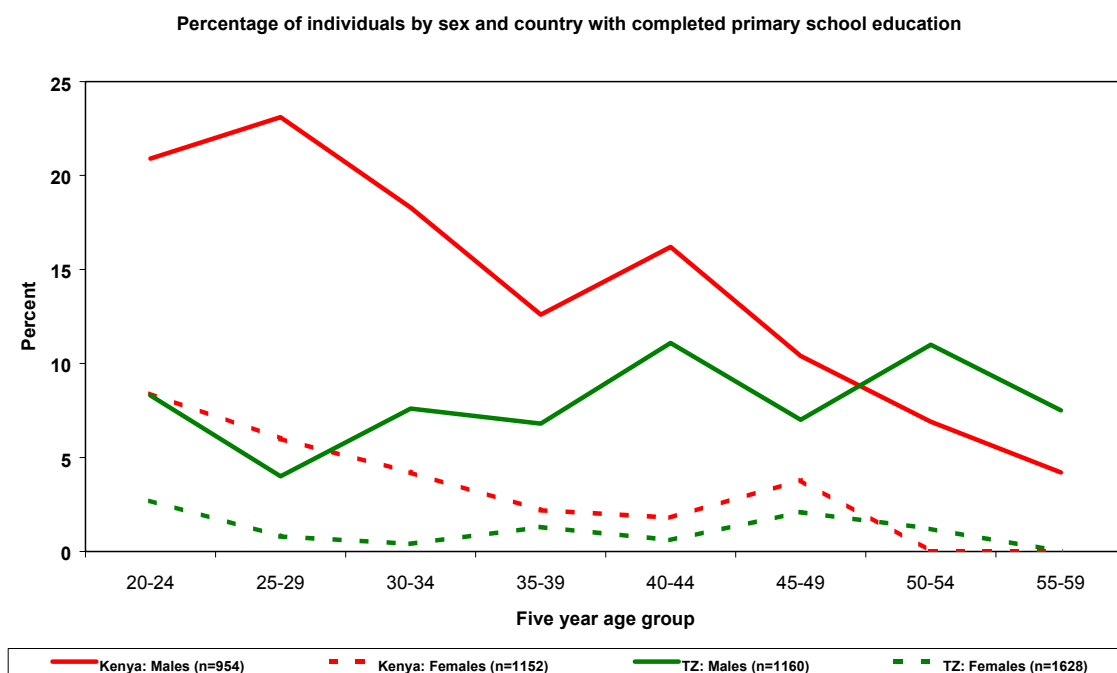
3.7.5 Education

Participation in formal education is a function both of supply and demand. The problems of providing schooling in remote rural areas with poor infrastructure are well known, particularly for non-sedentary populations (Swift *et al*, 1990)⁸¹. Several studies of Maasai participation in formal education have been carried out (King, 1972, Gorham, 1980; Holland, 1996), all reiterating the low levels of school attendance by eligible children. When combined with the traditional antipathy of the Maasai to sending their children to school⁸², the low levels of education reported for older Maasai in the survey are unsurprising. The sex bias in completed primary school education is marked, in both countries, with far fewer women than men having attended school.

⁸¹ The problems include: lack of demonstrable benefits of education of pastoralism; labour requirements of herding; transhumant settlement patterns; relatively high (and increasing) school fees; lack of education infrastructure; low population densities; and, the reluctance of teachers to live in relatively isolated areas (after Gorham, 1978).

⁸² Described by Galaty as "With education, Maasai often feel they have given away their children" (1992:37).

Graph 3.1



Source: SRDS data

There is evidence of an improvement in access to education over time in Kenya. Current levels of enrolment show that 40.1% of boys and 22.5% of girls aged 8-10 years in Kenya were attending school. In Tanzania, the picture continues to be far worse, and levels of male primary school completion appear to have worsened over time. At the time of the survey 10.7% of boys and 6.2% of girls aged 8-10 years were attending school at the time of the survey, although such data provide no information on the quality of the schooling or the completeness of attendance.

3.8 Respect (*enkanyit*)

There is one last element of Maasai lifestyle that is of importance to any study of the Maasai. It is the concept of respect or *enkanyit*, described by Llewelyn-Davies as “one of the most reiterated moral values of Maasai life” (1978:207). It is rare, however, to find reference to this term, with the exception of Llewelyn-Davies (1978) and Spencer (1988). Respect for elders is one of the first things that a Maasai child learns, but the term has resonance far beyond simply a sense of respects for one’s elders and betters. It reflects, for example, sanctioned sexual, marriage and eating partners.

Anybody who spends time among the Maasai observes *enkanyit*, and the subtleties of *enkanyit* for social interaction became obvious (and sometimes intractable) during fieldwork. Occasionally, for example, an enumerator was unable to work in a particular *enkang* because of the “disrespect” of asking family-oriented questions to a particular individual.

3.9 Summary

Of necessity, this section can do no more than outline the context of this study in anything but the briefest terms. Two points will be highlighted here. Firstly, the complex construction of what it means “to be Maasai”. East Africa contains many Maa-

speaking peoples, including the Samburu, Chamus and Arusha (to name some of the larger groups). That individuals and groups can move into and out of "Maasainess" over time and space is acknowledged by Maasai and non-Maasai. The notion of Maasai as a stereotypical pastiche of a semi-nomadic pastoralist is refuted, both on the basis of work by other authors and the SRDS data presented here.

The implications of ethnic identity for preconceptions of non-Maasai (both historical and contemporary) about Maasai are clearly highlighted. Twentieth century colonial administrators viewed Maasai as a once-strong fierce warrior group that had become weakened through a series of misfortunes. This fitted in well with their demographic perceptions of the Maasai as a disease-riddled people unwilling to participate in the colonial administration (albeit with a few notable exceptions such as the use of Maasai warriors to patrol the Kenya-Tanzania border during World War II). The perpetuation of such images in contemporary Kenya and Tanzania is a theme that will be returned to throughout this thesis. Issues of inclusion and exclusion of Maasai/non-Maasai are pertinent when examining the data relating to total population by ethnic group. The implications of ethnic identity (and numbers) for political power and demographic outcomes are explored in greater detail in Chapter Ten.

Chapter 4 Data Collection

The aim of this chapter is to describe retrospectively what I tried to do and why I chose that course, in terms of data collection methodology. Because this study was one component of a larger study titled “The impacts of land-use policy on environment, wildlife, demography and socio-economic indicators in east African savannas: the Serengeti Ecological Unit”, some decisions relating to survey design were taken as part of this wider endeavour. In addition, the SRDS was responsible for collecting not only demographic data but also socio-economic data, and was designed in order to incorporate both aims. The following sections incorporate discussion of the process of methodology development, and my personal contribution to this.

The dearth of demographic data relating to the Maasai, despite the volume of anthropological writing on the Maasai, is of itself highly informative⁸³. For example, Jacob's (1973) summary was provided only at the behest of Molnos' request for information, and did not reflect an independent demographic survey of the Maasai⁸⁴. Ethnographers tend not to refer to issues of quantitative data collection, unsurprising given their interests and *modus operandum* of participant observation. Information of use to the demographer organising a survey must therefore be gleaned indirectly from the ethnographies.

4.1 Data collection: Single Round Demographic Survey (SRDS)

In an ideal world, basic demographic parameters would be provided by a comprehensive system of passive vital registration. The development of vital registration systems in LEDCs is summarised succinctly by Cleland who states "there has been no progress" (1996:434) in the last fifty years⁸⁵. Also available for sub-Saharan Africa are large-scale surveys (e.g.: WFS, DHS) and censuses, although issues of data quality and coverage persist.

The core methodology for this study was a single round retrospective demographic survey (SRDS), using a pre-tested questionnaire adapted to the Maasai context. It was administered by locally recruited and trained Maasai enumerators. Direct observation by the researcher, who was present throughout the SRDS, supplemented the quantitative data. This study, in the words of Caldwell *et al* "retained the demographer's armoury" (1988:26), and added ethnographic information to its construction and deployment. The following section describes the methodology used in the SRDS, from design to pilot study to implementation. Wherever relevant, reference is made to the contribution of ethnographies to this process.

⁸³ As part of the Yale Human Relations Areas Files Project, conducted under the auspices of the Whittings, Melissa Llewellyn-Davis collected baseline demographic data on the Maasai. During this study, every effort was made to use these data. However, Llewellyn-Davies stated that the information she collected was of such poor quality, especially with reference to kin relationships and deaths that the information was not worth the paper it was written on (Pers. Comm.). Ultimately, it was not possible to verify this statement as the original data files are currently missing from the Yale Uni. Library (Yale Chief Archivist, Pers. Comm.).

⁸⁴ Jacobs is one of the few ethnographers to specifically address issues of conducting fieldwork among the Maasai.

⁸⁵ In 1998 UNICEF reported Kenya as having 30-49% of all births registered (no data were available for Tanzania). In Kenya, birth registration became compulsory for whites in 1904, but only in 1971 did it become mandatory for all. In a 1981 study, 7 out of a total of 56 African countries had data estimated to be at least 90% complete. Neither Kenya nor Tanzania was recorded as having even incomplete systems of vital registration, and there is no reason to expect this situation to have changed. National Research Council (1981) Data for the estimation of fertility and mortality Washington, National Academy Press

4.1.1 Choice of study sites

Because this study was organised to "dovetail" with other components of the wider project (Chapter One), the study sites were chosen to reflect a variety of land use policies, from conservation and tourism (NCAA) to land subdivision (Koyaki Group Ranch). Maasai live in both Kenya and Tanzania, their occupation of the area pre-dating the construction of the international border. It was therefore essential to carry out the SRDS in both Kenya and Tanzania. Study sites were chosen specifically to reflect the range of experience of rural Maasai⁸⁶. Four major study sites were identified during the pilot study, two either side of the border.

However, the final study involved three of the original study sites, plus a further site in Kenya (Map 4.1). Two attempts were made to visit the original Loliondo study site (Ololosukwan village). The first attempt was thwarted because of the El Niño weather phenomenon, making access to the area impossible. The second attempt was abandoned for reasons of security. There was very severe banditry activity in the area in the week that I was due to start fieldwork in Loliondo, which involved the killing of approximately 20 Maasai. Regional police and army were drafted into the area, and the situation was extremely tense for several weeks.

4.1.2 Enumeration unit

An enumeration unit must have some real, tangible meaning for the researcher, enumerator and respondent. In a study designed to be illustrative of an entire population (rural Maasai), the enumeration unit must capture all members of the population. Standardisation of the enumeration unit ensures comparability of data between study sites. The choice of enumeration unit is therefore a compromise between one that is ethnographically specific and one that conforms to some standardised schema. The former will produce "socially meaningful results that cannot be compared across societies" (Greenhalgh, 1982: 87) and the latter "internationally comparable results with questionable social meaning" (*op cit.*).

The United Nations definition of a household as "One or more persons who make common provision for food and other essentials for living" (United Nations, 1980) was inappropriate in a Maasai context. If the provision of food in a Maasai context is considered, then a complex web of food-sharing practices is revealed. For example, a married man can expect to be provided with milk by his wife (or wives) upon request. However, if an age mate accompanies him, then the age-mate can also expect to be provided with milk. In a polygynous marriage each wife prepares and cooks food (such as maize porridge) in her own house, for consumption by herself and any dependants. Except in special circumstances such as sickness or preparation for a ceremony, co-wives do not to make common provision for cooking.

The ethnographic literature was an essential starting point, containing detailed information on Maasai residential organisation. Indeed, it is perhaps the one topic that (nearly) all ethnographies of the Maasai refer to. In terms of vocabulary, there is no one word in Maa that refers to a household (Section 3.3.2). The closest approximation is that of the *olmarei* or family, which refers to a married man, his wife (wives), dependent children (including own and fostered) and any other dependent relatives⁸⁷. An *olmarei* may live independently or join together with one or more *olmarei* in an *enkang*, a joint

⁸⁶ The majority of the Maasai population in both Kenya and Tanzania is rural.

⁸⁷ Female-headed *olmarei* do exist, although rarely.

residential unit not necessarily based on kin relations. Following extensive pilot-testing, the enumeration unit was therefore the *olmarei*, and all *olmarei* identified at each *enkang* were enumerated.

4.1.3 Sampling

Ideally, the primary sampling units (in this case the household) for a demographic study should be randomly selected. However, a scientifically designed random sample assumes the existence of a complete and correct sampling frame. In neither Kenya⁸⁸ nor Tanzania⁸⁹ were such sampling frames available. The sample population was therefore not determined by any scientific sampling procedure. Rather, a geographic area was identified, and all sampling units within that area were interviewed, until the desired sample size was achieved. There was no reason to believe that rural Maasai in different areas of a country were likely to differ demographically. However, this assumption was subsequently demonstrated to be flawed (Chapter Ten), and the results presented must only be assumed to refer to the areas enumerated.

For each major study site, the enumerators drew up base maps of the geographic area. The maps indicated all multi-household units (identified by name) in the area, and a starting point was chosen randomly by the researcher. Maasai *enkang* move periodically, dependent upon local environment conditions, preventing the use of map sources such as aerial surveys. Without the detailed local knowledge of the enumerators, it would have been impossible to construct these maps. Further, location of the *enkang* would have been extremely time consuming without this knowledge.

If scientific sampling procedures are to be used, then the size of a sample is determined by two factors: the degree of sampling precision required, and the degree of sampling precision expected. The lack of sampling frames combined with no information on the total number of Maasai prevented the calculation of sampling fractions and a scientific approach to determining sample size. Because of the demands of the wider project upon the SRDS⁹⁰, the overall sample size was a function of the wider remit of the SRDS, and it was decided⁹¹ to collect data on a minimum of 2,500 individuals per study site. In total, the SRDS collected information on 14,928 individuals⁹².

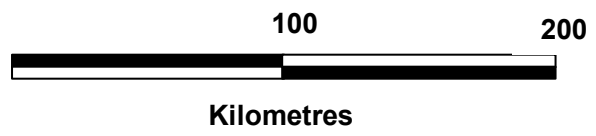
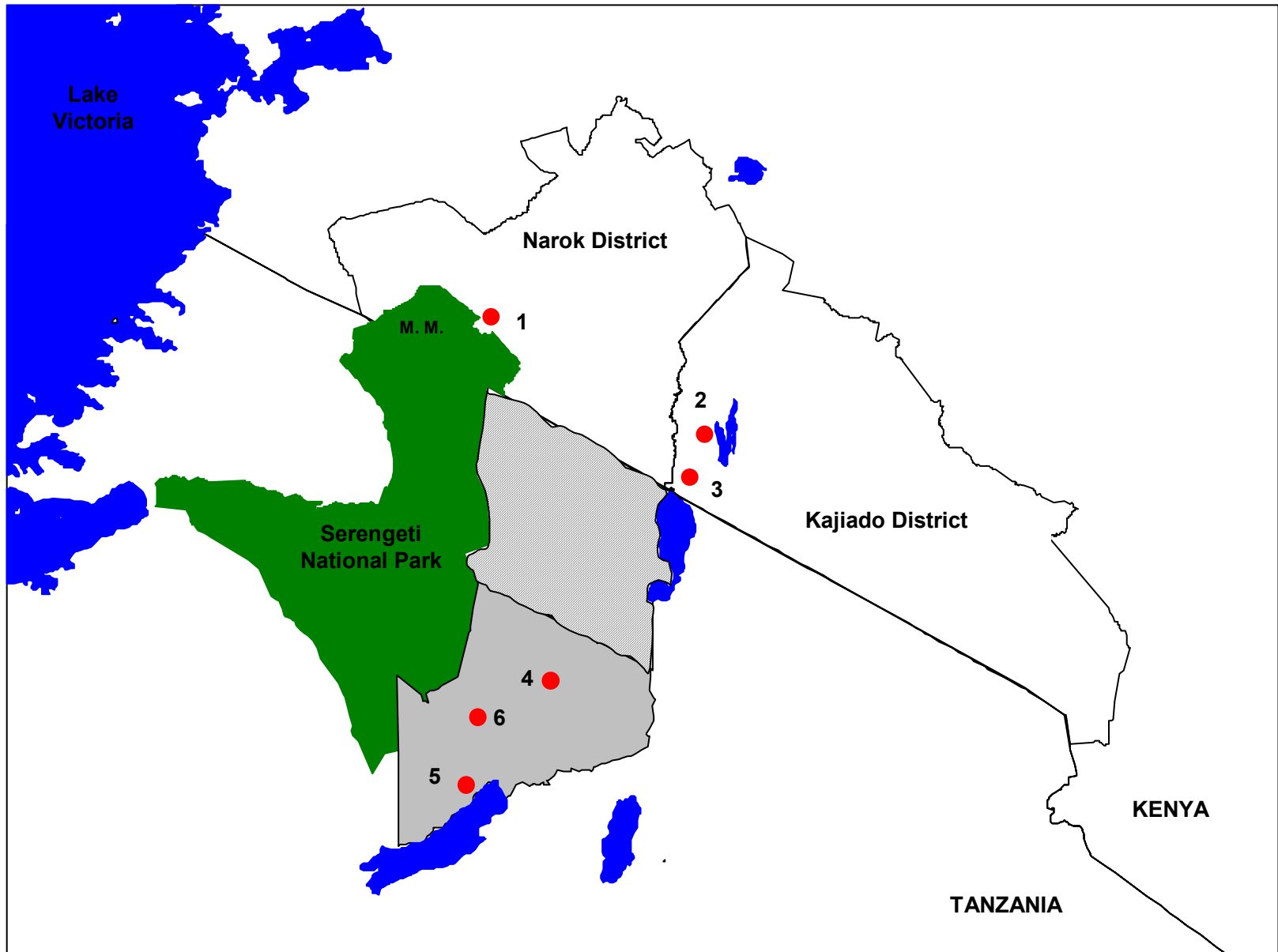
⁸⁸ The national sampling frame, derived from census returns, and maintained by the Central Bureau of Statistics was unavailable for this study (Central Bureau of Statistics, Pers. Comm.). An alternative sampling frame was investigated, that of the registers of the Group Ranches. However, these lists were drawn up at the time of the formation of the Group Ranches and are now obsolete. Further, they only ever contained the names of the registered members (men) rather than a complete listing of household members. The highly political nature of current access to Group Ranch land would have made the construction of more up-to-date lists extremely difficult.

⁸⁹ Initially in Tanzania it was hoped to be able to use the "10 cell" system whereby a registered village is composed of 10 cell units, each with its own leader. Theoretically, lists of each 10-cell leader should provide the researcher with a readily accessible up-to-date list of village residents, permitting systematic sampling. However, when this approach was tested in Endulen (NCA) during the pilot study, it was found that the majority of the lists was out of date and poorly maintained. Further, the number of households per 10-cell leader varied greatly, due to a lack of candidates to be 10 cell leaders.

⁹⁰ Firstly, to collect data to provide a cross-border comparison of the contemporary socio-economic situation of Maasai. Secondly, to provide a sampling frame for subsequent detailed socio-economic studies (by Thompson and Kivelia).

⁹¹ In consultation with the Principal Investigator Prof. K. Homewood.

⁹² For fertility analysis, for example, this yielded a sample size of 2,838 ever-married women aged 20-49. This is a relatively large sample size for fertility analysis given, for example, that DHS surveys require a sample size of approximately 4,000 women for nationally representative fertility analyses.



Key	
	Ngorongoro Conservation Area
M.M.	Maasai Mara Game Reserve
1	Koyaki Group Ranch
2	Olkirmatian Group Ranch
3	Shompole Group Ranch
	Loliondo G.C.A.
4	Irkeepus
5	Endulen-Esere
6	Meshilli



4.1.4 De facto or de jure enumeration?

The ethnographic literature makes many references to the mobility of Maasai men, on a variety of timescales ranging from daily to seasonally. A *de facto* enumeration theoretically has the advantage that it is definitionally simple. However, during the pilot study it became immediately apparent that a *de facto* approach held little or no relevance for either the enumerator or the respondent. For example, it is not unusual for a Maasai man to spend a night at an age mate's *enkang*, nor is it unusual for a man to be absent for several months due to livestock-related activities such as herding or trading. Being a *murran* precludes the young man from being resident at his mother's house. He is, however, still a part of the *olmarei*. In Nestel and Geissler's study of Maasai nutrition for example, they decided that "for logistical reasons adult men could not be included in the study" (1986:2). Women tend to be less residentially mobile than men, but similar issues do exist in terms of enumeration⁹³.

Based on the pilot study, and the fact that an initial *de facto* approach caused extreme confusion for both the enumerator and the respondent, it was decided to use a *de jure* enumeration. The task, therefore, was to define the "resident population" in order to include temporary absentees but to exclude visitors or transients. Here, recourse to the members of the *olmarei* proved invaluable. It was comprehended by both enumerators and residents who should be included and excluded from the definition and it was decided not to place a time limit on temporary absenteeism. In subsequent analyses it will be shown that this methodology was, by and large, successful⁹⁴.

4.1.5 Questionnaire design

The questionnaire used in the SRDS was designed to incorporate high levels of Maasai-specific content. The design of any questionnaire must take into account the following issues: data requirements for analysis, type of questions (closed/open/pre-coded), detailed instructions to the enumerators, logic of layout, ease of handling, manageable length, wording and ordering of questions and, the need for built-in cross checks. The questionnaire was pilot-tested with several variations before the final version (Appendix 1) was developed.

Levine and Scrimshaw suggest that "presurvey ethnographic work provides the research investigation with the contextual richness...and guides the framing of the questions" (1983: 685). One drawback to the incorporation of ethnographic knowledge into the design of a survey questionnaire might be a loss of standardisation of definitions. Meekers suggests that "ethnographic information could be used to identify the relevant marital categories in each culture. As a result, data analyses become much more complex, and it might not be possible to generalise the results of these studies" (1991:257). However, she does acknowledge that "Sometimes the problem of poor data is caused by the design of the survey questionnaires, which ask for information that is not culturally relevant...the quality of demographic data can be improved by incorporating ethnographic knowledge" (op. cit.). If a certain type of behaviour is generally proscribed in a particular context, then inclusion of a question on that behaviour might jeopardise the entire data collection project. To have ignored such "warning signs" in the ethnographic literature would be foolhardy on the part of the demographer.

⁹³ For example, food-sharing norms mean that when a group of warriors join together in a special warriors' *enkang* (*manyatta*), a few elderly women live in the *manyatta* temporarily in order to provide food.

⁹⁴ The one exception was men aged 20-49, discussed more fully in Chapter Five.

This section has concentrated on one type of data collection, the survey. A demographic questionnaire must take into account that "demographic concepts, as formulations of ideas and experiences, are a product of the socio-economic milieu in which they originate" (Awusabo-Asare, 1988:675). It was therefore essential to design questions that were contextually appropriate. A first step in this direction was by scouring the ethnographic literature and Maa-English dictionaries for words that might be useful in constructing and administering a questionnaire. A glossary of these words was created, and tested and used in enumerator training in order that the enumerators would be clear about appropriate translation terms. The absence of a term or phrase in Maa to represent a specific concept is a fairly reliable indicator that the concept has little relevance or is difficult to approach in a Maasai context. A second feature of contextually appropriate questions was the acceptability of concepts. For example, the ethnographic literature contains frequent references to the practice of a man's age mates having sex with his wife, sometimes with the specific intention of the wife becoming pregnant. This raised pre-pilot study concerns about the appropriateness of referring to a biological father⁹⁵. This concern became reality when the question was included in the pilot-study questionnaire, and enumerators felt unable to even ask the question. The result was the complete removal of this question⁹⁶.

4.2 Birth history

A detailed account of the childbearing experience of a woman is a useful tool for providing information (including miscarriages, abortions, contraceptive use, breastfeeding and weaning patterns) not revealed in a survey using the "Brass" questions. Current instruments of demographic data collection such as the DHS include detailed birth histories as a core element of the questionnaire. A pilot study⁹⁷ of 138 birth histories was carried out in Endulen village (Tanzania). This was in order to explore the possibility of collecting detailed birth histories from a subsample of women drawn from the SRDS⁹⁸.

The length of the birth history was kept to a minimum, relative to DHS-style birth histories. It quickly became apparent that asking detailed questions about a woman's reproductive history was counter-productive. Both the enumerators and the respondents were visibly uncomfortable about the depth of questioning, particularly with reference to dead children. Results from the birth history pilot study are not presented in the analysis of this study. However, to highlight issues of data quality, it should be noted that 22.5% of women in the birth history pilot study reported fewer dead children than in the SRDS. Although purely descriptive, this crude index of disagreement highlights the relatively poorer quality of information from the birth history relative to the SRDS. No response produced a higher number of deceased children in the birth history relative to the SRDS.

The decision was therefore taken not to collect detailed birth histories as part of the study. The point is an important one, with implications for data quality derived from birth histories in other studies. Cleland asks the question "has the birth history approach been vindicated, or could the same advance have been achieved by simpler and more cost effective household surveys...?" (1996:445). He concludes that "the collection of

⁹⁵ For the purposes of paternal orphanhood and the estimation of adult male mortality.

⁹⁶ See Section 7.4 for detailed discussion.

⁹⁷ See Appendix 2 for a copy of the birth history schedule.

⁹⁸ The birth history pilot study was carried out among a sample of women who had previously been questioned during the SRDS, approximately two months earlier. It was hoped that the interval would prevent respondent fatigue.

pregnancy or birth histories is no guarantee of higher-quality data than could have been obtained from alternative and less expensive survey strategies" (*op. cit.*). The uses of birth histories are extensive⁹⁹, but it is important to recognise the limitations of the approach. There are many contexts where counting people is considered inauspicious, and referring to dead individuals an extremely sensitive exercise, so these statements are not limited to a Maasai context. Brief questions (e.g.: Brass-style) allow the respondent to provide information without having to dwell on a topic. In contrast, a detailed birth history forces the respondent to provide detailed information on a topic that is extremely difficult for both the respondent and the enumerator¹⁰⁰.

4.3 Language

Interviews were conducted in the respondent's language of choice, therefore most of the interviews were in Maa. Because the enumerators were fluent Maa speakers, this approach probably minimised issues of interview miscomprehension. The only drawback to this approach was that, as the principal researcher, I could not understand the interviews, although I could follow their progress. However, relative to demographic surveys such as the WFS and DHS, the SRDS achieved extremely high levels of interviews conducted in the respondent's mother tongue.

4.4 Enumerator

The role of the enumerator is fundamental to the success of a survey, indeed Cleland suggests that "the quality of demographic data depends more on the skills, training and supervision of field staff than on the design of the data collection instrument" (1996:446). However, it is a topic that receives relatively little attention in the literature¹⁰¹. The enumerators are the public (human) face of the survey, and their attitude and behaviour can determine the acceptability or otherwise of a study in a location. This can be illustrated with reference to *enkanyit* (Section 3.8). Llewellyn-Davies describes *enkanyit* as "courteous behaviour towards others...appropriate to their relative social position" (1978:207). It is therefore not simply a question of being polite, it is politeness that is concomitant with the age, sex and kin position of the person being spoken to¹⁰².

The reliability of interviews depends to a large extent on the interpersonal and linguistics skills of "insiders" (Jessor *et al.*, 1996). It was essential that the enumerators were Maasai, for three main reasons. Firstly, the low levels of knowledge of KiSwahili (the *lingua franca* in Tanzania and Kenya) among Maasai meant that all enumerators had to be fluent in Maa. Secondly, in order that the fieldwork could be conducted in a manner most likely to allow for its completion, it was imperative that the enumerators be familiar with Maasai customary behaviour (greetings, courtesy based on age and sex, etc). Not least, the "unspoken" information that was so crucial to the data collection

⁹⁹ Advantages listed by Cleland (1996) include: Improved measures of lifetime fertility, relative to other data sources; High quality of information on infant mortality; good estimates for the few years preceding the survey. Cleland does note, however, the wide variation in advantages and disadvantages by study location.

¹⁰⁰ Many women cried when the birth history information was collected, which was a very rare occurrence during the SRDS.

¹⁰¹ An exception would be Garenne's 1994 study, which analysed maternity histories by fieldworker, and concluded, "a major determinant of the quality of the data seems to be the relationship between the enumerator and the interviewee" (1994:53). Issues of politeness, care and respect rather than the enumerator's intelligence are cited as the most important factors.

¹⁰² Jacobs makes repeated reference to the issue of "giving respect", for example "the avoidance of distasteful or unpleasant remarks is part of their concept of "giving respect" to other people, especially persons who are visitors, short acquaintances or well-known, important people" (1973:343)

exercise (Section 4.11) could only be observed by a Maasai. Finally, during the pilot study it became immediately apparent that Maasai will not reveal information of a personal or familial nature unless the person asking the question is personally known to them (or at least their extended family). This meant that for each major study site, it was necessary to recruit a new team of enumerators¹⁰³. This had significant implications for the length of time needed to complete the fieldwork. A Maasai context does not allow for the possibility that sensitive (or even any) information might be better collected by the outsider rather than the insider. Occasionally, customary rules of courtesy meant that an enumerator could not ask questions of a specific household because of his own kin relationship to that family, but this happened rarely because enumerators would preempt such a situation.

At the beginning of the SRDS, efforts were made to recruit female enumerators to the study, based on the assumption¹⁰⁴ that the largely female respondents would respond better to female enumerators. However, this assumption proved ill founded¹⁰⁵. The difficulty of recruiting suitably qualified female enumerators notwithstanding, it became clear that all respondents (male and female) responded better to male enumerators. Maasai women simply do not move around from *enkang* to *enkang*, whereas for men this is a normal part of everyday behaviour. A woman only tends to visit another *enkang* on specific (family-related) business, and then only in the company of other women or male kin. Further, the male-dominated nature of Maasai society means that women are far more likely to reply to questions asked by a man. With a female enumerator, the chances for joking and evasion by the respondents are greatly increased, as it is far more difficult for a woman to exert authority than for a man. In addition, the relatively lower levels of formal education for females in a Maasai context results in a far lower potential number of female enumerators than male¹⁰⁶.

Knowledge of individuals within the study community allowed enumerators to validate information, both during and after the interview¹⁰⁷. Such a technique begs the question "What about those interviews when the enumerator did not know any contradictory information?" There can be no guarantees when collecting demographic data, and this supplementary information from enumerators can only serve to improve the quality of the data used in the analysis. Enumerators were also asked to indicate whether the interview had been "good", "fair" or "poor", on the understanding that this did not reflect on their own work¹⁰⁸. In subsequent analyses only questionnaires ranked "good" or "fair" were used. In addition, by coding the data entry according to enumerator, it is also possible to examine the data by enumerator¹⁰⁹.

¹⁰³ Given this feature of data collection from a Maasai population, note is made of the implications for data collection using an instrument such as the DHS and "anonymous" enumerators, albeit of the same ethnic group.

¹⁰⁴ See, for example, Scott and Singh (1981)

¹⁰⁵ Becker *et al's* (1995) study of the effect of the sex of interviewers on the quality of survey data found only weak evidence to mitigate against the use of male interviewers in Nigeria.

¹⁰⁶ On one occasion, a suitable woman was identified for employment, but her husband refused his permission for her to work on the project. The two women who were employed as enumerators were both young and unmarried, which may have had implications for data quality.

¹⁰⁷ A limitation of the SRDS was that there was no systematic recording of this information. With hindsight, this should have been recorded.

¹⁰⁸ Of 1,555 household questionnaires, 80.5% were rated as "good", 19.2% as "fair" and 0.3% as "poor". It is interesting to note that those enumerators I regarded as the best were more likely to record an interview as "fair" whereas less diligent enumerators recorded all interviews as "Good".

¹⁰⁹ See Section 9.4.2.3 for an example of this approach.

In order to maintain high quality work by the enumerators, a bonus payment system was used. It was made clear at the beginning of the work that in addition to the basic salary a discretionary bonus would be paid to all enumerators who worked well during the survey. This system worked well and appeared to maintain a high quality of work throughout the study.

4.5 Role of the researcher

I was present at each of the study sites throughout the data collection period. Firstly, for transportation of the enumerators between *enkang*; secondly, in order to be present during the enumeration in order to answer questions (both from enumerators and respondents), and in order to act as an external data quality check¹¹⁰; thirdly, and most importantly, prolonged residence during the data collection allows for a range of data collection, not necessarily connected to the survey. Geest (1998) suggests four "anthropological" activities that can be used to improve the quality of demographic fieldwork: conversation, observation, participation, and introspection. Each of these approaches was used (consciously and unconsciously) throughout the fieldwork period in order to complement and strengthen the SRDS data.

This study does not list participant observation among its fieldwork techniques, and does not claim to have collected ethnographic information systematically. The movement between three major study sites during the fieldwork precluded prolonged residence in any one locale. Further, I am not a trained anthropologist and the aim of the study is not another ethnography of the Maasai. Using Spradley's (1980) classification of "types" of participant observation, my involvement could be described as "passive" participant observation. What is of interest here is what can be gained by a demographic study from the presence of the researcher, beyond a mere "policing" of the data collection¹¹¹. Does the fact that the researcher lives in close proximity to the enumerators and study population add to the quality of the data or the analysis? What are the implications for hypothesis generation and testing? The presence of the researcher throughout the data collection is important for motivating enumerators, and reinforces the importance of the data. Further, the researcher begins to comprehend some of the difficulties involved in collecting the data. When data analysis begins, such issues can provide an important supplementary source of information on the data collected. For example, it is only by witnessing how difficult it is for an enumerator to ask a woman about the number of deceased children, that issues of quality of mortality data can be comprehended.

Many of the advantages of being present during the data collection are intangible, and cannot be systematically incorporated into analyses. However, it does provide an opportunity to validate ethnographic reports. For example, being present at the marriage ceremony of a young *murrān* contradicted the general ethnographic statement that it was not possible for a *murrān* to marry. This event allowed probing about the motivations and pressures to marry, substantiating and adding to written ethnographic knowledge. Language barriers become paramount and doubtless fluency in Maa would have greatly improved my understanding and interaction, although it should be noted

¹¹⁰ For example, each questionnaire could only be considered as "complete" once the researcher had signed it.

¹¹¹ Although the importance of this should not be underestimated. In terms of data quality, researcher presence at least guarantees that the data were collected and not fabricated or extrapolated. The checking of every questionnaire prior to its being completed meant that obvious inconsistencies such as total number of births could be corrected before leaving the household. Such procedures represent nothing more than common sense.

that I spoke KiSwahili with reasonable competence. Other "intangible" benefits include the development of hypotheses and ideas that, based purely on ethnographies and a data set, would not have arisen. Perhaps the clearest example of this for the present study is that relating land tenure to fertility in Koyaki Group Ranch (Kenya) (Chapter Ten).

An important use of ethnographies for the demographer studying a population different to their own, is information on personal conduct. Perhaps the most useful information for the female field demographer who is going to work with the Maasai, is the description by von Mitzlaff of her own fieldwork experience.

"There was no getting rid of my bwana. Wherever I went, the first thing that people registered was the factor that there was no man with me. Only after I had convinced everybody that I moved around independently, but with the approval of a man (father, husband), was I accepted, albeit with some reservations...The older women hardly even bothered to mask their lack of understanding and disapproval of the fact that I had no children, and the young women found it very amusing that I did not have any milk in my breasts...female ethnologists who have children at least partly fulfil the role expectations of their environment. Childless field workers often avoid the problem by pretending to have children at home...Position as a guest and a white person afforded me privileges...from which I should normally have been excluded as a woman, such as rules concerning eating and language" (1994: 14).

Prior to fieldwork this description provided the most informative information about personal conduct among the Maasai¹¹². Being female was useful in that it allowed access to female domains (*enkaji*) relatively easily, and I could be among women during their daily activities. Whenever language permitted, it was therefore possible to join in (in a limited fashion) with the women. For example, the early evening is the most "sociable" time in a Maasai context, and as a female I could sit inside a woman's *enkaji* and listen to people¹¹³.

4.6 Respondent

The majority of the data were collected from women¹¹⁴, mainly because women are more likely to be present at the *enkang* during the day. However, if the head of the *olmarei* were present, his permission would always be sought prior to beginning the interview¹¹⁵. It became apparent that even if the head of the *olmarei* was present, then he would generally suggest that we asked his wives for information¹¹⁶.

¹¹² Further useful text was Spencer's, especially referring to principles of meat allocation (1988:256).

¹¹³ Although this frequently meant being asked lots of questions, it made my asking of questions more acceptable.

¹¹⁴ No systematic recording of the identity of the respondent was incorporated into the questionnaire. This is a limitation of the data and something I would change in future work.

¹¹⁵ Jacob describes this scenario comprehensively. "Because of the socially dominant position of adult men in Maasai society...all approaches to matters affecting a family must be made through the male head of the family... in no case is it proper or respectable to approach a women directly on matters of general importance to a family...[to] gather data about some particular Maasai woman's childbirth history or child-rearing practices. If you approached the woman without consulting or explaining to the husband (or father) what you wanted to know and why, or without seeking permission to approach his wife or daughter, the woman herself would speak only in the most general and vague terms, or more likely would refuse to answer your direct questions, or simply lie to you"...To avoid such conventions would be to show disrespect and give most serious offence to the adult men" (1972:342)

¹¹⁶ Given the focus of the SRDS on issues concerning children and relationships, it is likely that women were able to provide more accurate information than men were. Further, women were more likely to be compliant and follow enumerator's instructions.

The timing of the enumeration was important, given the daily routine of a Maasai household. For example, early morning and dusk are inappropriate times to visit because women are very preoccupied with milking. It was rare to find just one woman in an *enkang*, and it was often useful to have two or more women answering questions whilst they worked together. Firstly, it was possible to verify information. Secondly, it was occasionally useful to watch the interactions (spoken and unspoken) between the two women in order to validate the respondent's information.

4.7 Respondent-enumerator-researcher interactions

In an enumeration there are three interactions at any one point in time, each of which will have an impact on the quality of the information collected. The elements of these relationships are highlighted in Figure 4.1. It is impossible to state categorically the influence of each of the variables, but attention to each of these factors is important in conducting an enumeration.

4.8 Timetable

Seasonal events can have an important effect on the collection of demographic data among the Maasai. For example, during the rainy season women are very busy building their houses, which tend to disintegrate after a couple of days of rain. It proved virtually impossible to collect demographic data when it was raining¹¹⁷, not least because there was nowhere dry (apart from the vehicle) for people to sit and answer questions. In addition, when it is raining at dawn, Maasai tend not to begin their daily work until a time much later than normal. They describe such days as being much shorter and more difficult to complete everything that needs to be done. The degree of the climatic seasonality must also be taken into account. An exceptionally dry season will result in far more transhumance than a moderately dry year. The issue then becomes one of being unable to locate households. Fieldwork took place between September 1997 and November 1998.

4.9 Enumerator Recruitment and Training

Upon arrival at each major study site, I advertised by word of mouth that I was looking for enumerators. Individuals who approached me were asked to complete a written test in order to ascertain basic numeracy and literacy skills. Following the test, a selection of individuals would be asked to attend (paid) training, after which the final selection of enumerators was made. The delay between identification and final recruitment allowed me time to ask informal questions about potential enumerators, in order to highlight problems not apparent initially¹¹⁸. In addition, given that the enumeration involved a degree of teamwork, it was important to make sure that the enumerators functioned well together.

Training¹¹⁹ was conducted by myself, and usually took 5-6 days to complete. The training period provided an essential feedback from the enumerators (who all lived locally) on issues surrounding data collection. The base maps of individual *enkang*

¹¹⁷ The El Nino weather phenomenon occurred during the SRDS, with major implications for the SRDS timetable.

¹¹⁸ For example, an extremely competent potential enumerator was not employed after it became apparent that he had a drink problem and violent temper and would be considered a bad choice by the rest of the community. On another occasion, it was revealed that one of the enumerators had a conviction for murder. The researcher discovered that (contrary to initial belief) because the individual concerned had killed a non-Maasai in a position of government authority, there were no implications for the acceptability of the enumerator by the community.

¹¹⁹ See Appendix 3 for a copy of the training manual.

were drawn up by enumerators, as were the local event calendars for age estimation¹²⁰. Two elements concluded the training of enumerators: practice interviews¹²¹ and "spot the mistake" questionnaires.

4.10 Data entry

Prior to fieldwork, a data entry programme was designed for use with the hierarchical database Access Version 2. This included filters and built-in consistency checks to minimise subsequent data cleaning. Data entry was begun during the fieldwork and completed after return to the UK. The only "free-answer" question was that relating to occupation (both primary and secondary). All other responses were pre-coded prior to data entry.

4.11 Discussion

Without extensive reference to ethnographies prior to designing the research instrument or to conducting the fieldwork, the SRDS data would have been of a much poorer quality. Ethnographies provide a wealth of detailed, contextual information of relevance to the field demographer, from information on personal conduct to vernacular terms. Ethnographies contain detailed information that, at first glance, would not appear to be of relevance to the person trying to collect demographic information. However, what ethnographies do reveal is that there are many indirect indicators of an individual's "demography", which can enhance both fieldwork and interpretation (Table 4.1).

Table 4.1: Examples of indirect demographic indicators used during SRDS

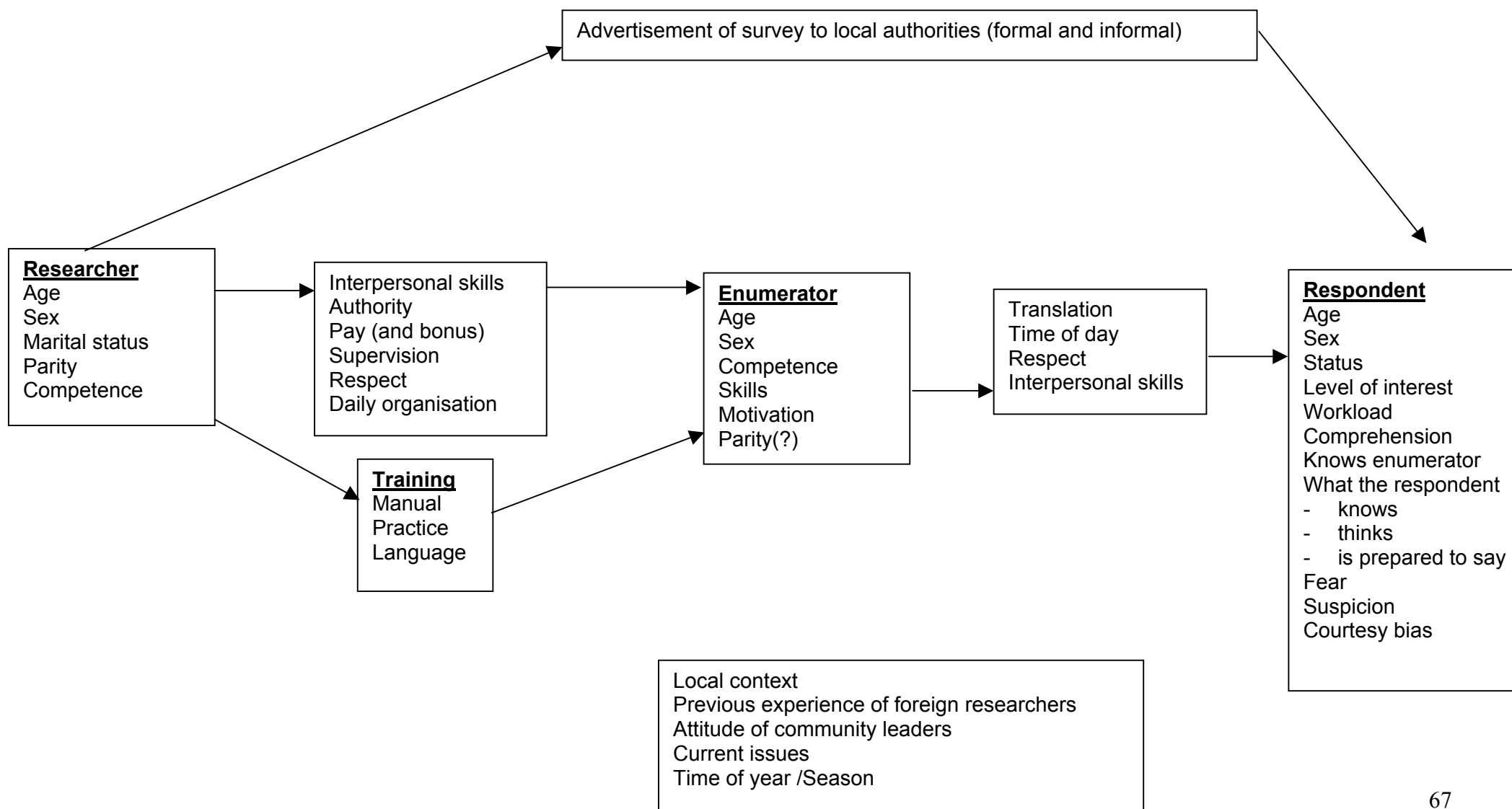
Indicator	Significance
Female jewellery	Beaded and metal jewellery tend to follow broad patterns which approximate to events such as marriage, age of children etc.
Number of huts	Each married woman will have her own hut, which can be used as a cross-check on the number of married or widowed women
Finger signs	Sign language can be used to indicate numbers, especially in situations where an individual does not want to say something out loud e.g.: number of dead children
Unshaven mother/baby head	A baby with an unshaved head is approximately less than 3 months old. A woman with an unshaved head has given birth to a baby (still alive) in the previous 3 months
Broad female leather belt	Worn after giving birth in order to flatten stomach
Male jewellery	Men do not make jewellery for themselves; jewellery worn by a man tends to be made by an extra-marital sexual partner. It is rare to find a Maasai man with no adornment.

Needless to say, Maasai enumerators know immediately how to interpret these indicators subconsciously. However, during training the use of these indicators as validation of responses was highlighted. For example, "gender, age-set, social status, progress through the life cycle...are all marked and displayed with personal ornament...These distinctions are blatant and obvious to Maasai" (Klumpp and Kratz, 1993:208). As Waller succinctly puts it, "beads talk" (1993:296).

¹²⁰ Other local informants also contributed to event calendar construction including chiefs, schoolteachers, and administrators, health personnel and, women's leaders. New event calendars were developed for each study site. See Appendix 4 for an example.

¹²¹ Practice interviews were conducted in households that were subsequently not included in the SRDS.

Figure 4.1: Respondent-enumerator-researcher interactions



Chapter Five Population structure

Issues relating to age structure are described first, followed by sex composition, together with a discussion of the quality of these data. The contribution of ethnographies to this element of the SRDS is highlighted.

5.1 Age Structure

The difficulties of age estimation in societies with no knowledge of age in a western calendar sense have concerned demographers for almost as long as demography has existed as an academic discipline (van de Walle, 1968). Indeed, Shryock and Siegel suggest, "errors in the reporting of age have probably been examined more intensively than the reporting of errors for any other question" (1976:115). Despite the fundamental need for populations to be correctly aged, the collection of age data in a non-literate, non-western context remains one of the most intractable problems in demographic data collection.

5.1.1 Methodology for collecting age data

Ethnographic evidence combined with reports from researchers who had worked among the Maasai (Llewellyn-Davies, Pers. Comm.) implied very low levels of age knowledge. The use of formal documentation (ID cards, school record cards) was considered inappropriate in a Maasai context, particularly in Tanzania where levels of formal record keeping tend to be much lower than Kenya. In addition, the reliability of the documents could not be guaranteed¹²². Age event calendars¹²³ were therefore used for age estimation. It is recognised, however, that the usefulness of an event calendar for ageing a population is directly proportional to the number of events contained within the event calendar. With increasing distance in time, the event calendars for each location became increasingly deficient. Because of low levels of integration of the study population within a national or even a regional framework, new event calendars had to be developed for each village visited. Very localised events had to be included in the calendars, reflecting very low levels of knowledge of regional or national events.

5.1.2 The use of age sets (*olaji*)¹²⁴

It has long been recognised (Blacker, 1965) that ignorance of the western calendar for a population does not necessarily mean that age *per se* for the study population is irrelevant. Following work on the Kikuyu ethnic group of Central Region, Kenya, Blacker succinctly states, "No person in possession of full mental faculties could ever forget his or her age grade" (1965:126). In Maasai society, status for males is implicitly associated with membership of an age set (*olaji*). The age set system proved to be an invaluable tool in attempting to age individuals with no knowledge of the western calendar. Even though it is only males who attain membership of an age set, females were able to state which age set had been dominant when they were born, or when they themselves were circumcised, allowing for indirect estimation of age. Pre-circumcision girls do participate in male circumcision ceremonies by dancing with the male circumcision group; the girls would normally be aged between 12 and 16. It was

¹²² Anecdotal evidence from Maasai in Narok described the *ad hoc* approach of local administrators to the imputation of date of birth on an individual's ID Card. Ages were often assigned arbitrarily, evident from a subjective eye comparison of the individual and their assigned "age".

¹²³ Appendix 4.

¹²⁴ See Chapter Three for a more detailed description of Maasai age-set formation

therefore possible to ask women which age set they had danced with in order to estimate their age¹²⁵.

If an individual's age set is known, together with the date of circumcision for that age set and the average age at circumcision, then it was possible to estimate the individual's age in completed years with a reasonable degree of confidence. In each location for the SRDS, tables of age sets were compiled, with conversion charts to estimate year of birth¹²⁶. Undoubtedly there were errors in ageing individuals using this method, as a male could be aged between his mid-teens and early twenties, depending upon individual circumstance. Efforts were made to narrow the potential error by probing for whether an individual was "small" or "big" for his age set. That the enumerators were Maasai was undoubtedly fundamental to the success of using age-sets in order to estimate an individual's age¹²⁷.

5.1.3 SRDS Reported Age Data

Overall, the shape of the age structure is of a very youthful population, with 53.1% of the population aged below 15 years (Graph 5.1). Up to approximately age 20, there is distinct heaping on even numbers, for both males and females. Above age 25, the age heaping becomes more pronounced on ages ending in 0 and 5 years. Of particular concern is the deficit of one-year-olds in both sexes, a deficit that is more marked in Tanzania (Graph 5.2).

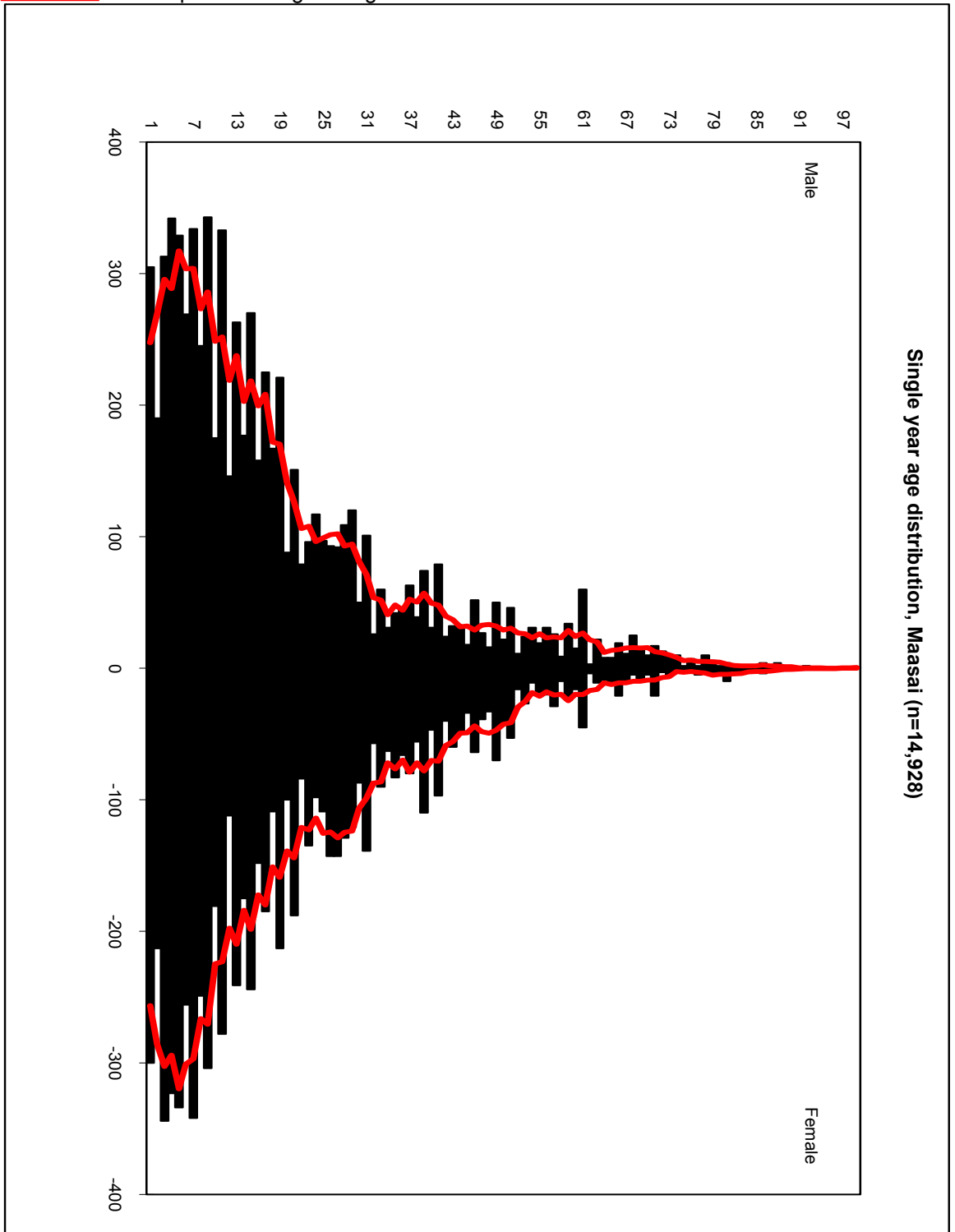
¹²⁵ This technique was used by the anthropologist Paul Spencer in his estimation of age. For example, "Telelia indicates that she was five or six years old when the *eunoto* festival of the Tareto age-set was held in 1918-1919. This would have placed her birth around 1913 and she would have been 63 years old by 1976." (1993:173)

¹²⁶ In terms of relevance of ethnographies to demographic data collection, the accurate dating of age sets was perhaps the single most useful element of ethnographies. Most ethnographies of the Maasai provide detailed tables of each named age-set, together with their approximate year of creation (Spencer, 1998:96 Mol, 1996:14, Berntsen, 1979:73).

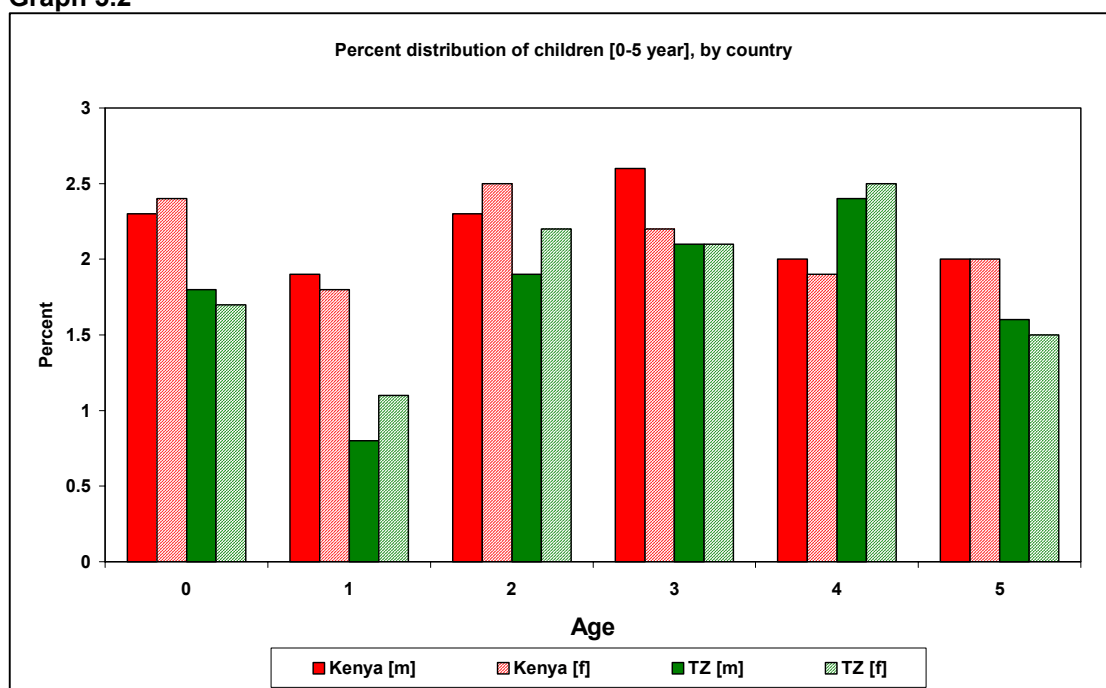
¹²⁷ With hindsight, the SRDS should have recorded a man's reported age-set alongside the reported age as an internal consistency check. Any future survey of Maasai that requires age information should collect this data.

Graph 5.1

3 point moving average



Graph 5.2



Source: SRDS data

This has serious implications for the calculation of age-specific mortality and recent fertility levels. Does the reported pattern represent systematic under-reporting of this age group, or shifting into adjacent age groups? There did not appear to be any reluctance on the part of respondents to refer to living children aged one year. Indeed, given that by this age Maasai children have been named, then if it were systematic under-reporting, one would expect underreporting to affect those children who have yet to be named.

Was there some exceptional mortality crisis (for example, drought, disease, or food shortage) that affected this age group? Could it have been some event that lowered conception rates, or increased foetal wastage, or increased infant mortality? In order to effect such a deficit of one-year-olds the mortality crisis would have had to have been extremely widespread and prolonged in order to affect all of the study sites. Geographically, the sites are distant and situated in very different environmental contexts (cool and wet volcanic upland of Ngorongoro compared to the arid lowlands of Magadi). Table 5.1 briefly summarises the timing of any possible mortality crisis that would have affected both countries.

Table 5.1: Timing of crises necessary to explain one-year-old deficit

	Kenya	Tanzania
Enumeration	Oct 97 - Dec 97	Feb 98 - March 98
Birth	Oct 95 - Dec 96	Feb 96 - Mar 97
Conception	Jan 95 - Mar 96	June 95 - July 96

The event calendars did not contain reference to any event occurring at these times that could have potentially had such a large impact. In addition, available precipitation records¹²⁸ were examined for evidence of unusually dry or wet conditions, but none were evident. Given the preference for even numbers that is apparent at older ages, then it is possible that one-year-old deficit does represent significant age shifting, most probably upwards. This result was unanticipated during the SRDS fieldwork, and

¹²⁸ From Suzy Serneels (Catholic University of Louvain, Belgium), collected at Narok Weather Station.

therefore specific mechanisms to try to prevent this shifting (either by the enumerator or the respondent) were not employed¹²⁹.

When the age-sex data are decomposed by enumerator, and enumerators were ranked according to a score using the Whipple Index, those enumerators who score "Highly Accurate" have very low levels of deficits of one-year-olds in their data. The implication is therefore that the deficit of one-year-olds is a function of enumerator skills rather than some other exogenous factor. There can be no single standard with which to accurately judge enumerator quality prior to conducting a survey. For example, educational attainment is not necessarily reflective of an individual's capability to collect accurate age data.

5.2 Sex ratio

The SRDS recorded slightly more females than males, and the excess was more marked in Tanzania than Kenya (Table 5.2). Assuming accurate age reporting, an imbalance in the sex ratio of a population at a particular age may be accounted for in one of three ways: gender-specific mortality, gender-specific out-migration or sex-selective reporting.

Table 5.2: Sex ratio, SRDS study sites

	Sex ratio¹³⁰
Kenya	99.0
Koyaki GR (n=2,401)	94.5
Olkirmatian GR (n=2,452)	102.6
Shompole GR (n=1,740)	101.9
Tanzania	92.6
Endulen-Esere (n=4,420)	91.3
Irkeepus (n=2,378)	90.9
Meshilli (n=1,537)	92.1
All	95.4

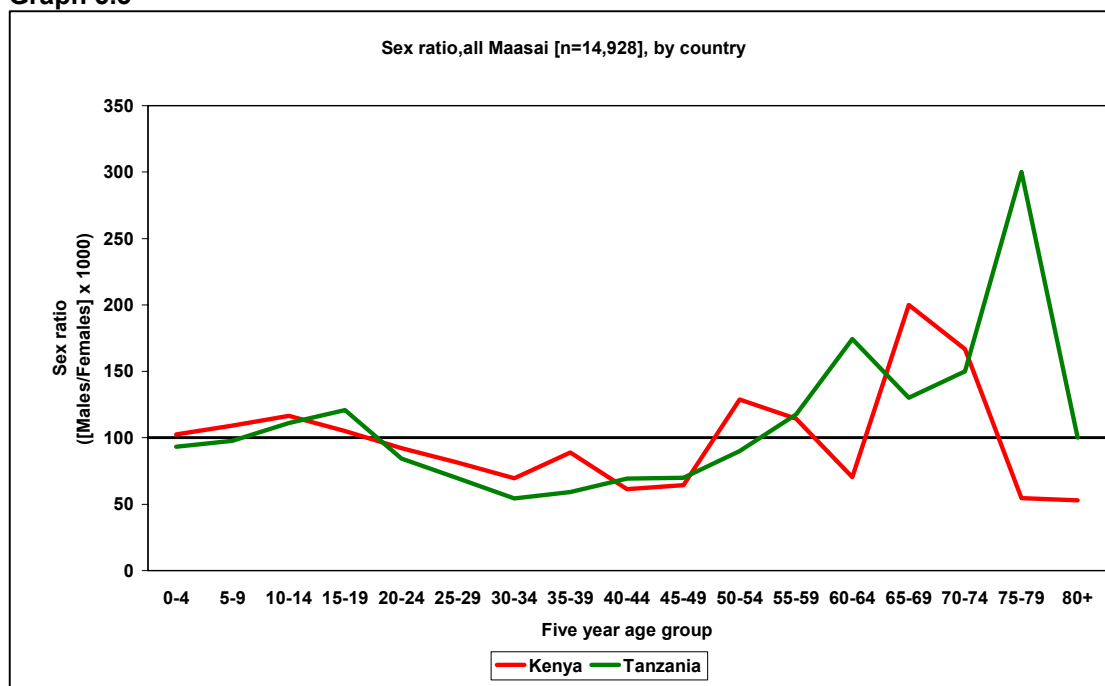
Up to age 49 the sex ratios for Kenya and Tanzania are similar, implying that factors contributing to imbalance in the sex ratio are constant for the two countries. Between ages 20 and 49 there is a marked excess of females over males in both Kenya and Tanzania.

A combination of reasons may explain this pattern. Firstly, the shifting of male ages upwards, out of the 20-49 age group may be occurring. This is possible, as Maasai society is one in which age confers status. However, given the use of age-sets in order to place an adult male's age, such a large-scale shifting upwards of male ages would be incongruous. Secondly, it may also be due in part to the non-inclusion of males as a result of their participation in *murrani* activities. However, this would only affect the younger men in this age group and every effort was made to ensure that *murrani* were included in the *de jure* household. Thirdly, men might be excluded from the *de jure* household because of gender differences in transhumance. This would seem unlikely, as, although men tend to have higher participation rates in transhumance, there is no marked increase in rates of transhumance for the 20-49 age group. Fourthly, the deficit might represent outmigration of Maasai men out of the traditional *de jure* household, for example to urban areas. Reasons for the under-enumeration of this age group are considered in more detail in Section 5.4.

¹²⁹ With hindsight, this is perhaps the best argument to attempt the most basic data entry during fieldwork in order to identify such potential problems, and attempt to prevent further problems in subsequent interviews. However, the lack of electricity during the SRDS precluded any data entry whilst in the field.

¹³⁰ Sex ratio = [Number of males/Number of females] x 100

Graph 5.3



Source: SRDS Data

5.3 Comparison with extant age data for the Maasai

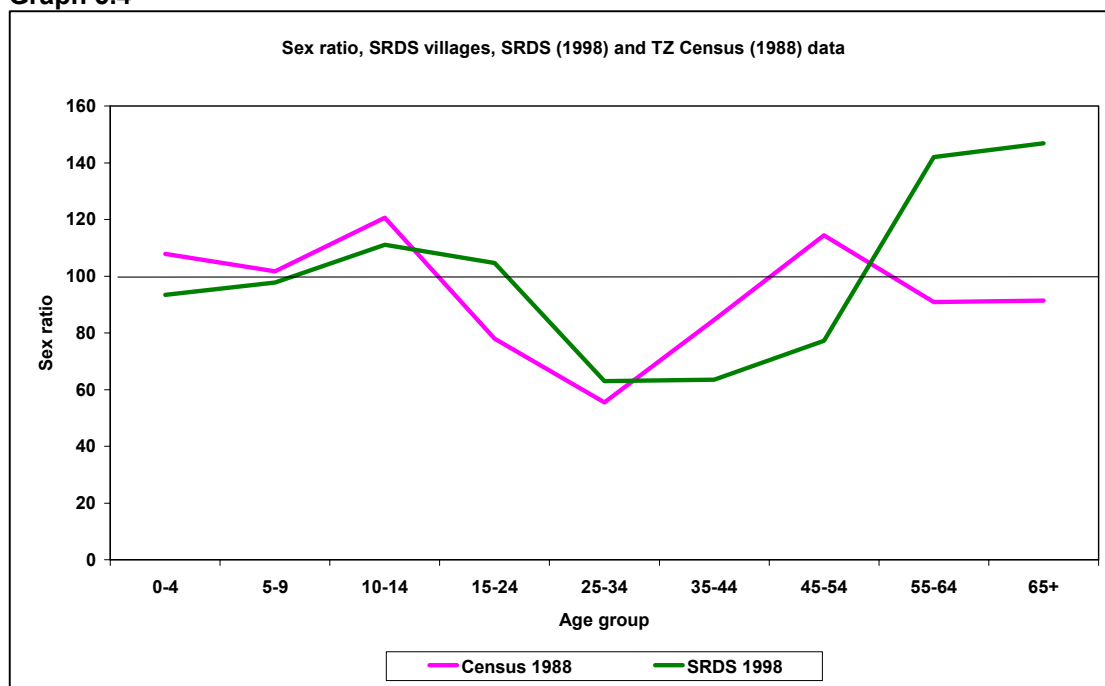
The age data collected in the SRDS were as accurate as possible, given the limitations of event calendar and age set methods. Further, the age data are probably the most accurate ever collected for the Maasai on such a large scale. Four of the SRDS enumerators (3 in Kenya and 1 in Tanzania) had been employed to collect census information. Anecdotal evidence from these enumerators, who carried out census enumeration in predominantly Maasai areas, suggests that such attention to accurate age reporting for Maasai was not paramount in census data collection. Indeed, their surprise at the amount of time spent in order to collect individual age data was self-evident.

The most recent Kenyan census (1989) produces district-level¹³¹ age-sex distributions in single years, allowing derivation of Whipple's Index. For Narok and Kajiado the indices were 192 and 168, respectively, representing "Very Rough" on the United Nations' scale. The SRDS data indicate less age heaping, with a Whipple's Index of 134 or "Rough". The lack of single-year published data for the most recent Tanzanian census (at a scale below the national level) precludes any comparison with the SRDS data.

The Tanzanian Census (1988) publishes age and sex distributions at the village level. It was therefore possible to examine the variation in sex ratio by age group for a population directly comparable to that of the SRDS (Graph 5.4). The marked deficit of males aged between 15 and 45 is very similar to that recorded in the SRDS.

¹³¹ The published Kenyan census data does not allow for disaggregation to a smaller scale than that of the district. It is acknowledged that the populations covered by the census and the SRDS are not strictly comparable, as the SRDS involved only Maasai whereas the census included many different ethnic groups. However, it was expected that the census returns would produce lower levels of age heaping, as the census district-level data included urban areas where formal education participation is much higher than the study sites.

Graph 5.4



If the deficit were caused by under-enumeration of males as a result of transhumance, then such a similar pattern would not be expected. The Tanzanian census was carried out in August¹³² and the SRDS was carried out February-April¹³³.

Table 5.3: Comparison of timing of 1988 Tanzanian census and SRDS

Factor	Tanzanian Census (1988)	SRDS (1998)
Month(s) of enumeration	August	February-April
Season	Hot and dry	Long rains
Transhumance	Yes	No
Type of census	<i>De facto</i>	<i>De jure</i>

Given strong seasonality in both the savanna climate and the practice of transhumance, the expectation would be to see different age sex ratios between the two data sources. The strong similarity between the two data sets suggests that the under-enumeration of men is caused by some other underlying factor.

5.4 Where have the men gone?

It was difficult for a married man to be excluded from the SRDS: his wife or wives would be present to report his membership of the *olmarei*. The assumption must therefore be made that the majority of the missing men are not married to women resident in the study areas. There are therefore two options for the relative under-enumeration of men aged 20-49. Either they are unmarried and currently resident in the area, but were not reported. Or, they are living permanently elsewhere and are therefore no longer considered to be part of the *olmarei*.

In order to explore these "missing men", exploratory research using free-listing (n=27) was carried out in Endulen (Tanzania). Respondents were asked to list all of the reasons they could think of for a man to leave his father's *enkang*. Unsurprisingly, most of the responses were explicitly linked to pastoralism (for example, to sell or herd cattle. There was only one reference to "job" out of a total of 192 free-list replies. There are

¹³² Middle of the long dry season when transhumance might be necessary.

¹³³ The beginning and middle of the long rainy season, combined with the El Niño weather event.

two possibilities to be drawn from this small-scale free-listing exercise. Either, the deficit of men aged 20-49 is an artefact of data collection, and they were missed out from the *de jure* enumeration. Or, men who leave the traditional agro-pastoral Maasai lifestyle leave their natal home and are no longer referred to by remaining family members. It is possible that the deficit is due to some combination of the two.

Data on the current residence¹³⁴ of adult siblings¹³⁵ were collected from all individuals, and the results are shown in Table 5.4. For all age groups, less than 10 per cent of adult siblings are reported as resident outside the district of enumeration, with little difference in percentages between brothers and sisters.

Table 5.4: Percentage of adult siblings by survival and residence status by five-year age group of respondent¹³⁶

	Adult siblings alive				Dead adult siblings	
	In district		Outside district		Male	Female
	Male	Female	Male	Female		
15-19	42	54	1	2	1	1
20-24	43	51	2	2	1	1
25-29	44	50	1	1	1	1
30-34	44	50	2	2	2	1
35-39	46	45	2	3	2	2
40-44	44	46	2	3	3	2
45-49	45	45	2	3	3	2
50-54	44	41	3	3	5	4

The number of male relative to female adult siblings, as a percentage of total reported siblings, is considerably lower at younger ages. This could reflect the fact that, on average, girls are circumcised earlier than boys, and therefore are considered “adult” earlier than boys. Or, it could represent the under-reporting of younger males due to outmigration from the study sites. The following section briefly explores the evidence for the permanent outmigration of adult Maasai males.

The only circumstantial data to support the suggestion that there is outmigration of Maasai males to urban areas is that provided by the Kenya Census. The sex ratio for Maasai living in Nairobi has been very high for the last two censuses, at 270 and 247 males per 100 females in 1979 and 1989, respectively. This implies sex-selective migration of Maasai males relative to Maasai females. Comparable data for Tanzania are unavailable. None of the ethnographies hinted at such large-scale outmigration of Maasai men. The wide age range for the “missing men”, suggests that the outmigration has been occurring for several years. These men have not married Maasai women within the study areas, otherwise they would have been recorded by the SDRS.

A traditional Maasai system, characterised by a patriarch in control of his *olmarei*, involves some degree of antagonism between father and son(s). A father will tend to decide on matters relating to livestock (trading and herd management) and family (for example, marriage of his children), and his sons only become truly independent once he has died. Anecdotal evidence suggests that in recent years, expanding opportunities for

¹³⁴ Residence defined at the district level in both Kenya and Tanzania. Thus, a sibling reported as “alive” could be resident either inside or outside the respondent’s district of residence.

¹³⁵ A sibling who had been circumcised (although not necessarily married)

¹³⁶ Based on reports by 6,281 respondents on a total of 29,480 siblings. Results weighted by the inverse size of the total sibling group.

Maasai men (especially those with an education) outside of a "traditional" Maasai lifestyle have become increasingly accessible and attractive. For example, an educated son (particularly if he is a younger son with several older male siblings) might become increasingly frustrated with having to "wait his turn" for independence. Given the expanding opportunities in urban areas for paid employment, it is possible that such men move away permanently. Spear, for example, suggests, "education and work elsewhere supplants the socialization of the *murrān*" (1993:14). There is much anecdotal evidence of Maasai men living in peri-urban areas e.g.: Ongata Rongai outside Nairobi (Kenya) married to non-Maasai wives¹³⁷.

¹³⁷ Such marriages are termed *nusu-nusu* (KiSwahili = half-half).

Chapter Six Nuptiality

Five issues relating to nuptiality are considered in this chapter. Firstly, this study is placed within the wider context of nuptiality studies by anthropologists and demographers. Secondly, using a combination of reported ethnography and fieldwork experience, norms and practices of marriage among the Maasai are described. Then, the implications of the Maasai context for nuptiality data collection are examined. Fourthly, using the SRDS data, selected measures of nuptiality are presented. Lastly, in order to highlight variations in nuptiality among the Maasai one particular aspect, polygyny, is examined in greater detail. Specific reference is made to variations in polygyny by production system, household composition and education. This section will not only document “traditional” demographic measures of nuptiality for the Maasai, but will also highlight current changes in nuptiality among the Maasai, based on hypotheses generated as a result of fieldwork.

6.1 Anthropologists and demographers and nuptiality

The study of nuptiality represents perhaps one of the clearest examples of the tensions between anthropology and demography. If an anthropologist were to study nuptiality then the work would probably include reference to kinship, residence, transfer of resources, inheritance, descent, alliance and divorce. On the other hand, a demographer would probably include “cohabitation, consummation, time in union, post-partum abstinence... and terminal abstinence” (Bledsoe and Pison, 1994:9) in their list of suitable study topics. Because of the demographer’s interest in the proximate influence of marriage on childbearing, the focus is often on an individual’s entry into a first union, taken as a proxy for exposure to childbearing.

Whilst necessarily reductive, this contrast of the two disciplines suggests a bleak future for the study of nuptiality by both demographers and anthropologists. Anthropologists tend to view demographic work on nuptiality as blinkered and fettered by a research frame that demands statistical significance, summed up by Bledsoe and Pison as an attempt “to boil down behavioural phenomena into discrete variables (1994:8). Demographers, on the other hand, reduce anthropologist’s work on nuptiality to colourful, detailed summaries of very small groups of people, with little latitude for generalisation. Van de Walle and Meekers (1994) neatly summarise the apparent dichotomy: “Marriage is a central concern of anthropologists, because it gives them clues to the organisation of the whole social system. Demographers have generally steered clear of the topic because of its complexity and their concern for comparability between surveys” (1994:70).

The primacy of nationally representative studies such as the WFS and DHS are perhaps the best example of anthropological dissatisfaction with demographic studies of nuptiality. For example, the DHS (1993) in Kenya used standardised nuptiality questions¹³⁸ in a country with 43 officially recognised ethnic groups, each with their own rules, norms and exceptions relating to union. It is not hard to understand anthropologists’ misgivings about demographer’s work on nuptiality when the questions are reviewed. But surveys such as the WFS and DHS do not purport to do anything

¹³⁸ “Have you ever been married or lived with a man?”; “Are you now married or living with a man, or are you now widowed, divorced, or no longer living together?”; “Does your husband/partner usually live with you or does he usually stay somewhere else?”; “Where does he usually stay?”; “Does your husband/partner have any other wives besides yourself?”; “How many wives/ partners does he have?”; “Have you been married or lived with a man only once or more than once?”; “In what month and year did you start living with your (first) husband/partner?”; “How old were you when you started living with him?”

other than provide representative data at the national scale. Indeed, it should be remembered that the primary goal of the WFS was to analyse fertility, and as such, the focus in the questionnaires was on cohabitation as a proxy for exposure to the risk of childbearing. Ethnographic data sources such as that by Parkin and Nyamwaya (1987) provide far more detailed accounts of the forms and causes of marriage than surveys. However, as van de Walle comments “the comparative insignificance of childbearing in the eyes of most anthropologists [Parkin and Nyamwaya] is obvious” (1993:118).

Despite the seemingly insurmountable differences in strategies and research questions of anthropologists and demographers, there are many examples of successful marriage between the two. Meekers illustrates how a formal survey instrument (1980-81 Côte d’Ivoire Fertility Survey) can obtain demographic results “that are consistent with the ethnographic literature on marriage customs” (1992:73). The Ivorian Fertility Survey recognised the plethora of marriage types within the country, and asked three separate questions on consummation, cohabitation and marriage ceremony in order to represent better the “process” nature of marriage in Côte d’Ivoire. It should be noted that the Côte d’Ivoire Survey was a conspicuous exception to the WFS house-style.

This study used a standard demographic tool for collecting data on nuptiality, the questionnaire. However, the questions were framed in order to be relevant to the Maasai context. Subsequent analyses of the data develop hypotheses and questions based on issues raised during fieldwork.

6.2 Marriage

Bledsoe and Pison (1994) draw attention to the fact that the category of “marriage” can represent one of two “cultural notions - our own, or those of the people whose lives we study” (1994:9). The result of either approach is inevitably flawed, either through the introduction of “ethnocentric assumptions” or by the preclusion of cross-cultural comparability. Cross-cultural comparability was not the aim of this study. Nor was it the intention to simply apply a western definition of marriage to the Maasai context. Therefore, an important starting point in designing questions on nuptiality was a study of the reported ethnographies of the Maasai.

The following description of marriage within the Maasai context is not meant to be an exhaustive examination. Rather, it aims to highlight those aspects of marriage that may be considered as being present in most areas, and which are pertinent for this study¹³⁹. Marriage is normally pre-arranged when the future wife is still a child, and certainly prior to her circumcision that takes place before puberty. Given the potentially long time gap between the initial marriage arrangement and the final ceremony, it is not unusual for circumstances to change, preventing the marriage of the girl to the allotted man. Such a situation is normally reconciled, however, by marriage of the girl to a relative of the intended man. Perhaps the strictest rule relating to marriage partners is that the husband may not be of the same age-set as the wife’s father¹⁴⁰. The internal alliances between alternate age sets make the “ideal wife” the daughter of a man who is two age sets older than the prospective husband.

¹³⁹ For fuller descriptions see: von Mitzlaff (1994), Llewellyn-Davies (1974, 1984, 1993)

¹⁴⁰ Such “quasi incest” (after von Mitzlaff (1994:99)) rules also apply to sexual relationships more generally, and are very strictly observed, with large punishments and fines for individuals that break them

In practical terms, a man can only marry when he is economically secure¹⁴¹ in order that he can establish an independent household. In addition, a man is (at the very earliest) only able to marry once he is a *murran*, and marriage at this young age is unusual¹⁴². Spencer suggests that this model of behaviour “draws attention to the power that is retained by the elders by delaying the marriages of younger men...creating a surplus of marriageable girls as brides for the elders themselves, enhancing their chances of polygyny” (1993:141). The gerontocratic control of marriage, according to Spencer “is so fundamental to their lifestyle and manner of thought that among Maasai it does not require explanation” (*op. cit.*). When the future spouses have been arranged, there are several stages of brideprice negotiation. The marriage is only formalised when the girl has left her natal home to live at her husband’s *enkang* and all of the brideprice has been paid. At any stage, one party may withdraw from the whole proceedings.

There are two circumstances that deviate from the norm described above, which I shall mention briefly. The first situation occurs when a girl leaves her natal home and goes to live with her “husband” before the completion of the brideprice transactions. She may even begin childbearing prior to the final formal marriage ceremony if it takes her “husband” a long time to pay the complete and final brideprice. The second case involves women who never leave their natal home, but remain in order to care for elderly parents. Such a situation normally arises when a household head does not have any surviving adult sons, and wants to nominate the individual who will inherit his herd. The literal translation for such a situation is a “girl of the village”. In this case, the woman may still have children, possibly by several different fathers, and the children belong to her father’s lineage. The woman never marries and upon the death of her father, and depending upon the age of her children, will either become the head of her own household or will become part of a married brother’s or son’s household. It should be noted that both of these cases are relatively rare¹⁴³, but are sanctioned by Maasai norms relating to nuptiality.

6.3 Nuptiality data collection: some considerations

Marriage is traditionally a process rather than an event for Maasai. There are many stages which must (should) take place prior to the marriage being considered as complete, from “booking” the girl to completion of the brideprice to the marriage ceremony, which itself lasts many days. The representation of marriage as a process rather than single event has long been recognised in studies of nuptiality in sub-Saharan Africa (van de Walle, 1968; Ware, 1977; United Nations, 1988b; Meekers, 1992; Bledsoe and Pison, 1994).

For the purposes of this study (like most demographic studies), however, only the point at which the couple begins cohabiting is of interest. It was recognised that the complex nature of marriage among the Maasai, with variations and nuances by location, cannot be reduced into a simple definition. It was for this reason that enumerators were trained to ask specifically about the time when the woman actually came to live at her husband’s *enkang*. It should be noted that this does not necessarily mean that the woman has her own *enkaji*. Indeed, the woman may live with her mother-in-law for up

¹⁴¹ Economic security is normally defined in terms of livestock, although with the diversification of Maasai livelihoods (Chapter 3) livestock is no longer the only measure of a man’s economic self-sufficiency.

¹⁴² Under certain circumstances it is possible that a young man who has only just been circumcised may be forced to marry against his will whilst he is still a *murran*. For example, if the *murran*’s father is very old and does not have any married sons, the father will want to arrange at least one marriage prior to his death.

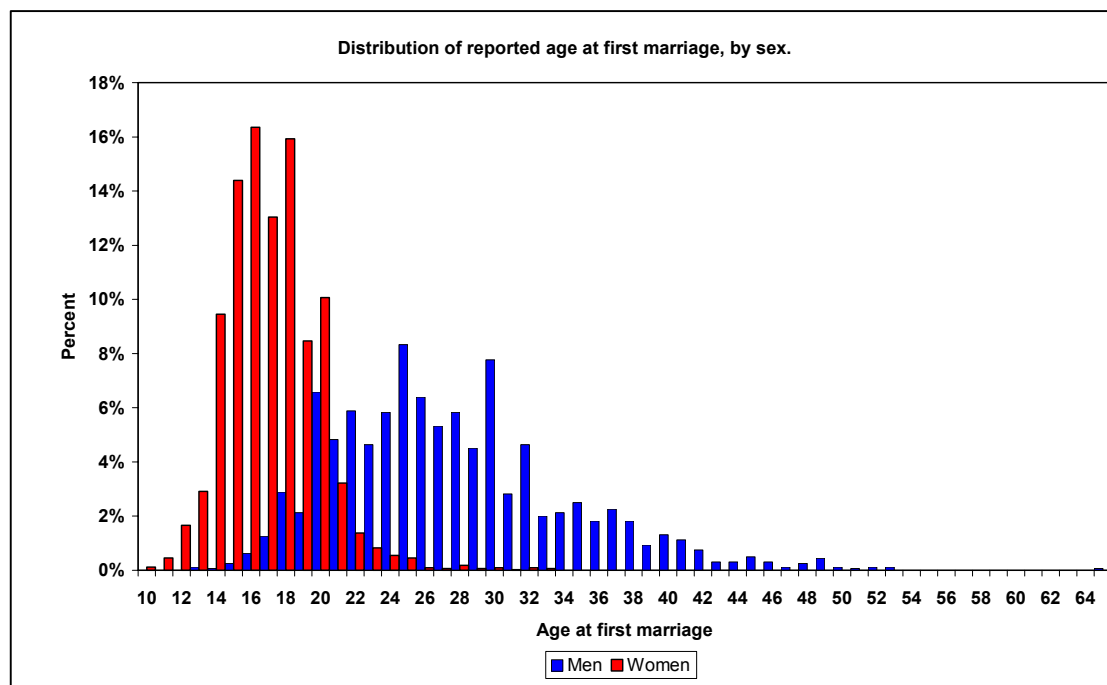
¹⁴³ Out of a total of 1,545 household heads, 3 were never-married females with children (SRDS).

to two years. Women have to build their own houses, a lengthy process that takes a long time for an inexperienced, newly married woman.

Marriage between Maasai and non-Maasai has been widely reported throughout the ethnographic literature. For example, reference to marriage between Maasai and agriculturists (Kikuyu in Kenya and Chagga in Tanzania) appears frequently (Spear and Waller, 1993). That inter-ethnic marriage might have implications for demographic outcomes is acknowledged. However, this study is restricted only to those marriages between Maasai (as defined by the SRDS). Given the purposive selection of the study sites in predominantly Maasai areas, inter-ethnic marriages were rarely recorded during the SRDS. Only 32 non-Maasai wives were recorded out of a total of 2,743 wives¹⁴⁴.

6.4 Quality of nuptiality data

Whilst questioning on current marital status was straightforward, questioning on age at first marriage tended to produce a reaction of derision for both sexes. It was not that the question was shameful¹⁴⁵. Instead, all questions relating to age in completed years were seen as irrelevant. For men, enumerators would often base a man's age at first marriage on his progression through age sets at the time of his marriage, again resulting in high levels of indirect estimation of age at first marriage. This leads to a certain amount of digit preference (Graph 6.1). For women, there is heaping on even-numbered years. For men, digit preference for years ending in 0 or 5 is more prevalent. Both men and women exhibit a bi-modal distribution of reported age at first marriage (16 and 18 years for women; 25 and 30 years for men) which reinforces the observation that reporting of age at first marriage is generally poor.



Graph 6.1
Source: SRDS

¹⁴⁴ It should be noted that these wives were clustered in Endulen village, a regionally important service centre with relatively high levels of non-Maasai resident, relative to other SRDS study sites.

¹⁴⁵ For example, the Fulani regard questions relating to age at first marriage as shameful because of its implicit association with the commencement of sexual relations (Randall, Pers. Comm.)

Table 6.1 presents selected measures of reported age at first marriage by sex and country for all ever-married individuals. For both sexes, the interpolated median age at first marriage is higher in Tanzania relative to Kenya.

Table 6.1: Age at first marriage by country and sex, all ever-married individuals

	Mean	Median ¹⁴⁶	Min	Max.	SMAM	n ¹⁴⁷
Men						
Kenya	25.6	24.3	13	50	26.7	765
Tanzania	29.4	28.2	13	65	30.6	832
Women						
Kenya	17.0	16.1	10	34	17.3	1,432
Tanzania	17.1	17.7	11	32	18.9	1,826

Source: SRDS

In order to overcome some of the data quality problems, SMAMs¹⁴⁸ were calculated by sex and country. Overall, the estimates of age at first marriage derived from the SMAMs are slightly higher than those directly estimated from reported age at first marriage. In terms of inter-country differences, the SMAM implies that for both males and females, age at first marriage is higher in Tanzania relative to Kenya.

Direct and indirect estimates of male age at first marriage indicate a higher age at first marriage in Tanzania, relative to Kenya. For females, the choice of indicator influences the conclusions drawn. Given the assumptions associated with the calculation of SMAMs and the degree of heaping of reported age at first marriage the interpolated median is the best estimate of current patterns of age at first marriage in this context. Finally, it must be remembered that these data are based on the report of individuals who have already married. Therefore, they are subject to censoring bias, especially for the younger age group¹⁴⁹.

6.5 Changing age at first marriage

Female age at first marriage has risen and continues to rise, due to a combination of factors including rising levels of female education and the enforcement of legislation. In Kenya for example, median age at first marriage increased from 18.8 years in 1993 to 19.2 years in 1998¹⁵⁰. Is there any evidence to suggest a change in age at first marriage for Maasai women? Age at marriage for Maasai women is to a large extent dependent upon the timing of circumcision. Circumcision is itself dependent in part on the age at which puberty begins. It therefore follows that if the average age at puberty or female circumcision changes, then so will entry into marriage. It is not possible to test whether there has been a change in the average timing of these two events, but it is possible to

¹⁴⁶ Calculated by interpolation as the age at which 50% of the single-year group was never-married.

¹⁴⁷ Ever-married individuals for whom age at first marriage is recorded. Of 4,877 ever-married individuals, "Do not know age at first marriage" was recorded for 22 cases.

¹⁴⁸ $SMAM (after Hajnal, 1953) = \frac{30+10x[PS(15-20)+...+PS(45-50)]-5x(PS45-50)+PS(50-55)]}{2-[PS(45-50) + PS(50-55)]}$

Where PS = Proportion of five year age group who have never-married.

SMAMs provide a synthetic estimate of the mean age at first marriage, derived from the proportion of each age group not yet married. The SMAMs should be interpreted with caution as their estimation necessitates assumptions about nuptiality to be made (no differences in mortality and migration according to marital status, no change in marriage patterns in the recent past).

¹⁴⁹ That is, those who have yet to marry will do so on average at an older age than those who have already married. The censoring of reported age at first marriage does not affect either the SMAM or the interpolated median, which makes these measures more useful than the reported age at first marriage for younger age groups.

¹⁵⁰ All women aged 25-49, Kenya DHS 1993, 1998.

look briefly at the median reported age at first marriage by five-year age group using the SRDS data. The evidence is slight, but does suggest the possibility of a lowering of age at first marriage for females over the past four or five decades (Table 6.2).

Table 6.2: Median reported age at first marriage, all ever-married women aged 20+

Age group	Median reported age at marriage	n
20-24	17	552
25-29	17	607
30-34	17	426
35-39	18	354
40-44	17	278
45-49	18	246
50-54	18	125
55-59	18	96
60-64	19	79
65-69	19	50
70+	20	80

Source: SRDS

The influence of censoring bias cannot be ruled out for the younger (<25 years) age group, but will have a negligible effect at older ages. The SRDS data suggests a pattern opposite to that occurring at the national level for both Kenya and Tanzania. The effect of education on entry into marriage for Maasai is discussed in detail in Section 6.7. What ethnographic evidence exists relating to possible changes in female entry into marriage? Because of the emphasis of ethnographic writing on the *relative* age at marriage rather than the *actual* age, there is relatively little information. For example, Spencer refers to a "sharp reduction" (1988:115) in the age at marriage for Maasai girls during the 1950s. He suggests that this was due to a decline in murranism following colonial administration. The result was a decline in the legitimate sexual partners for adolescent girls combined with an increase in available husbands, leading to earlier marriage. However, given the absence of age information it is not possible to determine the extent of this "sharp reduction".

6.6 Spousal age difference

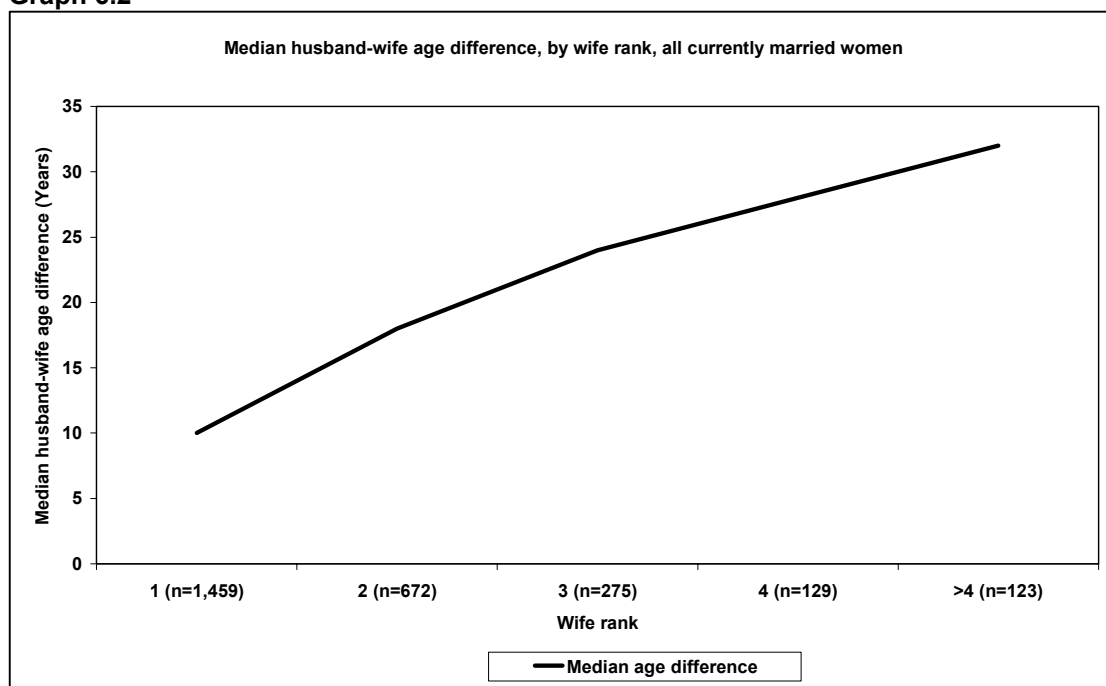
Given that the Maasai "ideal" marriage partner for a daughter is a member of an age-set two removed from that of her father, a large spousal age difference is to be expected. For example, Spencer states, "first wives are typically fifteen years younger than their husbands" (1988:54). The influence of polygyny on spousal age difference for existing marriages is clearly shown in Graph 5.8, ranging from 10 years for first wives to 32 years for currently married women of wife rank five and above. The highest observed spousal age difference was 63 years.

Although impossible to substantiate, anecdotal evidence suggests that, for higher order wives, the age difference has been increasing in the last two decades. The most frequently cited reason was the decreased importance of having a fully-grown (strong) woman as a junior wife. The construction and maintenance of an *enkaji* is entirely the responsibility of a married woman. It can take up to three months to collect the necessary materials and complete the building, a physically demanding task. With increased levels of sedentarisation and associated lower levels of transhumance¹⁵¹ and hence *enkaji* construction, it was suggested that it was no longer such a necessity for a man to have a skilled and strong wife in order to build her own home. Further, a decline

¹⁵¹ See Chapter 3 for a description of transhumance levels/sedentarisation

in adult male mortality will result in an increase in spousal age difference, assuming that a man continues to acquire wives throughout his life.

Graph 6.2



Source: SRDS

The relationship between polygyny and fertility is explored in detail in Section 6.8.2. However, several authors have considered the effect of spousal age difference on fertility in polygynous marriages (Bongaarts *et al*, 1984; Garenne & van de Walle, 1989). Male age is known to be associated with lower male fertility (Anderson, 1975). However, it is argued that this effect is likely to be strong only at long marriage duration (Mineau and Trussell, 1982).

6.7 Age at first marriage and education

Especially for older parents, formal education was (and to a lesser degree still is) seen as an intrusion into traditional Maasai lifestyle and livelihood. Boys at school cannot participate fully in *murr* activities. Girls are unavailable (except in the school holidays) to undertake traditional roles of herding and housekeeping. It is illegal in Kenya for a man to marry a schoolgirl (although it is rare for prosecution to follow), but a girl who is pregnant cannot continue at school. One case study¹⁵² in particular highlighted such a situation

Case Study 6.1

Jacob (48) was a sub-chief in Narok District (Kenya), and as such was a relatively influential and wealthy man in the village. While based on traditional power structures, chiefs and sub-chiefs play a formal administrative role in Kenyan local government. An alliance based on marriage with Jacob would be considered a useful connection for the bride's family. Jacob expressed a desire to marry Nashupai, who was then 13 years old and attending school. However, given Jacob's position in the community, it would be inappropriate for him to marry Nashupai whilst she was still a schoolgirl. It was common knowledge that Nashupai's father, in order not to lose this powerful affinal relation, condoned Nashupai becoming pregnant. As soon as Nashupai was obviously pregnant (although Jacob was not the father of the baby), she was forced to leave school. Soon after, yet prior to the birth of the child, Nashupai was married to Jacob.

¹⁵² In all case studies the names have been changed

However, it is not only girls for whom the influence of education had an unexpected effect on age at first marriage. Case Study 6.2 (although undoubtedly unusual) highlights how education can have an influence on male entry into marriage.

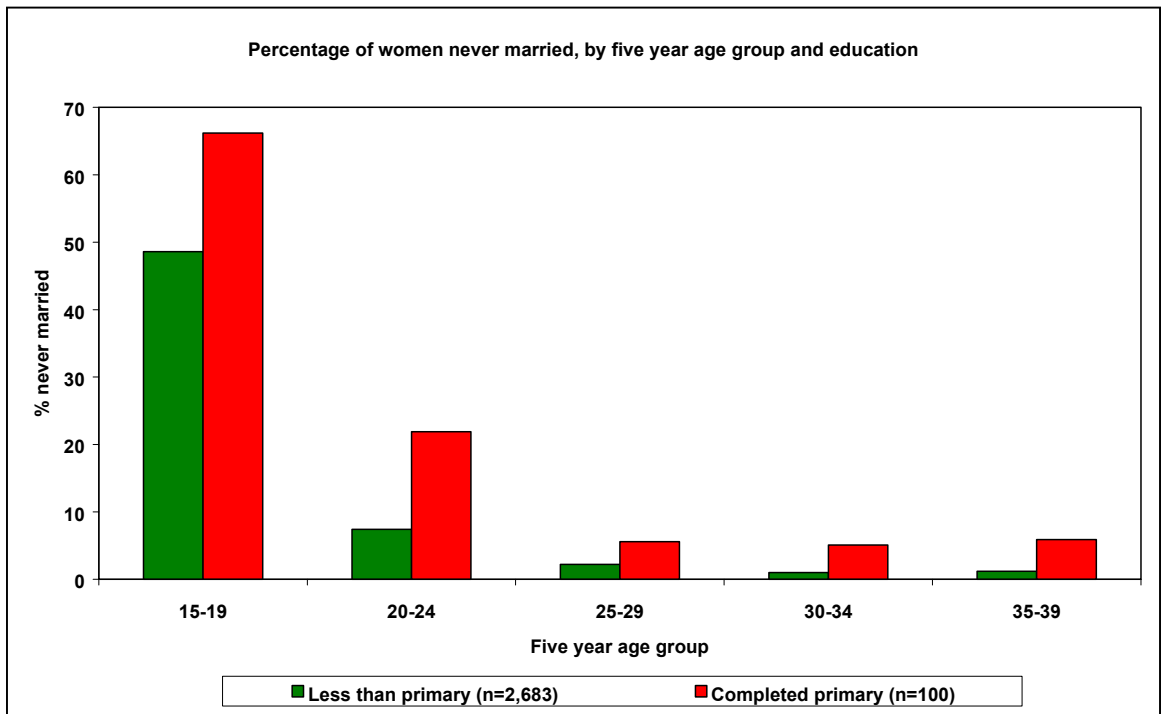
Case study 6.2

Daniel, aged 34, had an elderly father who disagreed vehemently with school attendance by his children. He had been in trouble with the local administrators, for not sending any of his children to school, despite having the financial means to do so. When Daniel was 13, and still attending school, his father arranged a marriage for him. The marriage was to a girl slightly older than Daniel (a very unusual situation). Because no married person can attend school, Daniel's father saw the marriage of Daniel as a way of defying local administrators. Daniel's father resorted to the use of a traditional healer (*laiboni*) in order that the local administrators would not pursue him for his actions. Daniel himself was uninterested in marrying at that age, and became a full-time *murran* for nearly two years. During that time, his new wife stayed with her mother-in-law until Daniel returned permanently to the *enkang*. It is highly unlikely that Daniel's father would have wanted Daniel to marry at such a young age if it had not been for his desire to remove Daniel from school. Aged 34, Daniel is now a grandfather.

Literature on the effect of education and age at first marriage is widespread and unanimous: at the societal level, increased education is associated with an increase in first age at marriage (Caldwell, 1982; McCarthy, 1982; McDonald, 1985; Weinberger, 1987; Lesthaeghe *et al*, 1989b; Westoff *et al*, 1994; Stambach, 1996). However, Case Studies 6.1 and 6.2 show that at the individual level, the direction of association can be the reverse. Indeed, not only can education be associated with lower age at first union, but also education itself can be the cause of that association. Talle echoes this suggestion by stating "there are indications that the female marriage age has been lowered by sharper competition for nubile girls, which is related to the fact that more girls are withdrawn from the marriage market as a consequence of growing school attendance while the rate of polygyny continues to be high" (1995:85).

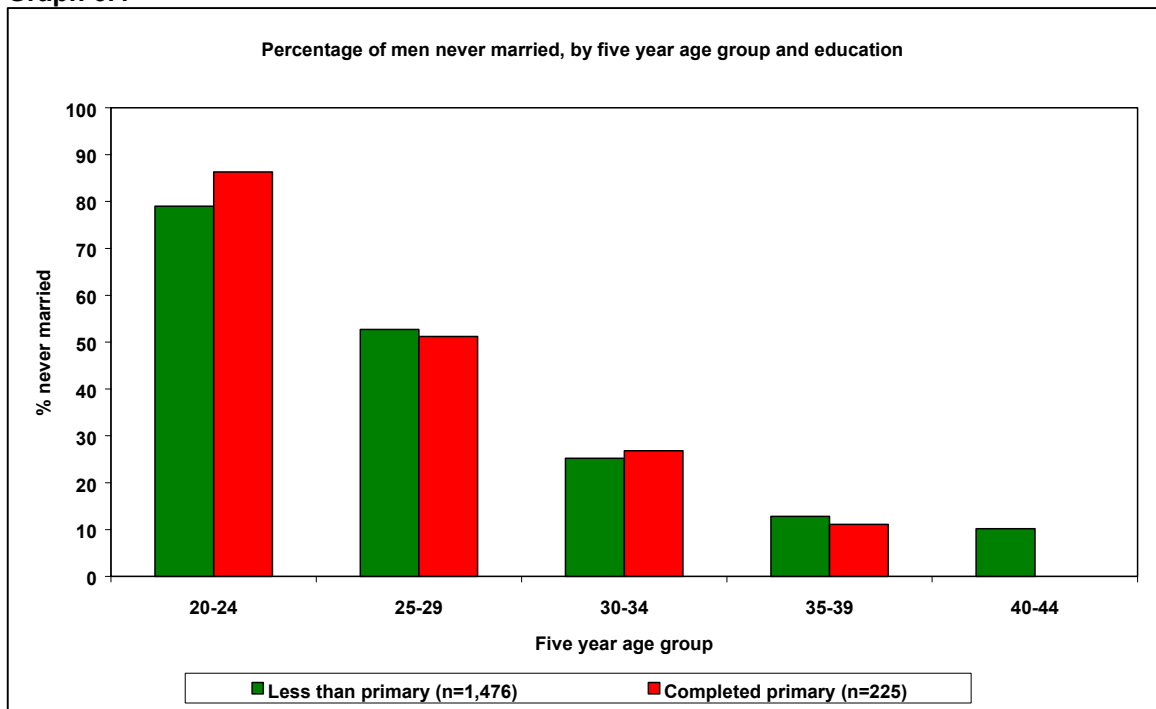
In order to examine the possible influence of education on entry into marriage among the Maasai, it would be useful to be able to look at age at first marriage by education status. However, given the relatively poor quality of the age at first marriage data and an assumed interaction between education and knowledge of age, such an approach is not suitable. It is possible, however, to examine proportions married, by five-year age group, and some indicator of education. To do so requires comparison using some meaningful category of education, for example, completed primary school. The SRDS data were standardised to take into account national differences in the number of years required to complete primary school. Data are presented for a truncated range of age groups due to the low levels of formal education among older Maasai, particularly women (Graph 6.3).

Graph 6.3



There is a marked difference for all age groups in the proportion of women never married by educational status. This differential declines with increasing age, to be expected in a population where marriage is virtually universal. The data imply, however, that primary school completion is linked to a lower likelihood of marriage.

Graph 6.4



Source: SRDS

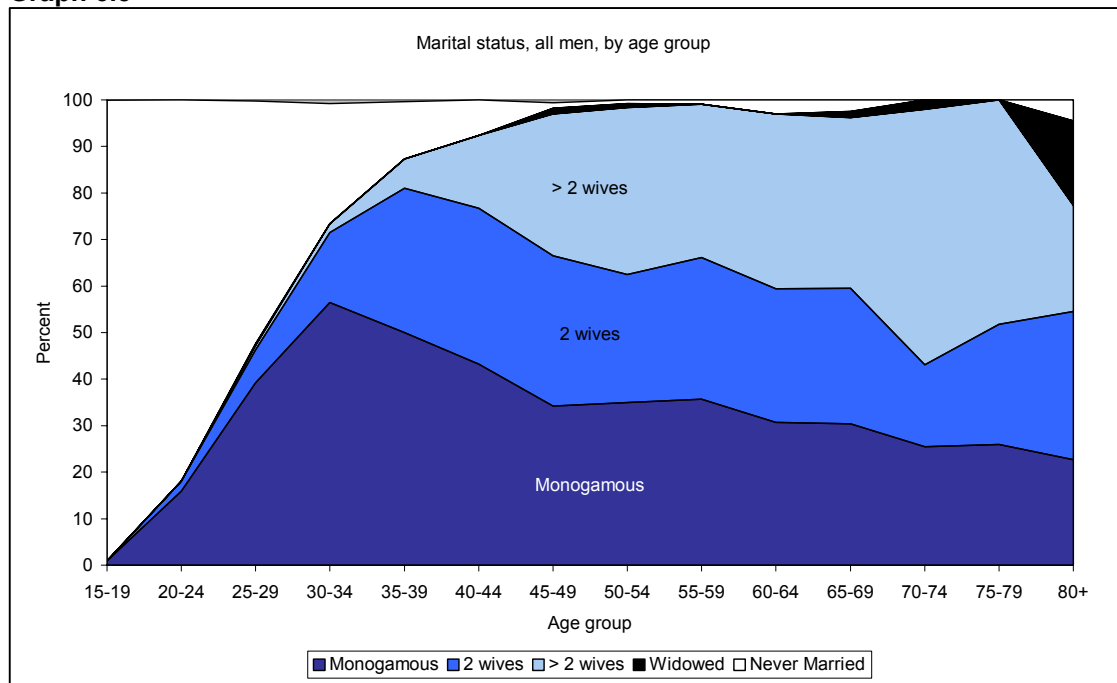
For men, the differential in entry into marriage by educational status is far less pronounced. Above age 25, the differences in marital status by education are negligible.

Small sample sizes for educated women, particularly at older ages, prevent any further analysis of the effect of education on entry into marriage.

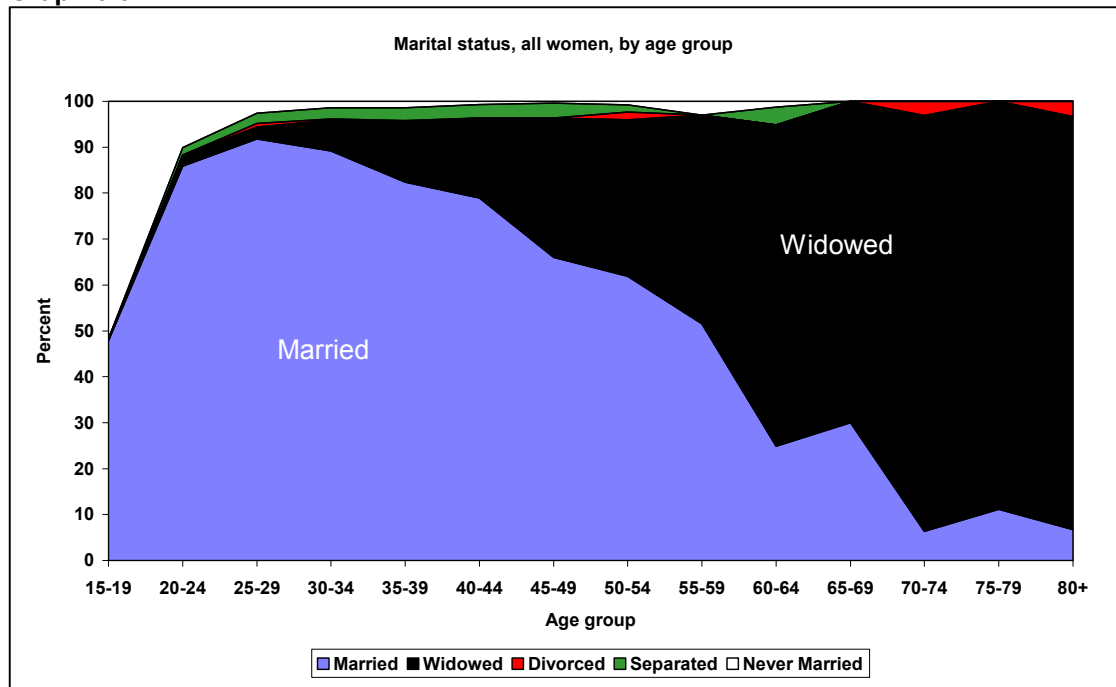
6.8 Current marital status

Firstly, because of the high levels of polygyny, especially with increasing age, men are very unlikely to be widowed (although one or more wives may have died). For example, it is only above age 79 that a non-negligible proportion (18.2%) of men is reported as being widowers. Secondly, very low levels of marriage instability are reported for men, also because of the influence of polygyny. That is, if a man is polygynously married, and one wife leaves him, he is still reported as being currently married, even though his wife will be reported as separated. Thirdly, Graph 6.5 clearly shows the influence of age upon entry into a polygynous union. Up to age 34, most married men are in monogamous unions, with a relatively small percentage of men entering a polygynous union before age 35. Men continue to acquire further wives throughout their married life, with the majority of men aged between 70-79 years having more than two wives.

Graph 6.5



Graph 6.6



A comparison of Graphs 6.5 and 6.6 shows the difference in age at entry into marriage for the sexes. By age 24, 85.8% of women are married for the first time, compared with just 18.1% of men.

In a polygynous society, a large average age gap between husband and wives produces a high proportion of widowed women with increasing age. Indeed, Lesthaeghe *et al* describe polygyny as being “functionally coherent” (1989:241), providing “an efficient remarriage net for widows and divorcees” (*op. cit.*). Much of the literature on polygyny cites widow remarriage (Timaeus & Reynar, 1998) as an integral part of the polygyny system. The SRDS data suggest that, for the Maasai included in the survey, widow remarriage is very rare.

The remarriage of widows is one of the few areas where Maasai *oloshon* (Section 3.3.5) plays an important role. This can be illustrated with reference to the work of two authors, von Mitzlaff and Spencer. Von Mitzlaff’s description of the Parakuyo (Tanzania) describes levirate marriages for widows who do not have a son who has been circumcised. Spencer, writing of the Matapato¹⁵³, suggests, “Widowhood is common...Remarriage for a widow is an anomaly, and would not be contemplated if she had children” (1988:45). He does note, “expedience may overrule the norm that such women should remain under the protection of a guardian to bear children and an heir for the dead husband” (1988:244). These examples underline the need for critical reflection on the nature of the ethnography, and for triangulation of information. Both von Mitzlaff and Spencer refer to Maasai, but it requires an understanding and recognition of the different components of Maasai ethnicity in order to make sense of their differing reports.

In Maasai society, a woman’s marital status will determine where and with whom she lives. For a widow, there are three outcomes in terms of residence. Either she forms her own *enkang* and becomes its head; or, she joins another *enkang*, either as a member of a

¹⁵³ Spencer describes the Matapato as “remote, wholly surrounded by other Maasai, and typical in so many ways as to be uniquely unremarkable” (1988:3)

household (*olmarei*) or as the head of her own household (*olmarei*)¹⁵⁴; or, she remarries. A widowed woman rarely acquires control of an *enkang*, and traditionally either moves to join the *enkang* of a brother of her dead husband or becomes a member of an adult son's *enkang*. All of her children belong to the patriline of her deceased husband, and livestock will still remain in trust for them (normally with some male relative from the patriline). These residential patterns are closely bound up with the fact that women are not allowed to own livestock, and a man is required to oversee livestock/ herd management (grazing, upkeep and sale). Thus, the incorporation of a widow into another *enkang* requires the existence of multi-household *enkang*, into which she and her dependants may be absorbed. The third outcome, that of widow remarriage, will involve the woman's incorporation into her new husband's *olmarei* and hence *enkang*.

The actual residential outcome of a woman being widowed will, to a large degree, depend on her own personal circumstances. For example, following the death of a polygynous household head, it is possible that his widows will live together until arrangements have been made for the dispersal of the household. However, such an arrangement is normally only temporary, and normally dissolves once another *enkang* has been found¹⁵⁵. For a woman with no adult, married sons the most common option is to join an *enkang* belonging to a brother of her dead husband, at least until such time as her sons have their own households. In addition to the influence of *oloshon*, the possibility for widow remarriage is closely linked to a woman's age and her rank within a polygynous union. A young, low ranking wife will be more likely to remarry (or be remarried) than an older first or second wife. It should be underlined that widowhood represents far more than simply a change of residence. A woman who is absorbed into another *enkang* will have to reposition herself within new power and personal structures. For example, a woman who was previously the first wife of a polygynously married man may find herself in a far less powerful position when she becomes a member of a married son's household.

A widow's offspring continue to belong to her husband's patriline, making it virtually impossible for her to take them to another household after her husband's death. A further factor should also be noted. Widowed women are not precluded from having (or continuing) sexual relations with a lover. Any subsequent children born after a husband's death will belong to his patriline¹⁵⁶. Because women hold livestock in trust for their children (although the woman has the right to the milk from those animals), it would be very difficult on a practical basis to remarry, even if she were allowed to take her children with her. Those animals belong to the patriline, and she would forego the milking rights to those animals if she were to remarry.

A combination of the rights of a husband's family to his children together with the permitted sexual activity of a widowed woman effectively make widow remarriage unnecessary among the Maasai. This is not to deny that some widow remarriage does take place. For example, out of a total of 2,717 currently married women, 10 reported their first husband as dead (SRDS). Given the reluctance of Maasai to refer to a dead individual, it is very likely that this is an under estimate of the level of widow

¹⁵⁴ That women only ever become heads of households as a result of a husband's death is underlined by the fact that, of those few households which are female-headed, the majority are headed by women who are currently widowed (95.1% in Narok and 80.0% in Kajiado).

¹⁵⁵ In the SRDS 21 out of a total of 1,454 households were composed of a group of co-wives still living together after the husband's death.

¹⁵⁶ For example, out of a total of 233 widowed women aged between 15 and 49 years at the time of the SRDS, 33 (14.2%) had given birth in the year preceding the SRDS.

remarriage. Such high levels of widow non-remarriage are not documented for other polygynous societies. The main difference in nuptiality patterns between men and women is that once married, men will spend the rest of their lives within a marriage (albeit with a changing wife composition). On the other hand, women are likely to spend a large proportion of their post-spinster lives as sexually active widows.

6.8.1 Marriage instability

Formal marriage dissolution is very rare among the Maasai¹⁵⁷. In the SRDS only 0.1% of men and 1.1% of women were divorced¹⁵⁸ or separated. However, short-term marriage disruption is common, and usually involves the wife leaving the marital home and returning to her natal home. Women often cite ill treatment (lack of material support from husband¹⁵⁹, beating, and drunkenness¹⁶⁰) as the main reason for leaving. It is rare, however, for this separation to become permanent. The reasons for this are threefold. Firstly, the wife's parents may have to pay back all or part of the brideprice. Secondly, given the strong affinal relationship that develops between the two families (wife's and husband's), such a break-up has ramifications far greater than the individual couple. Thirdly, unless the wife was still breastfeeding a child, she would be unable to take her children with her permanently, as children belong to the patriline. The divorcing of a wife by a husband has historically been referred to in the ethnographic literature in the cases of sterile women (Hollis, 1910¹⁶¹; Jacobs, 1973¹⁶²; Llewelyn-Davis, 1974). Of 79 women reported as divorced or separated in the SRDS, over 10 per cent were childless, suggesting that sterility does influence a woman's marital status.

There are customary ways of dealing with men who fail to provide for their wives and children, but given the public nature of such retribution, it is uncommon for a woman to pursue this line. More often, it will be the wife's male relatives who attempt to gain some form of compensation for the ill treatment of the wife. The following case study was reported during a short-term migration study (STMS) of 227 individuals from Narok District, randomly drawn from the SRDS. A total of 54 currently married women were included in the subsample, and case study 6.3 details the experience of one of the women.

¹⁵⁷ von Mitzlaff (1988) quotes Hurskainen "who estimates the divorce rate of the Parakuyo to be particularly low...Hurskainen himself admits that his information only stems from discussions on the subject (Hurskainen 1984:110 and 126, notes 17 and 18)" (fn29 pp148). Von Mitzlaff and Hurskainen disagree strongly on the motives for a divorce. Hurskainen suggests that clitoridectomy causes very low levels of divorce, as this causes women to be uninterested in extramarital sexual relationships. Von Mitzlaff, on the other hand, explains the low rates of divorce in terms of the societal controls on marriage dissolution. I would tend to agree with von Mitzlaff.

¹⁵⁸ There is no directly translated word in Maa for divorce, the metaphor "to cause the death of a marriage" is used instead.

¹⁵⁹ For example, Llewellyn-Davies notes that "a wife has the right to complain to her father or brother if her husband tries to reallocate any of her stock to another wife - unless there is a very compelling reason for doing so, such as the death of most of the co-wife's herd, this action will be taken as grounds for divorce" (1978:213)

¹⁶⁰ Alcoholism (rather than ritual intoxication) is increasingly being seen as a problem by the Maasai (Pers. Ob; Natural People's World, 1995; von Mitzlaff 1994:49)

¹⁶¹ "Divorce is almost unknown amongst the Maasai, and it is only barren women who may be divorced" (Hollis, 1910:481)

¹⁶² "Infertility is one of the few legitimate reasons for which a man may divorce a woman, but in practice even infertile women are rarely divorced by men unless they are troublesome as well" (Jacobs, 1973:403)

Case study 6.3

Nadupoi is 28 years old, and was married at the age of 18. She is the second of her husband's four wives. She currently has 4 children, the youngest of which is 9 months old. The second-to-last child died. In November 1997 she ran away from her husband, citing ill treatment and incompatibility with the other wives. She took the two youngest children with her. She went to live with her parents, who, it was reported, were unhappy at the turn of events, and wanted her to return to her husband. By March 1998, she still had not returned, so her husband went to fetch her and her children.

The strong societal controls on marriage dissolution are summarised by von Mitzlaff "As marriage is not seen as a matter between two individuals it cannot be dissolved by these two partners" (1994:148). There is also the possibility that divorce or separation by women of their husbands may become increasingly difficult, especially with recent increases in bridewealth, and increasing use of non-livestock bridewealth. Kipuri (1989) reports, for example, the case of a Maasai woman whose brideprice was permanent family rights to water livestock at a private well. It is hard to imagine this woman being allowed by her family to divorce her husband.

6.8.2 Polygyny

Both the causes and effects of polygyny have been studied extensively, in a variety of sub-Saharan African settings (Romaniuc, 1988; Pison, 1986; Pebley & Mbugua, 1989; Lesthaeghe *et al*, 1988, 1989b; Timaeus and Reynar, 1998). The supports for polygyny have been associated with a variety of "macro-level factors" (Timaeus and Reynar, 1998:146), including: kinship groups that share a common ancestor (especially patrilineal groups); societies where women undertake most of the subsistence agriculture; when a large family provides both labour and physical security; where women engage extensively in trade (Lesthaeghe *et al*, 1989b); in societies with limited social stratification (Clignet, 1970); and, in societies where traditional belief systems rather than formal religion are dominant.

The effects of polygyny on demography are subject to more discussion. For example, polygyny is associated with decreased individual fertility¹⁶³, no effect on individual-level fertility¹⁶⁴, and raised fertility for first wives¹⁶⁵. The impact of polygyny on fertility at the population level, however, is suggested to raise fertility (Pison, 1986, Fulton and Randall, 1988; Pebley & Mbugua, 1989). Other demographic consequences of polygyny include increased spousal age difference, reduced coital frequency (Brainard, 1991), high frequency of widowhood (Lesthaeghe *et al*, 1989; Timaeus and Reynar, 1998), and the promotion of prolonged breastfeeding and sexual abstinence post-partum (Timaeus and Reynar, 1998).

What are the current levels of polygyny amongst the Maasai? Polygyny is widely reported in the ethnographic literature (Spencer, 1988; Spear and Waller, 1993; Llewellyn-Davies, 1978; von Mitzlaff, 1988; Fosbrooke, 1948), however few substantive data exist. Spencer (data collected in 1976 amongst Matapato Maasai, Kenya) and von Mitzlaff's data are the only quantified examples of polygyny from the ethnographic literature (Tables 6.3-4). Spencer used genealogies in order to reconstruct the total number of wives, although it is unclear whether or not the totals include

¹⁶³ Muhsam, 1956; Dorjahn, 1959; Walle, van de 1968; Clignet, 1970; Reynar & Bouquet, 1975; Ukaegbu, 1977; Pitshandenge, 1982; Shaikh *et al*, 1987; Garenne & van de Walle, 1989

¹⁶⁴ Pool, 1968; Olusanya, 1971; Podlewski, 1975; Locoh, 1984; Pebley & Mbugua, 1987

¹⁶⁵ Smith and Kunz, 1976; Isaac and Feinberg, 1982; Ahmed, 1986; Bean & Minneau, 1986.

deceased wives. In addition, in Spencer's example men are aged in their broad age-sets rather than in completed years.

Table 6.3: Number of wives reported by husband's age set (from Spencer 1988).

Husband's age range	Number of wives						Wives/husband
	1	2	3	4	5	6	
56-70 (n=128)	48	41	23	12	1	1	2.08
41-55 (n=111)	68	35	6	1	1	0	1.51
26-40 (n=84)	60	19	4	0	0	0	1.33
18-25 (n=14)	14	0	0	0	0	0	1.00

Von Mitzlaff's data are presented using a much coarser age distribution of men, between elders and *murran*. They do provide, however, further evidence for the marriage of men whilst they are still *murran*.

Table 6.4: Number of wives per man (from von Mitzlaff, 1994).

	Number of wives					
	0	1	2	3	4	5
Elders	2	30	32	18	13	5
Murran	44	51	18	4	0	0

Both Spencer and von Mitzlaff's work illustrate the potential utility of ethnographic data for demographic enquiry. Both present "demographic" information, embedded within the structure of ethnography.

The next sections address the following issues. What are the current levels of polygyny amongst the Maasai? Do levels of polygyny vary by country? Is there any variation in the levels of polygyny by production system (pastoralism versus non-pastoralism)? Levels of polygyny by education will be examined in order to identify the possible influence of education on the practice of polygyny. Is there any evidence of a decline in the levels of polygyny in recent years? What attitudes towards polygyny were gleaned during the fieldwork? The description of polygyny for the Maasai are derived using the schema used by Timaeus and Reynar (1998)^{166,167,168}.

Table 6.5: Selected measures of polygyny, by country.

	All	Kenya	TZ
Prevalence of polygyny (<i>p</i>)	0.46	0.46	0.46
Intensity of polygyny (<i>w</i>)	2.80	2.72	2.84
Polygyny ratio (<i>M</i>)	1.83	1.80	1.85

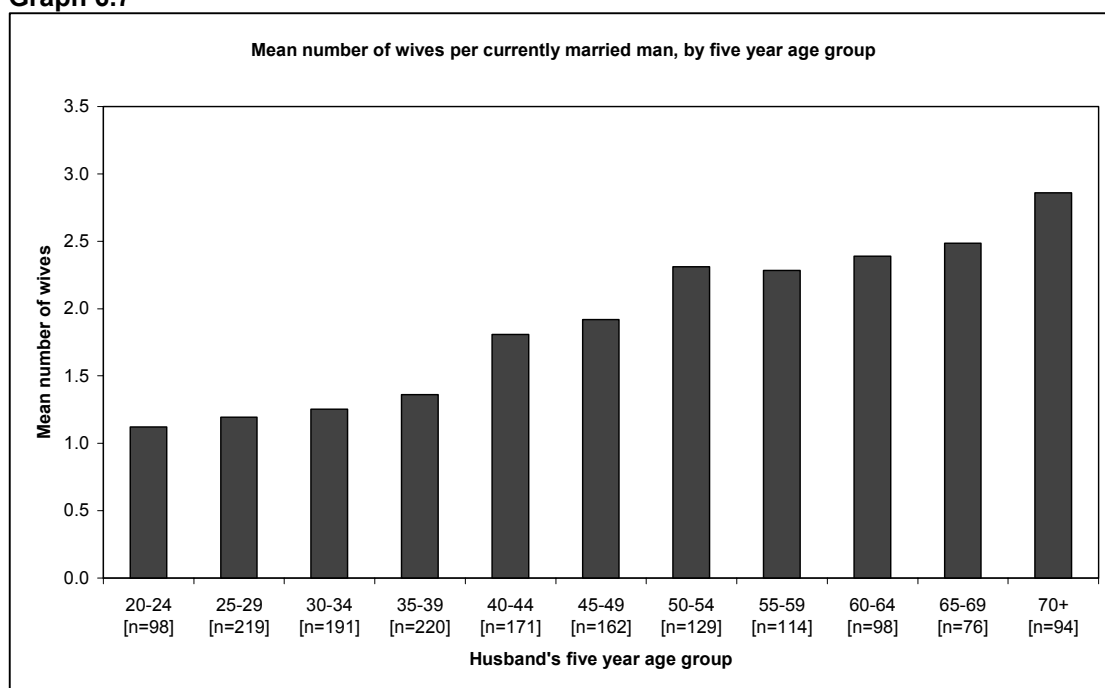
Overall, levels of polygyny prevalence and intensity vary very little between Kenya and Tanzania (Table 6.5). Nearly half (46%) of all currently married men are in polygynous unions, and the average number of wives per polygynist is 2.8. Using von Mitzlaff's (1988) (n=217) Tanzanian data, 52.6% of currently married men were in polygynous marriages (*p*) and on average there were 2.7 wives per polygynist (*w*). This suggests, at the nation-state level, that forces contributing to Maasai polygyny are constant and are a function of ethnicity rather than location. The increase in the number of wives over the lifecourse of a man is shown in Graph 6.7.

¹⁶⁶ *p*: Proportion of men in polygynous marriages

¹⁶⁷ *w*: Average number of wives per polygynist

¹⁶⁸ *M*: Ratio of currently married women to currently married men

Graph 6.7



There appear to be three marked "jumps" in the mean number of wives per currently married men, at ages 40-44, 50-54 and above age 69. It is not clear whether these jumps are a product of selectivity, are random, or represent a trend. It is also possible that male age estimation was dependent on the number of wives, representing a reporting error. Informal discussions on the practice of polygyny with monogamous, educated, married Maasai produced a remarkably consistent response: both men and women stated that they would prefer a monogamous marriage. The reasons given for this apparent contradiction with nuptiality norms were: expense (particularly of educating children) and conflict between husband and wives and co-wives. In addition, because of their educated status compared to other Maasai, these individuals were far more likely to be engaged in non-pastoral occupations, either as their main or secondary source of income. However, men reported that as they became older, it became increasingly difficult for them to withstand the pressure from their fathers or uncles¹⁶⁹ to enter into a polygynous union. It is possible however, that the responses received when talking to people about polygyny reflected what they thought I wanted to or should hear, rather than a true reflection of their thoughts on the subject.

The following section explores in more detail some of the themes that arose from these discussions. How are prevalence and intensity of polygyny affected by education, co-residence patterns and production system? Each of these influences is examined separately in order to determine whether or not the attitudes expressed informally are supported by the SRDS data. Following the informal discussions, the following patterns were expected: higher levels of polygyny where the production system is based on pastoralism and where a married man is still living in the same household as his father; and, reduced levels of polygyny for men with education.

6.8.2.1 Polygyny and production system

Lesthaeghe *et al* carried out an African-wide cross-cultural study of nuptiality regimes. They cited pastoralism (or, more specifically, "the importance of cattle raising versus agriculture" (1989b:314)), as a "major effect" (*op cit.*) on levels of polygyny. The

¹⁶⁹ Uncles = kin and age-set mates of father

direction of the relationship between levels of polygyny and pastoralism is negative “with cattle raising societies, where women are perceived “uneconomic”” producing lower levels of polygyny. A review of the literature, which details levels of polygyny, suggests no clear relationship between pastoralism and polygyny¹⁷⁰. Indeed, it would appear that there is more of a geographical divide than one based on production system. Evidence from east African pastoralist societies suggests higher overall prevalence of polygyny than for comparable production systems in west Africa.

For a pastoralist man, more wives mean more children and extended networks of reciprocity. Drought, diseases and raiding are the major causes of livestock loss among pastoralist communities, and larger herd owners are better able to deal with (and survive) such crises. The transfer of bridewealth to the man's in-laws enhances his social network and future security. However, it is not the production system *per se* that affects the levels of polygyny. Lesthaeghe *et al* (1989b), using a cross-cultural survey based on Murdock's Ethnographic Atlas (1967), argue that a pastoralist society is one in which women are rendered economically unimportant, as men control and organise the means of production, the result of which is reduced levels of polygyny. However, given the wide variations in type and degree of pastoralism, it would appear unwise, and in the light of the literature review, unsound to make such wide-ranging statements. The only statement that may be made with any certainty is that the importance of polygyny varies greatly both between and within pastoral groups, with evidence pointing towards higher levels of polygyny in east compared with west Africa¹⁷¹.

¹⁷⁰ It should be noted that differences in methodology and calculation between authors prevent any direct comparison of data. The data presented here are for comparison only in a relative sense.

¹⁷¹ Roth's (1994) study of the Toposa agropastoralists in Sudan would appear to be the one exception to this pattern.

Table 6.6: Polygyny levels for sub-Saharan African pastoralist societies

Author(s)	Ethnic group(s)	Polygyny levels
EAST AFRICA		
Henin (1969) (Sudan)	Blue Nile (n=531) (nomadic pastoralist)	% currently married women in polygynous union 19.2%
	Baggara (n=808) (nomadic pastoralist)	18.9%
	Gezira (n=856) (semi-nomadic pastoralist)	10.6%
	Managil (n=741) (semi-nomadic pastoralist)	5.7%
		"It is apparent that the proportion of women married to polygamous husbands was higher among the nomads than among the settled populations" (p.184)
Borgerhoff-Mulder (1989) (Kenya)	Kipsigis (n=1,192) (sedentary agropastoralist)	59.7% currently married women in polygynous unions
Brainard (1991) (Kenya)	Turkana (no sample size given)	"greater proportion of pastoralists and former pastoralists were polygynous than was true of long-settled ... men" (p119) Mean number of wives per polygynous pastoralist man estimated at 2.52
Borgerhoff-Mulder (1992) (Tanzania)	Datoga (n=399)	"Polygyny is ... prevalent in the community: menopausal and reproductive-aged women were married to men who had married 3.69 and 3.11 wives respectively" (p.390)
Roth (1994) (Sudan)	Toposa agropastoralists (n=444)	Mean number of wives per married man = 1.136
	Rendille pastoralists (n=950)	Mean number of wives per married man = 1.153
Little and Leslie (1999) (Kenya)	Turkana pastoralists (n=1,375)	Mean number of wives per man aged 65+ = 2.4
WEST AFRICA		
Randall (1984b) (Mali)	Gourma Tamasheq Delta Tamasheq	2.2% women report polygynous unions 3.7% women report polygynous unions
Hampshire (1998) (Burkina Faso)	Fulani	"The Fulani are a mildly polygynous ¹⁷² population with 7.6% of currently married men (n=1,765) and 13.5% (n=1,899) of currently married women being in polygynous unions" (p.251)

6.8.2.2 Education and polygyny

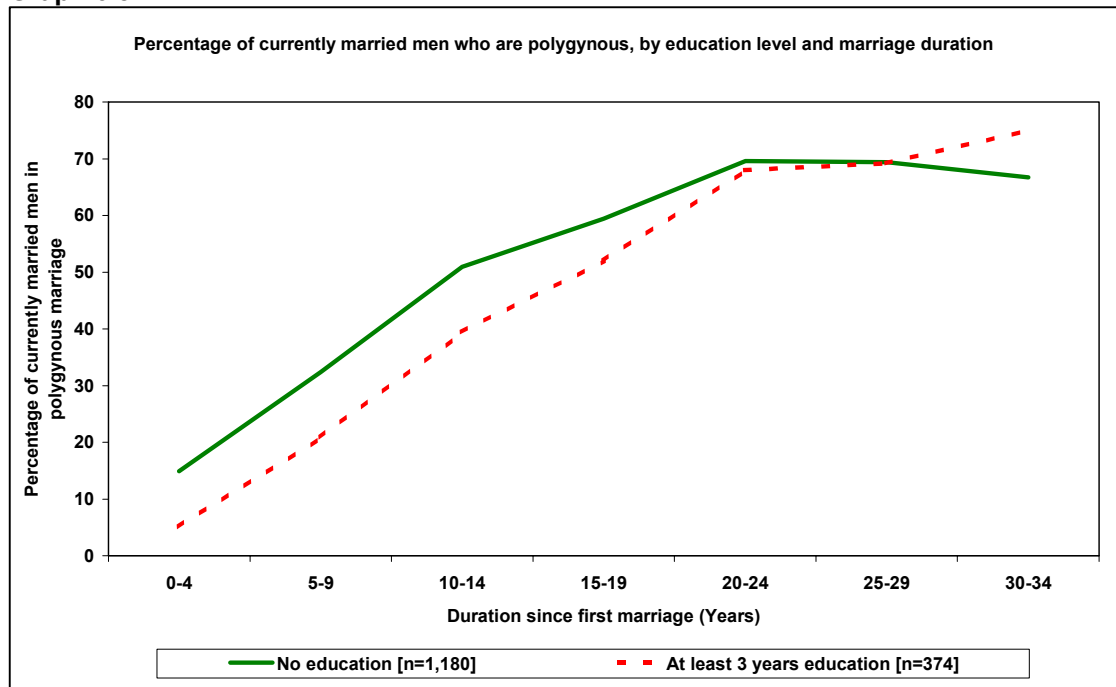
Much has been written about the effect of female education on polygyny (Lesthaeghe *et al*, 1989b). However, given the patriarchal nature of Maasai society, it would perhaps be more instructive to examine levels of polygyny by male education¹⁷³. To quote Basu "analyses [of the education-marriage-fertility relationship]... assume that while there is something special about the educated woman, there is nothing special about the educated man" (1999:269). In this section, therefore, the SRDS data are used to determine whether there is any relationship between male education and polygyny. What is the effect of education on male entry into polygyny?¹⁷⁴ Does education impact on levels of prevalence and intensity of polygyny? Through an examination of the prevalence and intensity of polygyny by male education and marriage duration, it is possible to examine the effect of male education on entry into polygyny and the acquisition of higher order wives.

¹⁷² The Fulani have been described as having "serial monogamy" (Hill & Thiam, 1988:343), in which frequent divorce and remarriage results in occasional periods of polygyny when spouses "overlap".

¹⁷³ The very low levels of female education recorded in the SRDS make analysis by education difficult for women.

¹⁷⁴ The data refer to all currently married men. One case, of a Tanzanian man with 23 wives was excluded, because of the disproportionate effect of this individual on prevalence and intensity for that particular marriage duration and education group.

Graph 6.8



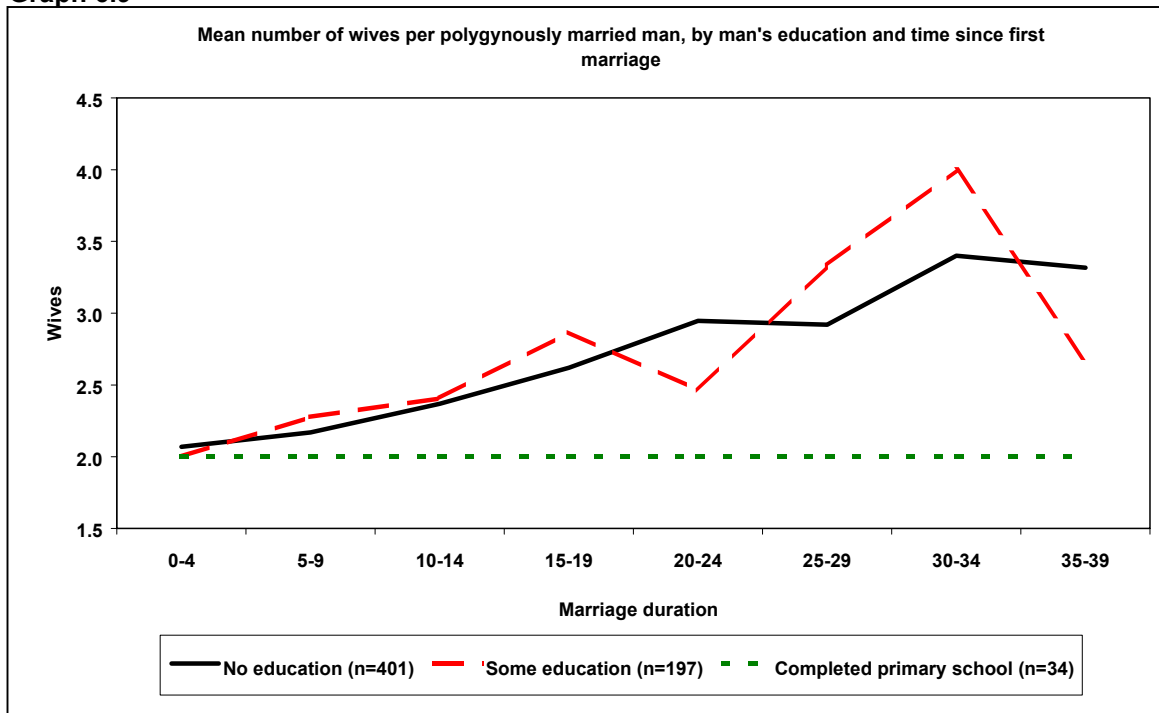
Source: SRDS Data

The effect of age on the prevalence of polygyny is clearly seen in Graph 5.14. For all men, regardless of level of education, the proportion currently in a polygynous marriage rises with marriage duration. Until a marriage duration of 25 years, however, men reporting at least three years of education have consistently lower prevalence of polygyny than men with no education. It has been shown that with increased marriage duration, the effect of male education on polygyny prevalence decreases. Does the same trend emerge for polygyny intensity? Graph 6.9 shows the average number of wives per currently polygynously married man, by male education level¹⁷⁵.

A distinct pattern emerges, with men who have at least completed primary school education never acquiring more than two wives, regardless of marriage duration. This is in stark contrast with men with lower levels of education. Men with less than completed primary level education exhibit (albeit with some fluctuations), an increase in intensity of polygyny with marriage duration.

¹⁷⁵ Some education = At least one year or adult or primary education.

Graph 6.9



Source: SRDS Data

What is it about better-educated men that makes them less likely to acquire more than two wives in total? I suggest that the following factors in some combination probably play a part. Men who have completed primary school are probably likely to only undergo a cursory *murrān* experience¹⁷⁶. This is because it is illegal for boys to attend school if they are sporting the customary *murrān* attire. The result is that Maasai boys who have completed primary school are not part of the larger *murrān* community, which has a far more consolidated lifecycle experience. A second factor may be the reduction of paternal influence over a man who has been well educated, especially if the father has not been educated. This may make it easier for the man to refuse to marry until he wants to (Case Study 6.4).

Case Study 6.4

Albert is a 31-year-old Maasai man living in Kajiado District (Kenya). He completed Form 4 (secondary school) education, and then went on to do a car mechanics apprenticeship in an urban area. His parents had “booked” two Maasai girls for him to marry. He refused to marry either girl, having decided that he wanted to marry Mary, a Maasai woman who had also completed secondary school education. After marrying Mary Albert was disowned by his family and two of his brothers married the girls his parents had chosen for him. Albert and Mary live in a traditional *enkang*, and have two children (aged 5 and 2). Albert stated that he would never have more than one wife, because he did not like the idea of the trouble that it would cause Mary domestically.

A third factor is that younger, more educated men are more likely to want to send their own children to school, an increasingly expensive undertaking (Case Study 6.5). More wives means greater total numbers of children, preventing them from all going to school.

¹⁷⁶ The only time available for such boys to participate in *murrān* activities is during the school holidays, when it is likely that demands on their labour at home will take precedence. It is therefore quite possible for a Maasai boy who is attending full-time education (and probably at boarding school) never to participate in *murrān* and age-set activities.

Case Study 6.5

Joseph is a 34-year-old man, living in Kajiado District, Kenya, who completed Form 4 education, and married an uneducated woman of his parent's choosing. The first wife died not long after the birth of their first child. Joseph chose to marry an educated Maasai woman, Silole, with whom he now has 2 further children. They are hoping to educate their children privately, and Silole has stated that she would leave Joseph if he were to take another wife. Joseph said that he does not want another wife, nor does he want more children, because of the expense involved.

A combination of some or all of these factors - all functions of participation in formal education - leads to both reduced prevalence and intensity of polygyny, as estimated from the SRDS.

6.8.2.3 Co-residence

A familiar theme that emerged when discussing polygyny with younger men, was the influence of their father and uncles in the timing of entry into a polygynous union. For those married men who are still part of their father's household, the influence of the father will be stronger, and the pressure to begin a polygynous marriage stronger than if the man is head of his own household. In order to examine this hypothesis, two sub-samples of married men¹⁷⁷ were examined: those men still living in the same household as their father, and those men who were heads of their own households.

However, the data indicate a direction of polygyny prevalence opposite to that expected. Of those men who were heads of their own households at the time of the SRDS, 23.0% were polygynously married, compared with 16.4% of men still living in the same household as their father. It is possible that the acquisition of a higher-order wife may be used as a means to demonstrate a young man's desire and ability to head his own household, resulting in lower polygyny for men still considered part of their father's household. It is also possible that the death of the father might represent a release of material resources to the son, which could be used to acquire another wife.

6.8.2.4 Discussion: Polygyny

Timaeus and Reynar suggest that "It has become a tradition for papers on polygyny in sub-Saharan Africa to conclude with a statement that the institution is alive and well" (1998:161). The SRDS for the Maasai would support such a statement, although with a few caveats. Firstly, there is evidence of increasing dissatisfaction with polygyny and its drawbacks (in-fighting between both wives and husband; increasing expense of education of many children; increasing expense of brideprice, especially for a more-educated wife). Secondly, with increasing levels of education, and exposure to influences of "Westernization" (after Caldwell, 1982), both men and women are less willing to bow to gerontocratic pressure to enter into a polygynous union, or even a union with a partner not of their own choice (Case Study 6.6).

Case Study 6.6

Silantoi ran away from home in November 1997 in order to marry a man of her choice. Silantoi was 16 years old and had 7 years of completed education, but did not want to marry the man chosen for her by her parents. Her brothers were sent to bring her back to her parents' home, but were unable to find her. Finally, the family resigned itself to her marriage, and it was generally assumed that after some time, she would be able to return to visit her family.

¹⁷⁷ Only men married for less than 10 years

Thirdly, traditional Maasai production systems are changing, towards a lifestyle that is less likely to involve transhumance more likely to involve cultivation, with implications for the demand for wives.

Chapter Seven Adult mortality

Information on adult mortality throughout sub-Saharan Africa is limited and unreliable. Indeed, "It is difficult to draw firm conclusions from the evidence for a single country...any findings are greatly restricted in time and must be hedged with cautions" (Brass and Jolly, 1993:44).

7.1 Maasai and adult death

References to death in ethnographies of the Maasai are extremely rare¹⁷⁸, and where they do occur, they tend to be limited to a description of one of two things: either, the practice of never referring a dead person; or, a description of the disposal of the body. Both Jacobs (1973) and Hollis refer to the inability to utter a person's name after their death¹⁷⁹. This is best exemplified using an example from Hollis "the person's name is buried: it is never again mentioned by the family....For instance, if an unimportant person called *Ol-onana* (he who is soft, or weak, or gentle) were to die, gentleness would not be called *enanai* in that kraal, as it is the name of a corpse, but it would be called by another name, such as *epolpol* (it is smooth)." (1905:304)¹⁸⁰.

Disposal of a dead body is generally not marked by the Maasai. Traditionally, the body was left some distance from the *enkang* in order that predators may eat it. Spencer suggests that this practice is becoming less common, for a variety of reasons including the lower prevalence of predators and the influence of Christian burial procedures in some localities. An important elder may ask for his body to be buried under a pile of stones near to the *enkang*. Superficially, there might appear to be some contradiction between the absolute refusal to speak a dead person's name combined with what might be regarded as a casual disposal of the body. However, it is more a reflection of a lack of belief in the afterlife, beyond the establishment of a still-living family to continue the family name.

Maasai are particularly reluctant to mention (even without naming) the death of a woman due to maternal causes. There is a commonly held view that if a woman dies during pregnancy or childbirth, then this is the result of a misdemeanour towards an individual or the community as a whole. The family (both natal and husband's) of the dead woman would be unwilling to admit to such a death, because of the poor reflection upon themselves. It should be noted that the use of the term "misdemeanour" does not necessarily represent a tangible offence against another person or persons. Rather, it can extend to a more general lack of *enkanyit* (respect) (after Llewelyn-Davies, 1978:207).

This review of the ethnographies provided little direction for mortality data collection. The sparse reference to death in the ethnographies served to underline the potential difficulties that would be encountered during the demographic fieldwork. Of course it could be argued that the lack of ethnographic mortality references was a reflection of the lack of interest in that topic by the ethnographer. However, it could also be taken as an indicator of the difficulties surrounding this topic.

¹⁷⁸ For example, Spear and Waller (1993) and von Mitzlaff (1994) make little reference to death.

¹⁷⁹ "One important symbolic significance of Maasai naming practices is that, if someone close to a family dies, it is prohibited to utter his or her name for at least one year thereafter; in the event that the name was taken from a common vocabulary term (e.g.: dawn), one must not refer to "dawn" directly for that year, but rather talk about it in a circumlocutory fashion." (Jacobs, 1973:400).

¹⁸⁰ Whilst this reference may appear somewhat dated, the practice is still widespread (Pers. Ob.).

7.2 Maasai adult mortality data

There are no data on Maasai adult mortality levels. The situation is perhaps best exemplified with reference to a baseline community study carried out by Nangawe *et al* in Tanzania. They concluded, "some data was [sic] impossible to extract given the cultural sensitivity of some topics and the project's desire to respect these cultural norms. Thus, since there is a deep reticence in Maasai culture to speak of death or deceased adults, only 1 adult death was reported and maternal mortality was reported as zero" (1984:10). Murray *et al* (1992) studied the impact of chronic undernutrition on the health and survival of 403 Maasai parents aged 18-35 years, but provided no mortality data in their results.

7.3 Collecting adult mortality data

Whenever the topic of collecting data on the deaths of adult relatives from the Maasai was raised, the universal response¹⁸¹ was one of the impossibility of the project. Indeed, the reactions of individuals to such questioning during the pilot study confirmed this general view. Despite this, questions on relative survival (sibling, mother and spouse) were included in the questionnaire. Their inclusion was not an invalidation of the impressions gained from the ethnographic literature and pilot study. Rather, it was to explore whether valid and reliable Maasai mortality data were impossible to collect or whether it was simply a case of getting the "right" people to ask the "right" questions.

Special attention was given to this subject during enumerator training, and much time was devoted to encouraging enumerators not to shy away from asking the question. It was sometimes possible to crosscheck reports of relative survival whilst in the field. One of the major advantages of employing enumerators who had lived and worked in the study sites for a long time (and for most of them since birth), was their personal knowledge of a respondent's family. This knowledge was neither perfect nor universal, but it greatly contributed to the collection of this sensitive data. There can be no doubt that "more important" deaths of well-respected elders were more likely to be captured through this application of personal knowledge than "less important" deaths¹⁸².

Theoretically, the practice of not mentioning a dead person's name for up to a year following the death should not have posed a problem for the data collection. An individual's name was unnecessary, simply their survival status. However, reluctance to state whether or not an individual was still alive is undoubtedly connected to the inability to speak that person's name. The issue is broader than simply some sense of upset or distress at having to remember that person. It is a manifestation of the sense of respect (*enkanyit*), which is so fundamentally important for all Maasai. To admit that the person is dead is as much a contravention of societal norms as is the utterance of their name.

Data on paternal orphanhood were not collected because of the fundamental assumption of knowledge of father's survival status. In Maasai society, *pater* is a far more important and therefore meaningful consideration than *genitor* (i.e.: social rather than biological father). Therefore, to question an individual on the survival status of their biological father certainly would have been met with incomprehension¹⁸³. Most people

¹⁸¹ From Pers. comm. with prospective enumerators, Maasai in general, and other researchers who had worked with the Maasai.

¹⁸² For example, of an unmarried man or a first wife who died nulliparous.

¹⁸³ The question "Is your father still alive" was trialled in the pilot study, and subsequently removed from the final questionnaire used in the SRDS. Firstly, it was not possible to find a translatable term for "biological father". Secondly, even when the pilot study enumerator had finally communicated the

would simply not know the identity of their biological father. The point is an important one, methodologically speaking. The issue is not simply one of training the enumerator "to ask the right question". No matter how rigorous the enumerator training, if the concepts contained in the question have no meaning in reality for either the enumerator or the respondent or both, then it is impossible (linguistically and practically) to ask the question.

7.4 Indirect estimation of adult mortality

Two procedures for obtaining estimates of adult mortality from information on the survival of parents (orphanhood) and the survival of spouses (widowhood) are described. Estimates of adult mortality derived from information on the survival of "close relatives" (UN, 1983:97) represent averages of the mortality experienced over the period during which the relatives were exposed to the risk of dying. It must first be noted that the orphanhood technique in the SRDS was restricted to maternal orphanhood.

Therefore, the SRDS questionnaire included three questions for the indirect estimation of adult mortality using the Brass method (Brass and Hill, 1973)¹⁸⁴. The exclusion of a paternal orphanhood question from the SRDS reduced the number of techniques available for the estimation of adult male mortality to just one (widowhood). It was therefore not possible to compare analyses of adult mortality levels from different data sources. As with any technique of indirect estimation, the validity of the estimate is contingent upon the validity of the data used.

7.4.1 The widowhood technique¹⁸⁵

This technique uses the proportions of ever-married persons classified by age whose first spouse is still alive to estimate adult survivorship probabilities. The technique refers only to the survival of the first spouse of each respondent. The reasons for this are twofold; firstly, to ensure that there is only one person at risk of dying per respondent; secondly, to minimise the potential problems introduced by inclusion of higher-order marriages. The widowhood technique is considered to have several advantages over the orphanhood technique as a method for estimating adult mortality (United Nations, 1983)¹⁸⁶, although there is potential bias in this technique, introduced by the fact that the population to which the estimated survival probabilities refer is only the ever-married segment of the population. The method assumes that the survival of the respondent is independent of that of his or her spouse.

question to the respondent, there was general incomprehension of the concept. All those people questioned referred to their "social" father, i.e.: *pater*.

¹⁸⁴ For adult female mortality: Is your mother still alive? Is your first wife still alive? For adult male mortality "Is your first husband still alive?"

¹⁸⁵ The information provided here represents the most recent revisions of the procedures first proposed by Hill (1977) and Hill and Trussell (1977).

¹⁸⁶ "Since only first marriages are being considered, there is in all cases only one respondent for each target person. Further, no type of adoption effect is likely to affect this type of data, so proportions not widowed for the shorter average exposure periods may produce acceptable survivorship estimates referring to more recent periods that are generally those of greater interest. Lastly, experience suggests that because the most reliable information about survival of first spouse is provided by women, these methods provide a fairly good means of estimating male adult mortality, the estimation of which from data on paternal orphanhood is the weakest both from a methodological point of view and for reasons related to data quality" (United Nations, 1983:110)

The widowhood technique requires two sets of data¹⁸⁷

1. proportion of ever-married male (female) respondents with first spouse alive (or dead) classified by five year age group
2. singulate mean age at marriage (SMAM) for both males and females

The need for SMAMs, a summary measure of age at first marriage, therefore introduces "a further level of approximation" (UN, 1983:111) into the calculations¹⁸⁸. The widowhood technique has generally been shown to work poorly in an African context, generally because of issues to do with the definition of marriage (Timaus, Pers. comm.). The SRDS therefore paid very close attention to such issues of definition and concept of marriage in the Maasai context.

7.4.2 The orphanhood technique¹⁸⁹

This analysis is concerned only with maternal orphanhood and the estimation of female adult mortality. Whilst demonstrably robust (UN, 1983), this procedure does have three major limitations. Firstly, the derived survivorship probabilities do not refer to the entire population, as they are based only on reports of parents with surviving children. Secondly, there is potential bias introduced by the over-representation of mothers with more than one surviving child. Theoretically it would be possible to control for this bias by using reports only from the oldest surviving child. However "in practice, errors in the reporting of family-order status have been found to be so large that methods of analysis using data where the responses have been limited to one child per parents have not yielded better estimates than the original methods" (UN, 1983:101). Finally, the "adoption effect", introduced by young orphans who are adopted by relatives who subsequently report the child as their own, can be substantial. It has the effect of artificially inflating the proportion of young respondents reporting mother still alive, therefore biasing upwards the survivorship probability estimates of younger mothers.

Given the problems referring to dead people among the Maasai, it was decided to keep questions relating to death to a minimum. The reason for this was to minimise the potential for non-completion of the questionnaire - few data are better than no data at all.

For computation, the orphanhood technique requires

1. proportion of respondents classified by five year age group with mother alive (or dead)
2. mean parity, classified by five-year age group.

Prior to an application of these indirect estimation techniques, the SRDS data are presented. The purpose of this is to examine the quality of the data before deciding whether or not to proceed with indirect estimation. Reasons for the observed data quality will also be explored.

7.4.3 Maternal orphanhood data

Graph 7.1 presents reported responses to the question "Is your biological¹⁹⁰ mother still alive?" by five-year age group. With the exception of age group 50-54, lower proportions of respondents in Kenya reported their biological mother as still alive,

¹⁸⁷ For computation using MortPak Lite software

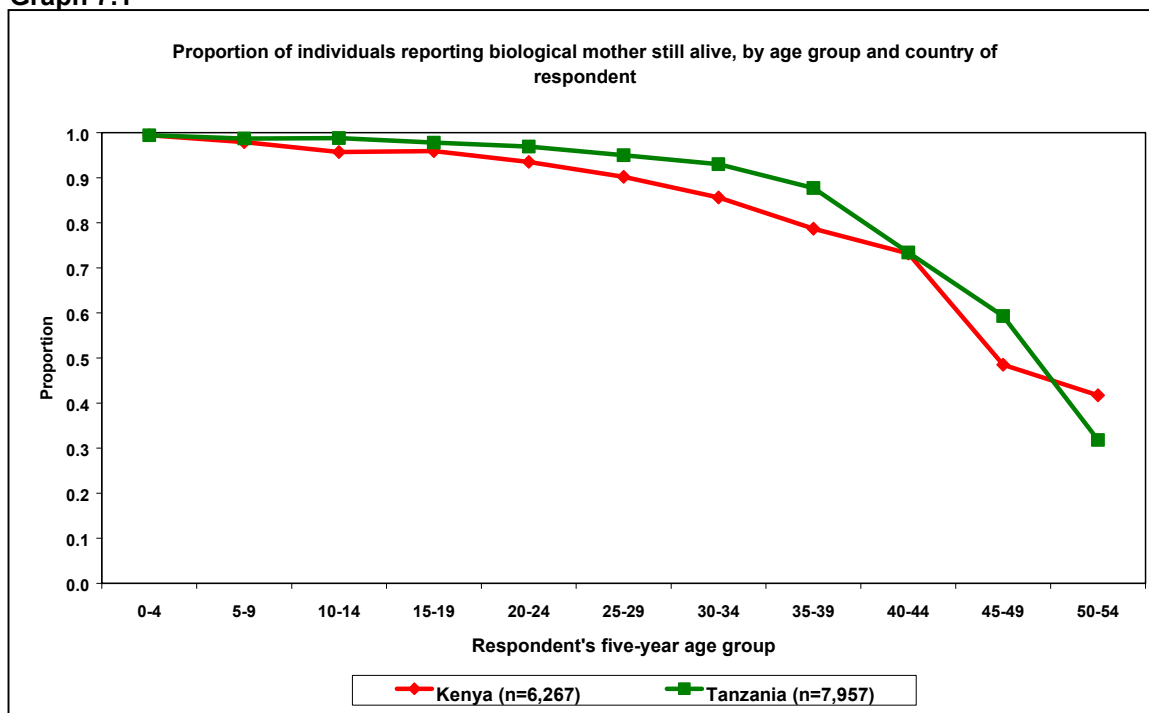
¹⁸⁸ See Chapter Six for detailed information on the calculation of SMAMs using SRDS data.

¹⁸⁹ As developed by Brass and Hill (1973) and later refined by Hill and Trussell (1977).

¹⁹⁰ For purposes of translation, this question literally translated to "Is the woman from whose stomach you came still alive?"

relative to Tanzania. Rather than representing better female adult mortality in Tanzania, this pattern probably represents relatively better reporting of maternal survivorship in Kenya, relative to Tanzania. On what evidence can such a statement be based? The short answer is "none", apart from what might be called "gut feeling". Circumstantial evidence suggests that levels of reporting would be better in Kenya relative to Tanzania. There are higher levels of education for Kenyan Maasai, and the reasonable expectation that increased exposure to formal education would diminish the traditional reticence to mention deaths¹⁹¹.

Graph 7.1

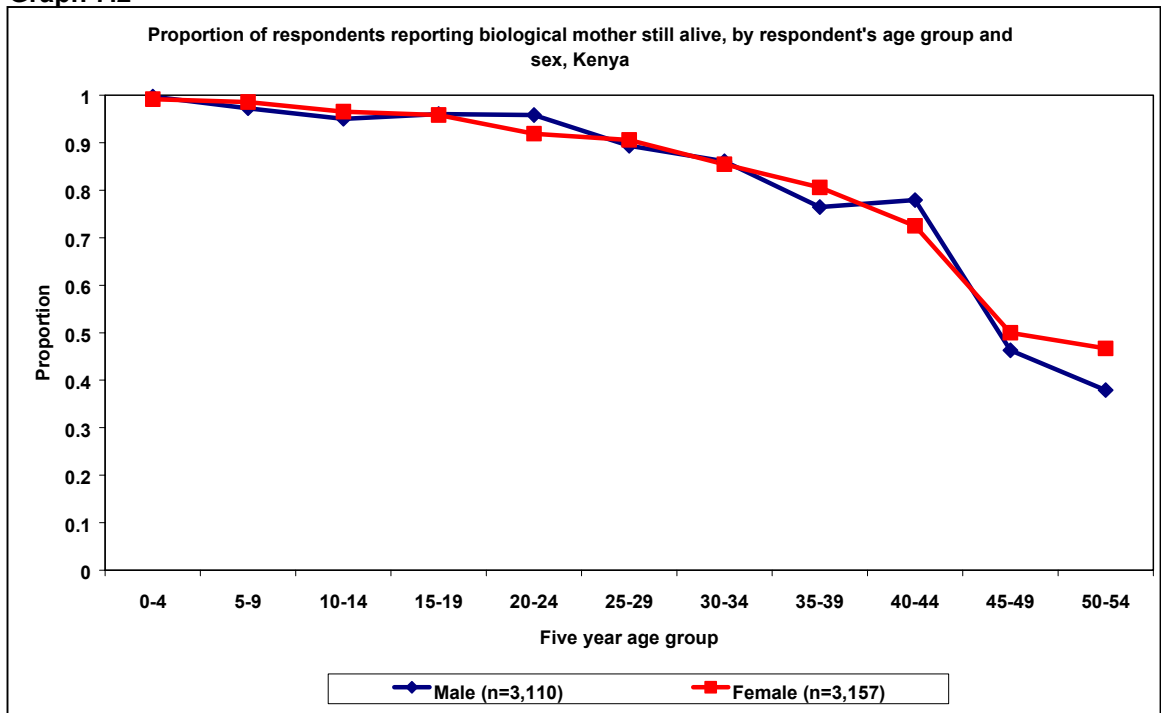


Source: SRDS data

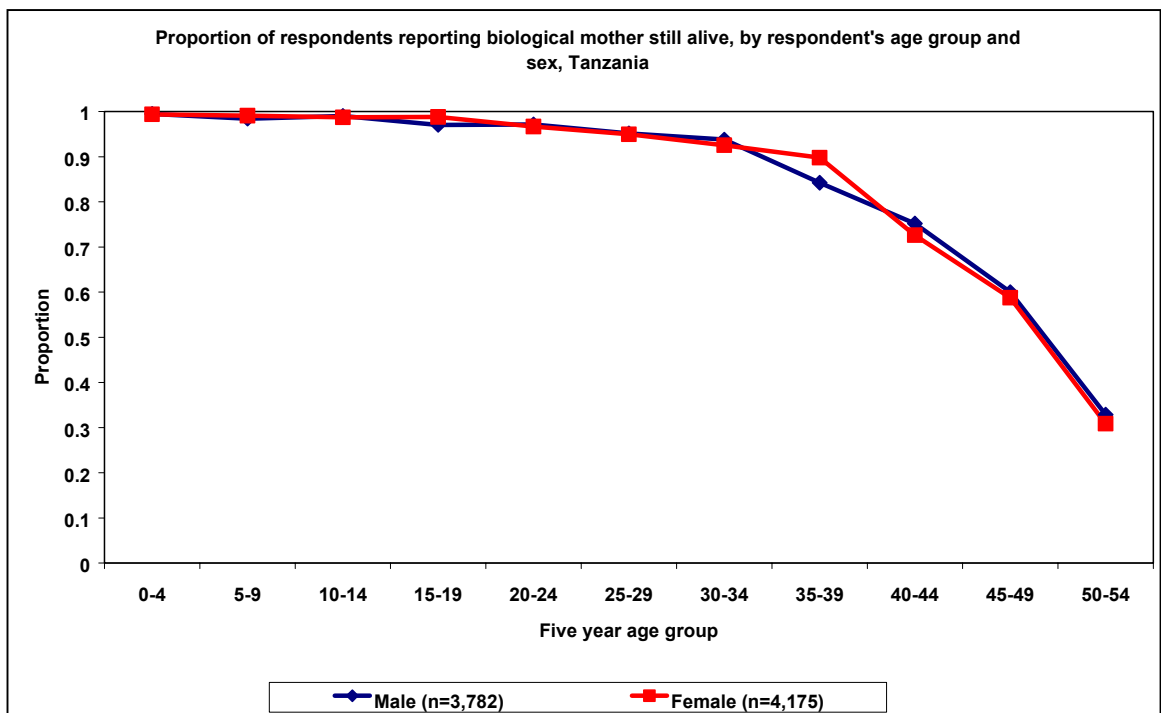
A common feature of orphanhood reports is that females tend to give better reports than males (Blacker, 1977; Wilson, 1985). Generally, this is because females in most societies are more likely to be in contact with their natal home than males, who tend to be more migratory.

¹⁹¹ It should be noted, however, that this expectation was not justified in terms of the mentioning of dead children (Chapter Eight).

Graph 7.2



Graph 7.3



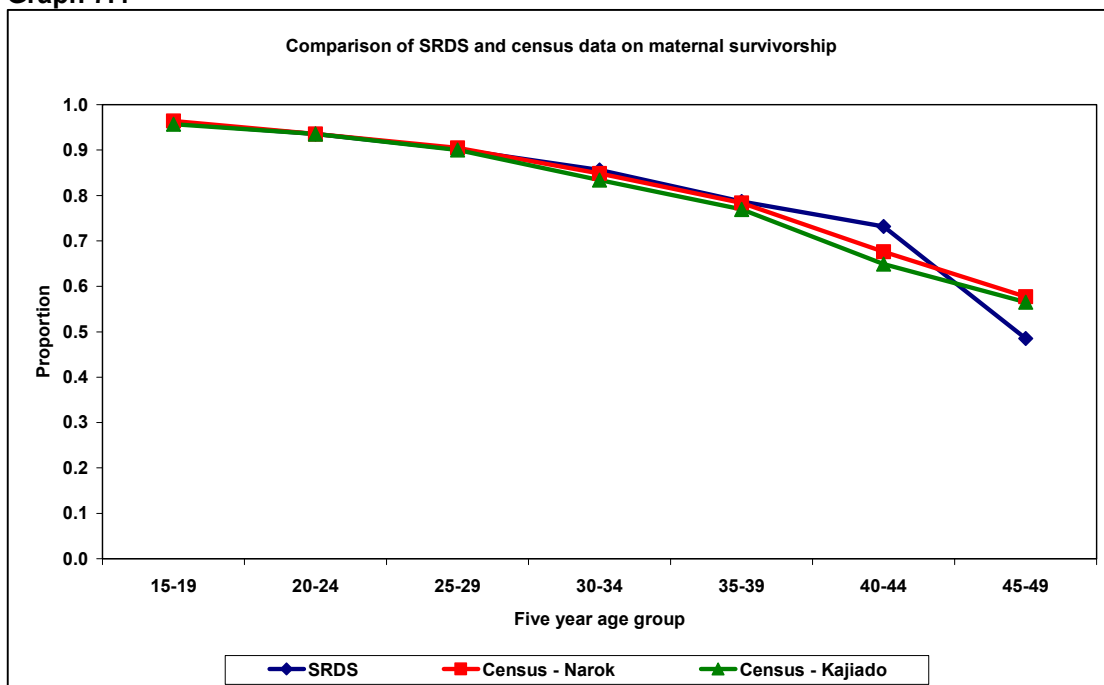
Source: SRDS data

In both Kenya and Tanzania, there is a high degree of congruence between sexes at all age groups in reporting the survival status of the biological mother. Henceforth, they will be considered together

Overall, the level of maternal survival by age reported in the SRDS is likely to be too high. There are two reasons for suggesting this. Firstly, there is the general reticence among Maasai about mentioning a dead individual. Secondly, especially if an individual was orphaned at a young age, the adoption effect is highly likely to bias

results. This latter point is especially pertinent if a co-wife of the deceased mother adopted an individual. To try to separate the two individuals in any meaningful, practical sense during an interview would be extremely difficult. The only comparison between SRDS and extant data sets that can be made is between the Kenyan SRDS data and the 1989 census district-level data on reported proportions of maternal survival (Graph 7.4).

Graph 7.4



Source: SRDS data, Kenya (1989 Vol. V)

There is a very high level of congruence in the pattern of reported maternal survivorship between the SRDS data and the census data. The only notable divergence occurs between ages 40 and 49, probably attributed to small sample sizes and random effects. When comparing these two sources of data, however, it must be reiterated that the SRDS data refer only to Maasai, while the census data refer to all ethnic groups within each district¹⁹². Further, the district-level census data refer to both urban and rural populations whilst the SRDS data refer only to rural individuals. Rural-urban differentials in early age survivorship have been established in a wide variety of situations (Brockhoff, 1993). For adult survivorship, however, the relationship is less clear. Notwithstanding issues of what constitutes urban/rural notwithstanding, a current urban resident may have spent the majority of their life living in a rural area. Levels of urbanisation are extremely low in Kajiado and Narok, at 1.2% and 0.4%, respectively in 1989. It is therefore unlikely that the overall level and trend of reported maternal survivorship would alter greatly if the urban population were removed from the census data. Given the rapid levels of urbanisation in Kenya, it is likely that most of the current urban population had both rural parents and a rural childhood.

Two inferences might be drawn from this agreement in the district-level census data and the SRDS data. Either, the adult female mortality levels of the Maasai broadly reflect those of the entire district populations for Narok and Kajiado, and *vice versa*. Given the relative importance numerically of Maasai populations in both Narok and Kajiado, then

¹⁹² In 1989 Maasai represented only 47% and 57% of Narok and Kajiado districts, respectively.

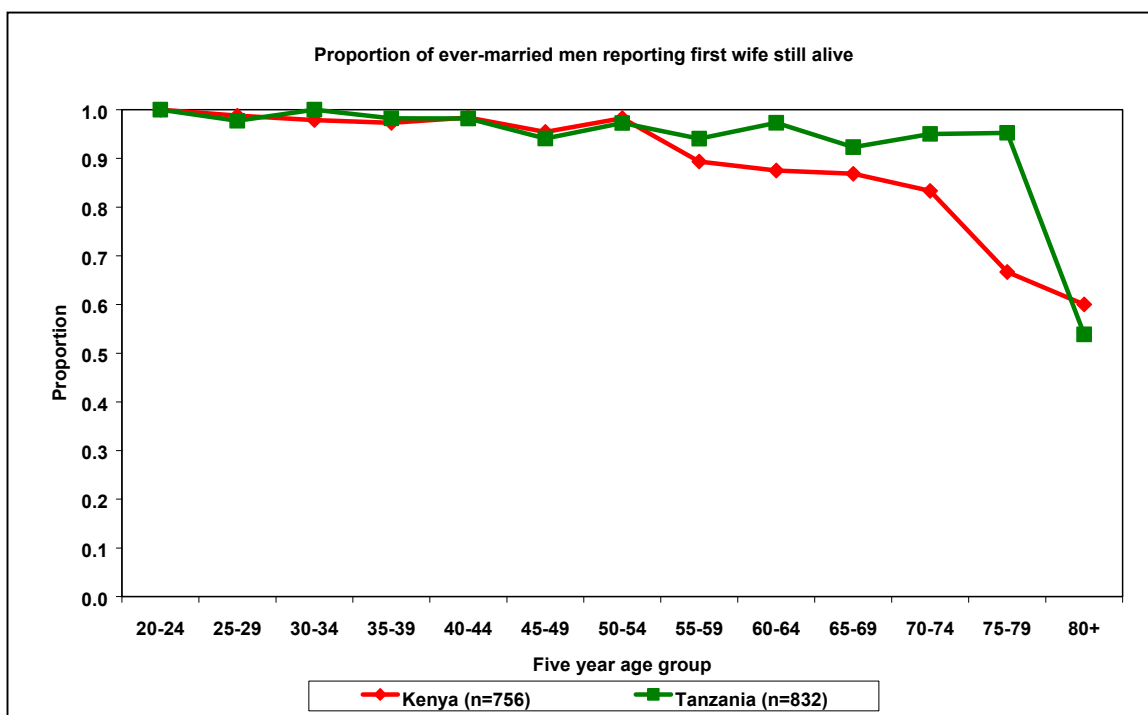
this is not an unreasonable inference. Or, both sets of data contain the same reporting errors, for example, under-reporting of dead individuals.

There is every reason to believe that the quality of reporting from the SRDS was better than that from the census enumeration, at least in terms of the data reported by Maasai. Detailed attention was given to enumerator training with regards to questions relating to death, and the enumerators were of the same ethnic group as the respondent. Evidence in support of this statement is that the census data rely only on female respondents' reports of maternal survival due to the poor quality of data from male respondents. In the SRDS, there was no such sex-bias in reporting. Of course, it is quite possible that at the district level, better reporting of dead mothers in the census was derived from non-Maasai ethnic groups, particularly those living in the urban, peri-urban or semi-urban areas.

7.4.4 Widowhood data

The reported levels of wife survivorship are implausibly high, particularly in Tanzania, where at least 90% of first wives are reported as still alive for all men up to the age of 80 (Graph 7.5).

The proportions of reported surviving wives are slightly lower for Kenya, but still unfeasibly high. What is interesting is the high level of consistency between both Kenya and Tanzania in the reports of first wife survival status. This suggests a high degree of commonality between the Maasai in either country in matters of referring to first wives. Despite the influence of spousal age difference, given the relatively high levels of maternal mortality among the Maasai (Section 7.6.1), it is not possible to accept the reported levels of first wife survivorship from men. The quality of the data must be seriously questioned, and certainly not used for indirect estimation techniques.



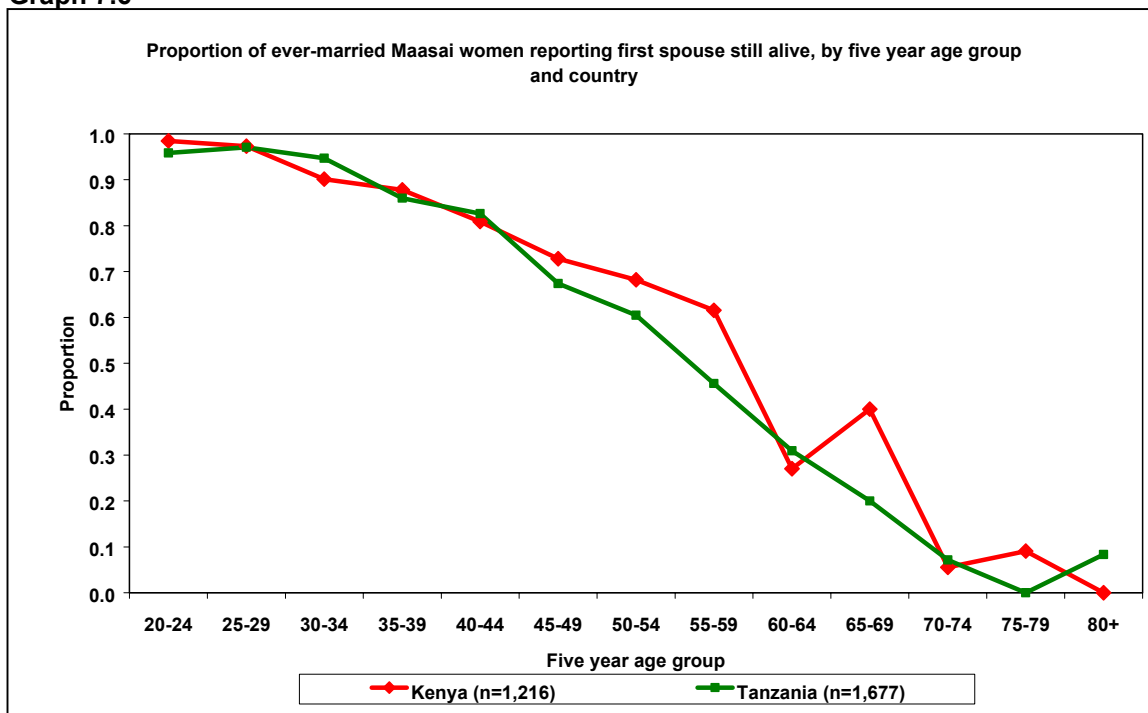
Graph 7.5

Source: SRDS data

7.5 Adult male mortality

When compared with the widowhood data reported by men, ever-married female reporting of husband survivorship produces a very different level and pattern of survivorship (Graph 7.6).

Graph 7.6



Source: SRDS data

In both Kenya and Tanzania, widowhood increases with age. However, it should be noted that the pattern of reporting in Kenya is much more erratic above age 59, although this could simply be explained by random fluctuations due to the small sample sizes at the older ages. Relative to men's widowhood data, the female widowhood reporting on deceased husbands appears to be better quality. It was therefore decided to proceed with indirect estimation of adult male mortality using the widowhood method.

Why should the quality of male reporting of the survival status of first wives be so poor? This question is especially pertinent, given the reasonable quality of the data produced by women on first husbands. This suggests that the problem is not a cultural issue of mentioning a dead person (however obliquely). The male reporting is poor probably because of nuptiality patterns, namely, polygyny. That is, regardless of the survival status of the first wife (chronologically), a man or his proxy will only report on the current first-ranking wife. Although no data were recorded as to who provided the information for the enumerator¹⁹³, in practice the majority of data were normally provided by women, who in all likelihood could be a subsequent "first" wife. It is quite possible that a subsequent wife would have very little knowledge of any preceding deceased spouse of her husband. Or, a subsequent wife may be very unwilling to report a deceased wife prior to herself, given the status a first-ranked wife has within the household. Further, if a first wife died of maternal causes, it is very unlikely that the surviving husband or a subsequent wife will report the death. Because of the practice of polygyny, and the fact that in reality there is no such thing as a Maasai widower (Chapter Six), the very poor levels of reporting on first wives are unsurprising.

¹⁹³ The weakness introduced by this shortfall is acknowledged. It would have been beneficial to collect some basic data on who was providing the information.

The response levels from widowed women about deceased husbands, however, are considerably better. Levels of widow remarriage are low, for reasons outlined in Chapter Six. A woman is well known to be a widow by the surrounding community, and there are no extenuating as to why this fact should be concealed. A combination of these two factors makes a statement of widowhood by a woman a relatively uncomplicated matter, relative to the reporting of a deceased first wife.

It is difficult to say whether or not any improvement in the reporting of first wives survival status could have been achieved with methodological changes. There does not appear to be a term in Maa that refers to the first wife a man has ever-married¹⁹⁴. Further, if an individual really does not want to provide a piece of information, then more detailed questioning is almost certainly not going to elicit that information. Indeed, within a Maasai context, such an approach is only likely to endanger any further questioning. Because of these data quality issues subsequent analyses will focus on adult female mortality using the orphanhood method and adult male mortality using the widowhood method.

7.6 Adult female mortality: maternal orphanhood technique

The maternal orphanhood technique requires data on the mean age at childbearing and the mean parity of women, classified by five-year age groups. Because of the potential impact of the under-reporting of dead children (Section 8.3), the estimation was computed twice, using both mean parity data and cumulative ASFR data. However, the mortality estimates using model life tables were identical. The results are shown in Tables 7.1-2.

Table 7.1: Estimated female life expectancy at birth based on reported female orphanhood, SRDS data, Kenya

Age group of respondent	Proportion not orphaned	Age x	Probability of surviving from age 25 to age x	Life expectancy at birth ¹⁹⁵
15-19	.96	45	.9654	71.3
20-24	.94	50	.9497	72.0
25-29	.90	55	.9198	71.5
30-34	.86	60	.8847	72.2
35-39	.79	65	.8170	71.6
40-44	.73	70	.7512	73.4
45-49	.49	75	.4825	64.7

Table 7.2: Estimated female life expectancy at birth based on reported female orphanhood, SRDS data, Tanzania

Age group of respondent	Proportion not orphaned	Age x	Probability of surviving from age 25 to age x	Life expectancy at birth
15-19	.98	45	.9926	>80
20-24	.97	50	.9896	>80
25-29	.95	55	.9839	>80
30-34	.93	60	.9735	>80
35-39	.88	65	.9308	>80
40-44	.73	70	.7707	76.6
45-49	.59	75	.6048	75.5

¹⁹⁴ To the best of my knowledge, having consulted with enumerators and searched ethnographic texts and Maa dictionaries. The phrase *enkitok botorr* was mentioned, but it was unclear whether it referred to ever-married first wife or current first wife.

¹⁹⁵ Using Coale-Demeny model with Hill-Trussell equations.

For both Kenya and Tanzania, the initial results suggest improbably high female survivorship, particularly in Tanzania. Any technique of indirect estimation is only as good as the data used in the estimation. Given the very real possibility of under-reporting of dead children, it is likely that both the SRDS and the Kenyan district-level census data represent an under-reporting of maternal orphanhood.

7.6.1 Maternal mortality

The WHO defines maternal mortality is “a death of a woman while pregnant or within 42 days of a termination of pregnancy, irrespective of the duration and site of the pregnancy, from any cause related to or aggravated by the pregnancy, or its management but not from accidental or incidental causes” (1996).

The United Nations region of eastern Africa has the highest levels of maternal mortality ratio in the world (1,060 maternal deaths per 100,000 live births), representing a lifetime risk of maternal death of 1 in 12. The WHO estimates¹⁹⁶ a maternal mortality ratio for Kenya of 650 per 100,000, representing a lifetime risk of 1 in 20. For Tanzania, the figures are 770 per 100,000 and 1 in 18, respectively. No data on maternal mortality exist for the Maasai.

With specific reference to the implications for maternal mortality this section examines the context of maternity for Maasai woman. Firstly, Maasai practices related to pregnancy, childbirth and postpartum are examined, with specific reference to implications for maternal mortality. Issues including nutrition, formal healthcare use and Traditional Birth Attendants (TBAs) are described. Secondly, estimates of maternal mortality are calculated, using an adaptation of the *Sisterhood Method*. The results are interpreted within the context of Maasai attitudes toward reporting maternal deaths.

7.6.1.1 Maasai practices related to pregnancy

The status of a Maasai wife within her husband’s *enkang* alters considerably after the birth of her first child. Prior to childbearing, a woman’s position is somewhat tenuous, especially if she has to live with her husband’s mother and does not have her own *enkaji*. After a first birth, however, a woman’s position within the *enkang* is strengthened, both vis à vis her mother-in-law and any co-wives. Von Mitzlaff suggests that the consolidation of the woman’s position is a result of continuing the patriline (1994:112). The form of address for a woman changes with her first birth, from *esiankiki* (circumcised and married) to *entomonone* (woman with very young baby).

The practice of withholding food from pregnant woman during the final months of her pregnancy is widespread among the Maasai (von Mitzlaff, 1994; Mawani, 1996; Nestel 1986; Mpoke and Johnson, 1993; Pers. Ob.). For the first 6 months of a pregnancy, a woman will stop eating any fatty foods, including fresh milk. For the last 3 months of a pregnancy, the diet becomes far more restricted, and will include only maize, water, and possibly soured milk. The practice of restricted diet is very strictly observed for women expecting their first child. Nestel (1986) estimated that pregnant Maasai women consumed 50-55% of recommended calorific daily intake.

The deliberate restriction of food intake has a twofold motivation. Primarily, it is to ensure a small child at birth, reducing the risks and effort associated with a larger birth. Mawani’s (1996) ethnographic study of maternal morbidity among Maasai women in

¹⁹⁶ Kenya and Tanzania are without accurate information on numbers of deaths and without direct or indirect estimates of maternal mortality. Therefore, the maternal mortality ratio is estimated through the use of modelling using 1990 United Nations projections of adult female deaths.

Kenya highlights the concerns associated with childbirth among Maasai women. Morbidity associated with pregnancy is given little cognisance. Rather, the focus of Maasai women's concerns is parturition, explaining the practice of restricted feeding prior to the birth. A secondary feature of restricted childbearing is the concern of many women to regain a slim build after the birth. A tangible expression of this desire to remain slim is the wearing of a wide leather belt for several months after the birth, the purpose of which is to flatten the stomach. It is interesting to note that brain size (and hence head size - the single most important determinant of a difficult delivery) is largely unaffected by nutrition. The main physiological effect of restricted diet would be severe anaemia, and hence lethargy, for both mother and child. For example, Nestel's study among the Maasai in Kenya noted that despite the restricted diet of the mother, the babies were of normal weight¹⁹⁷.

As soon as a woman realises she is pregnant, then she is supposed to stop having sexual intercourse. In general, Maasai consider seminal fluid to be harmful to the foetus. Llewellyn-Davies (1978:221) suggests that the pregnancy-abstinence rule is an extension of the more general Maasai offence of a man having sexual relations with a daughter (classificatory or real). Both von Mitzlaff¹⁹⁸ and Llewellyn-Davies¹⁹⁹ report incidents whereby women who give birth to either defective or marked children are "checked" for signs of sexual activity during pregnancy.

Systematic data on the use of hospitals and clinics by women for antenatal, parturition, and post-natal services were not collected during the SRDS. However, the use of services for maternal healthcare among the populations studied is very low²⁰⁰. The only study, to date, of Maasai pregnancy practices is that by Mpoke and Johnson. They noted that 29% of women in their study (n=184) reported having delivered a child in hospital at least once (1993: 307). This is a very high level of formal healthcare use, and probably not indicative of average Maasai use of hospital for delivery. Mpoke and Johnson's study population lives within 25km of Nairobi and Ngong town, both of which have higher levels of healthcare availability than a normal rural Maasai setting. In addition, several of their informants who had previously experienced complications in delivery reported moving to lodgings close to the hospital towards the end of their pregnancy (1993: 308). Such an option would not be available (affordable) for the majority of Maasai women in this study.

Women generally give birth at home, attended by other circumcised women from the *enkang* and locality. Traditional Birth Attendants (*enkaitaiyoni*) are most likely to attend a first birth or one that is proving to be difficult. Few TBAs have any formal

¹⁹⁷ Although Prentice and Prentice (1988), based on work in the Gambia, noted that malnutrition during pregnancy was associated with a 10% decline in birth weight, and elevated mortality risks.

¹⁹⁸ "Should a woman have sex with a man despite the pregnancy, at birth, her child will have white spots on its head and the upper part of its body. These will disappear after 10 days or so. A woman who breaks this taboo (*enkariatani*) will be beaten by the other women on the very day of the delivery. She will also be excluded from their meetings and social gatherings for a long time" von Mitzlaff (1994:113).

¹⁹⁹ "When a woman is delivered of a stillborn or deformed baby, the midwife, or a woman skilled in the technique, massages her stomach to find evidence of seminal fluids distending in it. If she claims to have found such evidence, the culprit is abused by everyone present" Llewellyn-Davies (1978:226)

²⁰⁰ The one source of published data available for a (largely) Maasai population is that from AMREF whose Nomadic Health Unit, runs Entasopia Rural Health Centre (ERHC). The ERHC serves two of the Group Ranches covered by the SRDS - Shompole and Olkirmatian. The ERHC serves a population of approximately 18,000 people, providing a wide range of services. In 1996 only 16 deliveries were carried out at the ERHC. In addition, 397 women attended antenatal clinics and 244 women received tetanus toxoid immunisation and iron/folate supplementation. It is not possible to provide separate figures for post-natal care, as the data are included together with the family planning services.

training, and as a result poor obstetric practices are widespread. These include: the use of old razor blades to cut the umbilical cord; the use of fingernails for episiotomies; only tying the umbilical cord on the baby's side; induced vomiting to stimulate labour and expulsion of the placenta²⁰¹. Following the birth, the woman's diet changes to include large amounts of fat, meat and milk, ostensibly to offset the poor nourishment during the pregnancy. For two to three months following the birth, the woman does not leave the *enkang* or its immediate surrounds. This period of time is known as *entomonone*, and is outwardly represented by the non-shaving of the woman's and child's head.

7.6.1.2 Measurement of maternal mortality

The most common measurement of maternal mortality is the maternal mortality ratio²⁰². The data collected in the SRDS, however, did not permit the direct estimation of levels of maternal mortality. Instead, use was made of the "Sisterhood Method" developed by Graham *et al* (1989). The Sisterhood Method is an extension of the basic sibling survivorship technique (Hill and Trussell, 1977). Graham *et al* recommend four basic questions for collection of data for the sisterhood method²⁰³ (1989:128). In the SRDS, the questions were rephrased to refer to female siblings who had been circumcised, rather than ever-married sisters. The reason for this was the "process" rather than "event" nature of Maasai marriage (Chapter Six), which would have led to inaccuracy in data collection. The majority of Maasai women marry, and hence are exposed to childbearing relatively soon after circumcision (usually within one year). It was therefore decided to use of "post-circumcision" rather than "ever-married" as the criterion for female sibling inclusion. For the purposes of the SRDS, the WHO-recommended period of 42 days was replaced with *entomonone* (period of seclusion after birth). This was because *entomonone* is a widely recognised period of puerperium among the Maasai, whilst 42 days would be largely irrelevant within this context. Using Graham *et al's* (1989) methodology²⁰⁴, the following indirect estimates of maternal mortality were made for the SRDS data.

Table 7.3: Lifetime risk of maternal death from reports of respondents²⁰⁵

	n	Lifetime risk	
		Maasai ²⁰⁶	National
Kenya	2,999	1 in 59	1 in 20
Tanzania	3,981	1 in 33	1 in 18
All	6,980	1 in 40	-

Source: SRDS data, Ross *et al* (1999)

Relative to the published levels of maternal mortality for Kenya and Tanzania as a whole, estimates of the lifetime risk of maternal mortality for Maasai women are very

²⁰¹ "TBAs reported having traditional treatments for complications such as postpartum haemorrhage, prolonged labour, or tears and lacerations. For haemorrhage, they described tying each arm and thigh tightly with string. In cases of prolonged labour, fat, herbs or donkey dung boiled in water and strained was given orally to act as a laxative. Alternatively, the woman might be forced to run, be chased and beaten by other women, forced to lift a heavy object or to uproot a tree root, or as a last resort, be lifted upside down and shaken - all in the hope of hastening labor." (Mpoke and Johnson, 1993:308)

²⁰² The number of maternal deaths per 100,000 deliveries (usually live births)

²⁰³ How many sisters (born to the same mother) have you ever had who were ever-married (including those who are now dead?); How many of these ever-married sisters are alive now?; How many of these ever-married sisters are dead?; How many of these dead sisters died while they were pregnant, or during childbirth, or during the six weeks after the end of pregnancy?

²⁰⁴ Graham *et al* (1989) recommend a minimum sample size of 3,000 respondents for the application of the sisterhood method.

²⁰⁵ All respondents aged between 15 and 49

²⁰⁶ This estimate of maternal mortality refers to a period about 11.7 years prior to data collection.

low. The difficulties surrounding the collection of these data, combined with the lack of maternal healthcare provision for most Maasai women, suggest that these estimates are implausibly low.

7.7 Adult male mortality: widowhood technique

Interpretation of the application of all indirect estimation techniques requires the choice of a model life table. The Coale-Demeny North model life table was used in the following calculations²⁰⁷. Although heavily biased by early age mortality, life expectancy at birth (e_0) is estimated in order to allow comparison with published national data.

Table 7.4: Estimated male life expectancy at birth and at age 20 based on reported widowhood (n=2,684), SRDS data, by country

Age group of wife reporting on husband	e_0		e_{20}	
	Kenya	Tanzania	Kenya	Tanzania
20-24	71.8	47.9	54.7	43.0
25-29	74.3	72.2	56.4	55.0
30-34	53.6	70.6	45.6	53.6
35-39	57.6	54.0	47.4	45.7
40-44	53.4	58.0	45.4	47.6
45-49	51.1	46.1	44.4	42.1
50-54	55.9	50.1	46.6	43.9
55-59	<20	<20	<20	<20

In both Kenya and Tanzania, the derived estimates of life expectancy follow no clear trend with age. Estimates of e_0 are extremely irregular, especially in the case of Tanzania, with estimates of e_0 peaking at over 72 years for the age group 20-24. In order to attempt some estimation of male life expectancy at birth for the Maasai, therefore, an average was taken of those estimates that at least appeared to follow some time trend. Male life expectancy at birth is estimated at 52.1 years and 54.3 years for Tanzania and Kenya, respectively²⁰⁸. However, relative to the published Kenya estimates of male life expectancy at birth, the SRDS estimates are considerably lower. The 1989 census estimated male life expectancy at 57.5 years for Kenya as a whole, and 61.0 and 61.9 years for Narok and Kajiado, respectively²⁰⁹.

One of the chief advantages given by Hill for the use of the widowhood technique for the estimation of adult mortality is that there is “generally only one report of an individual’s fate” (1977:75). This advantage is removed in a highly polygynous situation. The number of reports of an individual's fate will be proportional to the number of surviving spouses: one dead man with eight surviving wives will be reported on 8 times. How might it be possible to adapt the widowhood technique for the estimation of adult male mortality for use in a polygynous context? One approach

²⁰⁷ This model life table was the most appropriate for the Rift valley districts, otherwise “implausibly low levels of early age mortality would be assumed” (Kenya 1996 Vol. V p.47). Estimates made using MortPak Lite.

²⁰⁸ The estimate of e_0 for Kenya is based on an average of widowhood from women aged 30 to 54, and the Tanzanian estimate is based on an average of women aged 35 to 54. These age groups were chosen based on the overall pattern of estimated e_0 by age group of wife reporting on husband. Estimates of e_0 are extremely high when based on reports from Kenyan women aged 20-29 and Tanzanian women aged 25-34. One possible explanation might be that women in these age groups married to much older men are most likely to be widowed and remarry, and subsequently not report the first marriage. This would have the effect of biasing upwards estimates of male e_0 based on reports by these women.

²⁰⁹ Based on linkage of estimates of child mortality derived from proportions of children dead for a 1979-1989 hypothetical cohort of mothers, and estimates of adult mortality from the 1989 orphanhood data (Kenya, 1996 Vol. V, p.47).

might be to weight each wife's response by the inverse of the number of wives her husband had. However, Timaeus (Pers. comm.) suggests that this would violate the use of SMAMs in the calculations, as men are older than their SMAM when they marry their junior wives.

It must be remembered that the widowhood technique uses only reports of ever-married men from their wife/wives. Excluded from the estimations is the mortality experience of never-married men. The assumption of the technique is that marriage does not alter the mortality experience of an individual. Attention is drawn, however, to the fact that (traditionally at least), unmarried *murrani* are exposed to a unique set of mortality risks. That is, the traditional role of the *murrani* to defend a neighbourhood and also to raid cattle, is a very risky occupation, with implications for mortality levels²¹⁰. The widowhood technique therefore excludes the mortality risks that *murrani* are exposed to, and cannot incorporate this potential raised risk of mortality for young, never-married Maasai men.

7.8 Cause of death

Data on cause of death were not collected systematically by the SRDS. Given the difficulties in simply obtaining a yes/no response to questions, to introduce a further question related to mortality would have been foolhardy. However, there was one enumerator (Koyaki Group Ranch, Kenya) who took a particular interest in trying to collect this sort of information. What follows is in no way supposed to be representative. It merely represents the *ad hoc* information scribbled down by the enumerator at the time of the interviews.

Table 7.5: Cause of male adult death, recorded in Koyaki Group ranch, SRDS

Cause of death	Number of times mentioned
Land mine	2
Cattle raiding	3
Fever ²¹¹	8
Typhoid	1
Amoebic dysentery	1
Curse ²¹²	1
Drowning	1
Snake bite	1

This unrepresentative information highlights two things. Firstly, the relative importance of malaria or other fevers as a cause of death. Secondly, the deaths attributed to cattle raiding highlight the mortality risks associated with one particular aspect of Maasai society; being a *murrani*. Deaths caused by land mine, cattle raiding, drowning and snake bite were all reported cause of death for young men. Whilst cattle raiding is illegal in both Kenya and Tanzania, and the day-to-day role of *murrani* has declined, the periodic contribution of cattle raiding to adult male mortality should not be overlooked²¹³.

²¹⁰ More recent *murrani* activities have included smuggling, poaching and raiding.

²¹¹ The enumerator recorded "malaria", but in the absence of corroborating information, it was decided to record these responses as "fever".

²¹² The belief in cursing as a cause of morbidity and mortality is strongly held by the Maasai, and curses are greatly feared.

²¹³ For example, one enumerator suddenly disappeared from the SRDS enumeration. It later transpired that he had gone to recapture some of his cattle that had been stolen.

In both Kenya and Tanzania, levels of HIV seroprevalence have increased rapidly, the most recent national estimates of adult seropositivity being 11.6% and 9.6%, respectively (UNAIDS, 1999)²¹⁴. The impact of increasing levels of seropositivity on life expectancy and age-specific mortality rates has been well documented (*Op. Cit.*). The risk factors associated with HIV transmission include sexual intercourse with an infected person, mother to child transmission (MTCT) and parenteral causes (for example, injecting drug use (IDU), blood product transfusion). Sub-Saharan Africa is characterised by high levels of heterosexual HIV transmission, and has some of the highest national seroprevalence levels in the world. Factors such as high rates of sexual partner change and higher than average levels of lesion-causing STDs are important co-factors in this region. The relative contribution of the different co-factors is almost impossible to measure: those individuals with higher than average rates of sexual partner change are more likely both to acquire sexually transmitted infections and to transmit them to others.

To date, there are only two published reports on the HIV serostatus of the Maasai²¹⁵. The first study was by Lopez-Corral *et al* (1992) in Arusha region, northwest Tanzania. The study used blood specimens (n=80) from outpatients at a clinic. No cases of seropositivity were found, although 79% of the sample had a STD at the time of the enquiry²¹⁶. Valadez *et al*'s study in Kajiado District used antenatal blood specimens (n=2,082) from pregnant women over the period 1989-1992. The communities from which the women were drawn live very close to a high transmission area - a major trucking route²¹⁷. Valadez *et al* reported annual prevalence ranging between 0.95% and 2.23%, with no evidence of an increasing trend over the time period. It must be noted that Valadez *et al*'s study also collected syphilis prevalence data over the same period. The trend in this infection increased, from 2.9% in 1989 to 5.3% in 1991. Both reports imply relatively low levels of HIV prevalence for Maasai samples. However, attention is drawn to the dates of these studies, with the fieldwork for Valadez *et al*'s study taking place over a decade ago. Given the potential for rapid increases in seropositivity levels in a low risk population, these figures must be interpreted as reflection of a historical situation. A third, unpublished, source of data is provided by Wasso Hospital records (Loliondo, Ngorongoro District). Of 277 blood samples tested in 1994, 15 cases tested positive for HIV, representing 5.4% of the sample (Lembikas *et al*, 1996:45)²¹⁸. Given the location of Wasso hospital, it is reasonable to assume that the large majority of the tested individuals were Maasai. The role of perceptions relating to the morbidity status (in this case seroprevalence) should not be ignored. Talle, for example, notes "locally based rumours of pastoralists being less exposed to HIV transmission, as they are considered to be "fresh from the bush"" (1999: 122), noting that "the bush" is generally associated with freedom from disease.

²¹⁴ Estimates based on antenatal attendances outside major urban areas.

²¹⁵ Two further sources are included for completeness. Owuor's (1994) report is drawn from the Daily Nation (March 31st 1994) newspaper, and its provenance cannot be verified. It reports seropositivity levels of 1% for a group of 308 Maasai women in northern Tanzania. Talle (1995) reports "blood screening of pregnant women at some mother and child health (MCH) clinics does show that HIV is present in their communities, but up to now on a relatively small scale (personal communication with local health care personnel)" (1995:78).

²¹⁶ Lopez-Corral *et al* refer to a 1987 study (no provenance given) in which 144 pregnant women were tested for HIV, and 1 case was found to be HIV positive.

²¹⁷ The role of trucking/ transport routes and high HIV transmission areas has been well documented.

²¹⁸ It is pertinent to note that of the 15 positive cases of HIV, 12 were female and 3 male. This gender-difference probably represents differences in propensity to be tested, as women attending Wasso hospital for antenatal tests were far more likely to be tested than males.

A large sexual network is a major risk factor in HIV transmission (Mann *et al*, 1996). What evidence exists relating to rates of partner change among the Maasai? To date, only two studies of Maasai partner change have been published. Morley (1991) reports the results from 132 Maasai²¹⁹ men, questioned on their rate of sexual partner change for the previous three years (1985-1987). Averaged over the 3 years, the mean number of different sexual partners per year was 11.8. Talle collected data relating to sexual practices from approximately 100 male and female respondents using an unstructured questionnaire survey in northern Tanzania. She concludes that “Maasai of both sexes, married and unmarried, are involved in sexual relationships with several partners simultaneously...reported having two or three permanent lovers (*esindani*) in addition to their spouses. People also may have temporary or occasional love relationships (*engare engeene*)” (1995:76). Further, unmarried or divorced women were found to have between 10 and 20 partners at any one point in time. The role of polygyny in facilitating HIV transmission between spouses and co-wives should not be ignored. Beyond the intra-marriage potential for HIV transmission, the increased likelihood of extra-marital sex by a young woman married to a much older husband is another contributory factor.

A second important question, in terms of HIV transmission, however is *who* the sexual partners are. If the high levels of sexual networking are with “risky” partners such as commercial sex workers, then the implications for HIV transmission are obvious. Substantive information on this topic is limited to Talle’s innovative work in northern Tanzania. She makes the following points about the sex partners of Maasai men: the majority of Maasai sexual partners are other Maasai; older Maasai men express a strong aversion to sex with an uncircumcised woman; younger Maasai men with some schooling are more likely to pay for sex with a commercial sex worker²²⁰. Talle summarises the attitude to Maasai men to the use of commercial sex workers “On the whole, Maasai men are not used to the idea of prostitutes and find it both ridiculous and slightly embarrassing to spend money on sex. Why should they pay for giving away their “blood” (i.e.: semen) which basically is to a woman's benefit?” (1999:119). On the other hand, Maasai women are highly unlikely to have a non-Maasai sexual partner, unless they are involved in the sale of commercial sex²²¹.

The role of male circumcision in slowing the rate of HIV transmission has been demonstrated, partly through the mechanism of reduced risk of STD infection (Szabo and Short, 2000). Given the almost universal male circumcision among the Maasai, it is possible that this will play a role in the reportedly low levels of HIV among the Maasai. Potentially more important, however, is the role of parenteral transmission for both males and females during circumcision. It is not uncommon for the same circumcision instrument to be used on a very large group of individuals (Section 3.5.2.2). Similarly, when girls and *murrani* pierce their ears, shared instruments for piercing are commonly used. The fact that most girls are sexually active prior to circumcision makes the risk of HIV transmission at circumcision pertinent²²².

²¹⁹ The published report simply refers to “tribes”, but personal communication from one of the authors confirms that the ethnic group concerned was Maasai.

²²⁰ Talle notes that this is especially so in the case of Maasai men who engage in non-traditional forms of employment, and hence have more access to cash.

²²¹ The use of commercial sex by Maasai women to earn money during times of economic hardship has been noted since colonial times (White, 1990). Talle (1999) also notes that impoverished Maasai women engage in the sale of sex, based on fieldwork at the cross-border town of Namanga.

²²² Pre-pubescent sex is particularly efficient for STD transmission.

Although inconclusive, the available data suggest low levels of HIV prevalence among the Maasai. However, given the high rates of sexual partner change combined with other co-factors such as shared circumcisions and prolonged breastfeeding, the potential for HIV transmission within the Maasai is high. The demographic implications are open to interpretation. For example, the acceptable sexual partners for the *murrani* are pre-pubescent girls. If these young girls become infected with HIV (with a median survival time of 10 years), then there will be a reducing effect on fertility and net population increase.

7.10 Discussion

Data, especially over time, on the levels of adult mortality in sub-Saharan Africa are notoriously difficult to collect and analyse. The development of robust techniques for the indirect estimation of adult mortality levels and life expectancy at birth has greatly improved the knowledge base for this region. However, the applications of the widowhood and orphanhood techniques are still only as good as the data used in their computation. Application of the widowhood and orphanhood techniques to the Maasai SRDS data has highlighted several key points. Firstly, the techniques are reliant on age-related data. The poor quality of the SRDS age data has been discussed elsewhere (Chapter Five). Secondly, the context of the data cannot be ignored. For example, the inappropriateness of even asking a question on paternal survivorship precluded the inclusion of the question in the questionnaire. In terms of the widowhood technique, the influence of polygyny cannot be ignored. Firstly, there is the potentially confounding influence of multiple wives reporting on one dead husband. Secondly, men's failure to report on a first wife other than the wife currently ranked number one prevented the estimation of adult female mortality using the widowhood technique.

The reluctance to refer to dead people in general cannot be ignored. The implications for census and survey-derived estimates of mortality in areas where Maasai live are important. Reticence in referring to dead people is not the sole preserve of the Maasai, therefore the implications of the conclusions drawn here can be extended to other ethnic contexts. This study has not been able to advance substantive knowledge of adult female Maasai mortality. That relative levels of female mortality are high, given the risks associated with maternity, cannot be doubted. That nearly one in four of all reported adult female deaths were attributed to maternal causes, in a context where reference to maternal death is very difficult to elicit, is testament to this. Male Maasai life expectancy at age twenty is estimated at approximately 45 years. In the absence of any other studies of Maasai mortality, this estimate must be taken at face value.

Chapter Eight Early age mortality

Early childhood mortality refers to mortality up to the fifth birthday. This section will examine three main issues relating to Maasai early childhood mortality. Firstly, existing data on Maasai early age mortality will be drawn together. Secondly, the SRDS data relating to early childhood mortality are presented. This is followed by a consideration of the SRDS data quality, together with the implications for other sources of early age mortality in Kenya and Tanzania. Thirdly, using the Mosley and Chen (1984) framework of child survival, a description of Maasai child-care practices will be presented, together with an exploration of the influence of Maasai-specific practices on child survival.

8.1 Data on Maasai early age mortality

Historical reports of Maasai early age mortality all stated or implied extremely high levels (Merker, 1910; Orr and Gilks, 1931), often attributed to practices considered to be abhorrent by the Europeans²²³. More recently, there are three published reports of levels of infant mortality among the Maasai; de Vries (Kenya: 1984²²⁴), Meegan *et al* (Kenya: 1994) and Nangawe *et al* (Tanzania: 1984). Whilst all studies refer explicitly to infant mortality, no study defines what is meant by infant mortality or describes how the rates were obtained. Indeed, examination of de Vries' methodology shows that infant mortality *per se* could not be measured.

In early 1974, de Vries' study identified 48 Maasai infants aged between 4 and 5 months. Two months later, due to high levels of migration, the families of only 13 of the original 48 infants were identified. Of these 13 infants, seven had died. However, the fieldwork took place towards the end of a particularly prolonged and harsh drought episode. De Vries' conclusion on Maasai infant mortality is understandably broad, stating that "the baseline Masai infant mortality rate probably falls between the Kenyan rate²²⁵ and the 1910 figure (300/1,000)²²⁶". However, what de Vries' work does highlight is the impact that inter- and intra-annual climatic variability can have on early age mortality. It must be remembered that one of the defining features of a savanna environment is the extreme temporal variability in weather, particularly precipitation.

Meegan *et al* state that the "infant mortality rate was 186/1,000" (1994:635), as part of a study involving 138 Maasai mothers and the development of child weighing programmes²²⁷. Nangawe *et al* carried out a baseline survey of 721 individuals, and reported "an extremely high infant mortality rate of 355 deaths per thousand live births", but the methodology and calculations are not specified. Notwithstanding, Nangawe *et al* state that the very high levels might reflect "the severe measles epidemic of the previous months, age misreporting, or a combination of the two" (1984:10). Despite the lack of substantive data, a common theme of reports of Maasai early age mortality (both historical and contemporary) suggests levels that are higher than the national averages. Having reviewed the limited data available on early age mortality among the Maasai, the next section presents the SRDS data on early age mortality.

²²³ See Chapter Four for greater detail on historical reports of Maasai early age mortality.

²²⁴ Although the fieldwork was carried out in 1974

²²⁵ Estimated at 120 per 1,000 in 1974

²²⁶ Quoted from Merker (1910)

²²⁷ No information is provided as to how this figure was achieved.

8.2 SRDS data

The SRDS included questions specifically aimed at collecting early-age mortality data²²⁸. Early age mortality can be indirectly estimated using the children-ever-born/children-surviving (ceb-cs) technique, first suggested by Brass (1964) and later modified by Trussell (1975). This technique has been described as "probably the most powerful technique of indirect demographic estimation" (United Nations 1983:4). The technique estimates early-age mortality from data on the average number of children ever born and the average number of children surviving. Ceb-cs estimation assumes that the risk of dying of a child is only a function of the age of the child, and no other factor²²⁹.

The overall sex ratios for reported children ever born in Kenya and Tanzania are 1.11 and 1.00, respectively (Table 8.1). While the sex ratios of children ever born do fluctuate by age of mother, they show no systematic trend, and levels are acceptably close to the normal range of 1.02-1.07 (United Nations, 1983:77). The sex ratio of reported dead children are much more erratic, although there does not appear to be any systematic pattern of sex ratio by mother's age.

Table 8.1: Sex ratio of children ever born and children ever died, by age group of mother and country, SRDS data.

Kenya						
	Male		Female		Sex ratio	
	Born	Dead	Born	Dead	Born	Dead
15-19	65	1	65	2	1.00	0.50
20-24	261	5	214	13	1.22	0.39
25-29	452	21	412	20	1.10	1.05
30-34	389	9	393	20	0.99	0.45
35-39	377	15	347	16	1.09	0.94
40-44	405	22	356	18	1.14	1.20
45-49	372	23	298	22	1.25	1.05
Total	2,321	96	2,085	111	1.11	0.86
Tanzania						
	Male		Female		Sex ratio	
	Born	Dead	Born	Dead	Born	Dead
15-19	51	6	50	2	1.02	3.00
20-24	216	9	226	7	0.96	1.29
25-29	520	30	502	24	1.04	1.25
30-34	563	41	535	29	1.05	1.41
35-39	630	55	622	52	1.01	1.06
40-44	536	40	544	40	0.99	1.00
45-49	516	32	546	49	0.95	0.65
Total	3,032	213	3,025	203	1.00	1.05

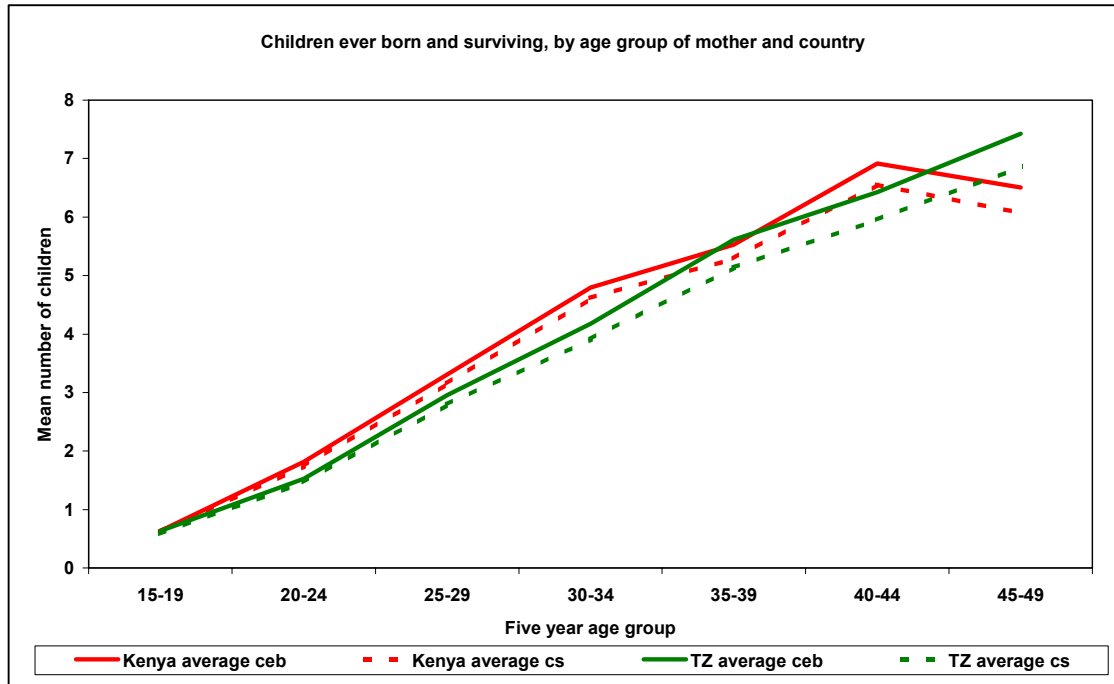
The SRDS data on levels of reported children ever born and surviving by country are shown in Graph 8.1. The levels of reported dead children are very low, in both Kenya and Tanzania. Two initial conclusions may be drawn. Either, there is widespread under-reporting of dead children. Or, levels of early-age mortality are very low among the Maasai. It is not possible to examine directly the first suggestion (under-reporting of dead children), but it is possible to compare the reported levels of dead children from the SRDS with other data sources.

²²⁸ Children ever born: "How many male children, born to you, have died?" "How many female children, born to you, have died?". Most recent birth: "When was your most recent birth?" "Was it a boy or a girl?" "Is this child still alive?"

²²⁹ Although it is recognised that children born to young mothers (aged 15-19) will experience higher levels of mortality than children born to older mothers. In addition, mothers in this age group tend to be a selected group. Therefore, data relating to mothers aged 15-19 are generally disregarded.

Graph 8.1

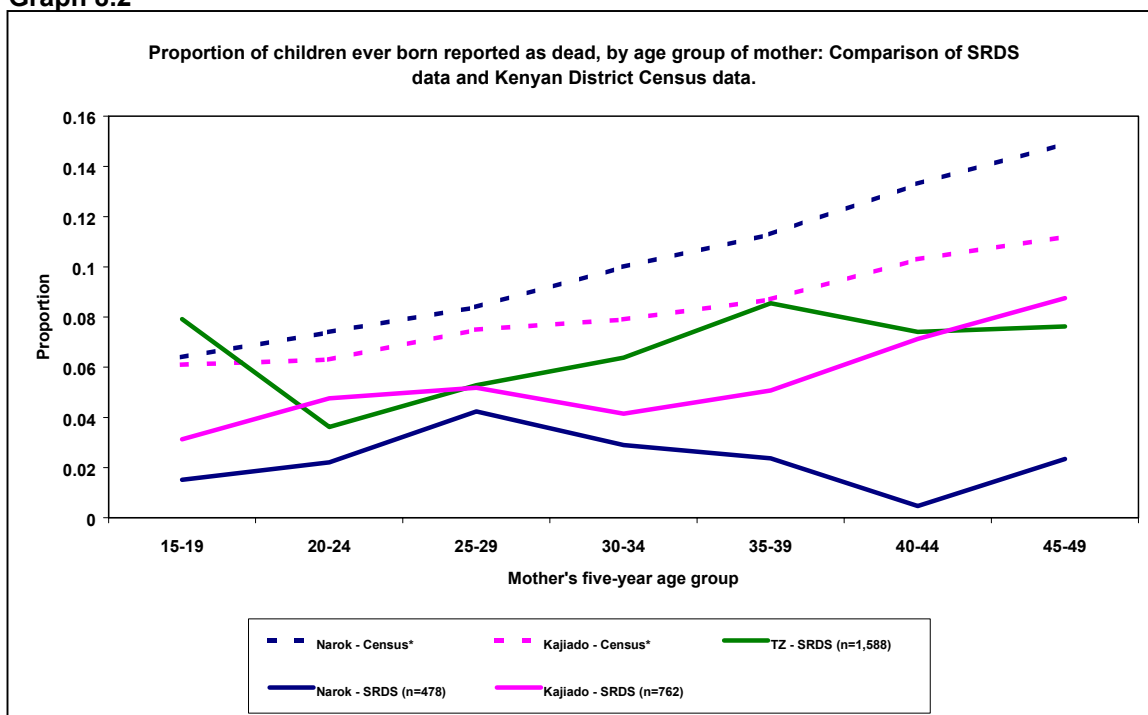
Source: SRDS Data (Based on reports from 1,240 women in Kenya and 1,588 women in Tanzania)



Published data for Kenya allow for a comparison of SRDS data with census information (Graph 8.2). Because there are no published Tanzanian census data on proportion of surviving children with which to compare the SRDS data, it is only possible to use the Kenyan district data for purposes of comparison²³⁰. Two caveats must be noted here. Firstly, the census data refer to 1989, while the SRDS data were collected in 1997. Secondly, the census data refer to the entire district, and all constituent ethnic groups, while the SRDS data refer only to the Maasai. In 1989 Maasai accounted for only 47.3% and 56.6% of Narok and Kajiado districts, respectively, although in each district, Maasai are the dominant ethnic group. The census data at the district level must therefore be regarded as only the crudest approximation for Maasai data.

²³⁰ Throughout this chapter, for ease of comparison with census data, the SRDS study sites are referred to by their District name in Kenya. Thus, Koyaki Group Ranch is SRDS Narok data and Olkirmatian-Shompole Group Ranches are SRDS Kajiado data.

Graph 8.2



Source: SRDS data; Kenya Vol.V 1989 * Sample size data unavailable for published census data

Overall, levels of reported dead children are much higher for the census data, relative to the SRDS data. The next section will examine the SRDS data at the country-level and estimate levels of early age mortality. Kenya will be considered first. For all female age groups in the census, levels of reported dead children are higher in Narok, relative to Kajiado. The SRDS Kajiado data show an overall trend of increasing proportion of children dead with increasing age, a pattern to be expected. The Narok data, however, show decreasing proportions of dead children between ages 29 and 44. It must therefore be concluded that the Narok data on reported dead children are seriously deficient, and cannot be used in the indirect estimation of early-age mortality.

Why is the level of under-reporting of dead children so much higher in Narok relative to Kajiado²³¹? There is no obvious reason to assume that Maasai women in Narok will be less likely to report dead children than their counterparts in Kajiado. The dislike for mentioning dead children (and people in general) is common to both locations. The standardised training, guidance and supervision in both locations suggest that differences in survey administration are not responsible for the Narok-specific under-reporting of dead children. The SRDS Kajiado data appear to be of better quality than those from Narok. It was therefore decided to use only the Kajiado data to indirectly estimate the levels of early age mortality for the Kenyan Maasai. The results are shown in Table 8.2, together with the most recent census and DHS data for comparison.

²³¹ It cannot be assumed that there is no under-reporting of dead children in Kajiado.

Table 8.2: Estimates of Infant and Child mortality, SRDS and other data, expressed per 1,000, Kenya.

	Infant (${}_1q_0$)	Child (${}_4q_1$)
SRDS ²³² (Maasai)	38	17
Census (1989) (Kajiado)	45	N/A
DHS (1998) (Rift Valley Province)	50	19

Source: SRDS; DHS (1998); Kenya Vol. V (1996)

Overall, the Tanzanian SRDS data on reported dead children as a proportion of children ever born are much closer to the Kenyan census data for the two "Maasai" districts than the Kenyan SRDS data. Using the same approach as for the Kajiado data, infant and child mortality levels were estimated (Table 8.3).

Table 8.3: Estimates of Infant and Child mortality, SRDS and other data, expressed per 1,000, Tanzania.

	Infant (${}_1q_0$)	Child (${}_4q_1$)
SRDS (Maasai)	39	17
DHS (1996) (Northern Highlands Zone)	41	30

Source: SRDS data; DHS, 1996

There is little evidence from the SRDS of early age mortality differentials between the two countries. The SRDS estimates of infant and child mortality are very similar, at 17/1,000 for child mortality in both countries, and 39/1,000 and 38/1,000 for infant mortality in Tanzania and (Kajiado) Kenya, respectively. In order to explore the consistency of the mortality estimates, they were converted into mortality levels in the Coale-Demeny system to compare the age pattern of the estimates obtained with that of the model life table (Table 8.4).

Table 8.4: Mortality levels in the North model life tables consistent with the childhood mortality estimates $q(x)$, SRDS data

Mother's Age Group	Age x	Kajiado (n=762)		Tanzania (n=1,588)	
		$l(x)$	North mortality level	$l(x)$	North mortality level
15-19	1	0.968	21.5	0.973	22.1
20-24	2	0.951	20.2	0.971	22.2
25-29	3	0.948	20.4	0.950	20.6
30-34	5	0.958	21.6	0.934	19.9
35-39	10	0.948	21.3	0.904	18.8
40-44	15	0.928	20.4	0.917	19.8
45-49	20	0.912	20.0	0.917	20.3

Notwithstanding random variation, there is little evidence of a mortality decline over time in Kenya, although there is some evidence of a recent decline in Tanzania.

8.3 Issues of reporting

There are many issues surrounding the reporting of dead individuals by Maasai (Sections 6.3, 8.4.1.1). It is important to consider in detail the potential impact of this non-reporting of deaths on both SRDS and other mortality data. There is relatively good agreement between the SRDS and other estimates of early age mortality. Data indicate that those areas (whether district or region or zone) where Maasai predominantly live have early age mortality rates considerably lower than the national average. For example, the Northern Highlands Zone in Tanzania had the best levels of

²³² Using MORTPAK-LITE and assumption of mean age at childbearing calculated at 28.08. Estimates of child mortality are based on estimates for women aged 25-29, based on the age distribution of reported dead children and using the North model life table. See Appendix 5 for details.

under five mortality of all Tanzanian zones in 1991 and 1996 (DHS, 1996)²³³. The Rift Valley Province is consistently ranked third out of eight Provinces in Kenya, although there is limited evidence from three rounds of DHS to suggest that early age child mortality is worsening (DHS, 1998). The question must therefore be asked, to what extent is this agreement between SRDS and other data a function of under-reporting in both data sources or a valid and reliable representation of reality?

The DHS estimates are based on data collected in birth histories, the quality of which depends on the completeness with which births and deaths are reported and recorded. Potentially the most serious data quality problems are the selective omission from the birth histories of births that did not survive, displacement of birth dates, and misreporting of the age at death. In addition, the estimation of early age mortality that relies on birth histories assumes that adult female mortality is not very high, or that if it is high, there is little or no correlation between the mortality risks of mothers and their offspring. The problems surrounding the collection of birth histories from Maasai women were illustrated in Section 4.3. The use of birth histories to derive mortality estimates in populations with poor date recall "is not obviously superior" (Cleland, 1996:446) to other methods, such as ceb-cs used by census analyses. For example, Hill's (1991) study of 12 DHS surveys demonstrated discrepancies in the mortality results obtained, dependent upon the estimation method used²³⁴.

The 1989 Kenyan census data provide information at the Province level on the levels of not-stated mortality for all those women who did report their parity. The levels of non-reporting of children dead in Rift Valley Province (0.7%) are ranked third out of the eight provinces. This implies that under-reporting is a problem for the geographic region within which Narok and Kajiado Districts are located, and must be incorporated into any analyses based on these data. What is of more significance here is the "apparent" reporting but actual non-reporting of dead children.

That there were severe reporting problems by Maasai associated with dead individuals cannot be ignored. The detailed training and supervision of the SRDS data collection was in contrast to that of the recent censuses, as reported by enumerators who had worked on both studies. The under-reporting of one-year-olds (Chapter Five) is perhaps the clearest example that there are serious flaws in collected data. It is impossible to determine whether or not the "missing one-year-olds" are predominantly composed of dead children, although this is extremely likely. That the published (Census and DHS) data from areas where Maasai and other Maa-speaking populations live are an underestimation of early age mortality in these areas is highly probable.

Given these caveats relating to data quality, what other avenues are open for a consideration of Maasai early age mortality conditions? What other (non-demographic) data might inform interpretation of the SRDS and extant data? The scanty data on Maasai early age mortality (Section 8.1) imply relatively levels considerably higher than those suggested by the SRDS, census and DHS data. The following section describes the conditions of early age survival in a Maasai context, in order to inform this discrepancy.

²³³ Although the Maasai probably comprise a very small proportion of the total population in the Northern Highlands Zone. Further, relative to the rest of Tanzania, this region is relatively densely populated and contained well developed infrastructure.

²³⁴ Although the differences in level or trend of mortality were not systematic.

8.4 Child survival: theoretical framework

Mosley and Chen (1984) propose an analytical framework for the study of child survival, using a proximate determinants approach (after Davis and Blake). They identify a set of intermediate variables that directly influence the risk of child morbidity and mortality, summarised in Figure 8.1. Mosley and Chen's framework will be used to examine the context of child survival in a Maasai situation. The aim here is not to attempt a systematic quantification of the proximate determinants of child survival among the Maasai. Rather, the focus is on bringing together disparate sources of information (including ethnographic, clinical, survey, and personal observations) in order to provide a broad overview of the context of child survival for the Maasai.

8.4.1 Nutrient deficiency

Mosley and Chen describe patterns of dietary intake and food choice as "probably among the strongest "culturally conditioned" tastes across all societies" (1984:36). Included in this section are nutrients available not only to the child, but also to the mother. Therefore, an examination of maternal diet and nutrition during pregnancy is pertinent here. The restricted diet of a pregnant Maasai woman is widely reported, as summarised in Table 8.5. Diet restriction is strongly linked to the view among Maasai that a large birth-weight baby is more likely to cause complications at birth. It should therefore be underlined that the practice of food restriction is considered to be essential to the mother's and child's survival chances at birth. In addition to the restricted diet, the use of purgatives (liquid fat and herbs) is reported, to reduce the foetal weight, to induce labour and to "purify" the mother's blood.

Figure 8.1: Mosley and Chen's (1984) framework of determinants of child survival

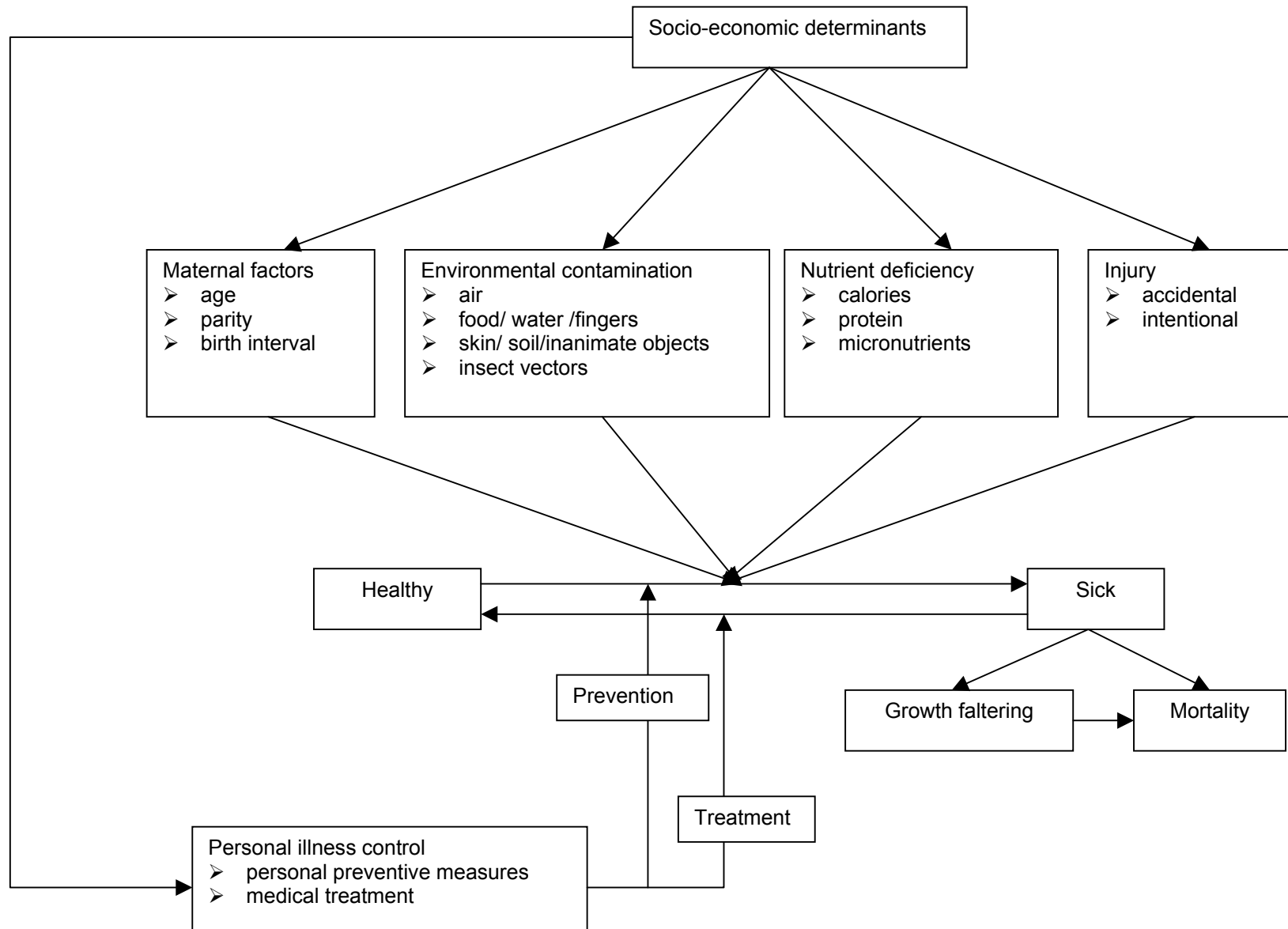


Table 8.5: Evidence for restricted diet of Maasai women during pregnancy

Author (Date)	Study population	Information
Cachia (1960)	Maasai	Average weight of baby from mother with a restricted diet 142g less than a baby from mother with no diet restrictions
Nestel (1986)	127 women and their children	Calorific consumption of pregnant women at 45-50% of normal levels (Based on 2 month revisits with 24 hour dietary recall)
de Vries (1984)	13 Maasai infants	Anecdotal
Von Mitzlaff (1994)	Parakuyo Maasai (Tanzania) 34 members of an <i>enkang</i>	Participant observation - stop eating fatty food and drinking milk as soon as pregnancy is noticed - fasting from 7 th month - diet of sour milk, roasted or boiled unhusked maize - use water to prevent hunger
Kuria (1989)	200 women Kajiado District (Kenya)	Unable to eat specific food during pregnancy - fresh milk (66%) - meat (86%)
Bergsjo (1993)		Anecdotal ²³⁵
Mpoke & Johnson (1993)	206 Maasai women who had children who were no yet old enough to herd ²³⁶	Foods permitted to be eaten by a pregnant woman - maize /maize products (91%) - milk (64%) - potatoes (27%) - what products (26%) - rice (20%) - green vegetables (5%) - meat (4%) Of 28 currently pregnant women - 29% eating "less" than when not pregnant

The avoidance of meat and fresh milk is widespread, together with the use of water in order to stave off hunger. The levels of dietary restriction and purgative use are higher for first pregnancies, relative to higher-order pregnancies. However, none of the studies quantifies the level of pregnancy diet restriction in terms of calorific intake relative to "normal" consumption. Further, the lack of prospective studies prevents any determination of whether or not this practice is currently less widespread or less "extreme" than historically. Immediately following a birth, a woman's dietary restrictions are lifted, and meat and milk products feature strongly in the *post-partum* period. Some authors report that the newborn child is put immediately to the breast (Bergsjo 1993; Von Mitzlaff, 1994). Other authors report what de Vries calls a "unique neonate feeding practice", which involves giving the child liquid fat to drink prior to putting to the breast (de Vries, 1984; Mpoke and Johnson, 1993). All authors report the rubbing of the child with fat, immediately after the birth.

Following a birth, a woman remains within the confines of the *enkang* for a period of time²³⁷, leaving only to urinate or defecate. During this period of *entomonone* (or seclusion), a woman's household duties are much reduced, and are often carried out by a young female relative, brought to live in the household specifically for this purpose²³⁸.

²³⁵ No specific information/data is provided and the practice is simply alluded to by the author. Not possible to tell if the information is based on personal experience or reporting by other authors.

²³⁶ Biased selection criterion for the sample (excluded any woman if all of her children had died).

²³⁷ Slightly different lengths of *entomonone* are reported by different authors. For example, Bergsjo (1993:397) reports a duration of 3-4 months, and de Vries a duration of 2-3 months.

²³⁸ Some authors also report the woman's mother being brought to live with her for the first few months after the birth, especially if it is a woman's first birth. "When a woman has a child, she has other wives to

The infant's needs are paramount during this period, and the mother is expected to maintain physical proximity to the infant during the period of *entomonone*. Breastfeeding is on demand, a feature that continues until the child is fully weaned. The period of *entomonone* is publicly ended when the mother's and baby's heads are shaved for the first time following the birth. It should be noted that the key decision-makers relating to child nutrition are older women, especially grandmothers.

Complete weaning normally occurs at around two years, although this is based on anecdotal evidence (de Vries, 1984; Kuria, 1989) and personal observation. The major types of weaning foods are milk-based products, including fresh liquid, clarified butter and milk fat. Much less important, but also used, are potatoes, *ugali*²³⁹ and rice (Pers. Ob.). Milk formulae are available in local shops, which implies that there must be a market. However, there are no data on the level and timing of the use of breastmilk substitutes by Maasai mothers. Once a child is introduced to cow's milk, it is at increased risk of morbidity due to the common practice of watering down the cow milk, especially during the dry season²⁴⁰.

Nestel's study of nutritional levels for Kenyan Maasai children (Nestel, 1986), estimated an average energy intake at 1080kcal per day. Estimated protein intake was high, averaging between 150% and 400% of FAO²⁴¹ recommended dietary intakes²⁴². The proportion of daily calorific intake attributable to sugar was estimated at between 9% and 12%, due to the increasing use of sugar, rather than wild honey, in tea. McCabe *et al*'s (1989) study of food security and nutritional status in Loliondo (Ngorongoro District) noted that 27% of children under the age of five years were malnourished. A 1989 survey by the NGO KIPOC reported that 16% of children under the age of five were malnourished (KIPOC, 1993). These studies are reported for completeness, rather than to suggest absolute levels of child malnutrition amongst Maasai populations.

Seasonality is a characteristic of any subsistence production system, and Nestel noted that all individuals suffer seasonal stress in nutrition. Children aged 2-5 years (i.e.: post-weaning children) were found to be the most nutritionally disadvantaged of all age groups (1986:206). Nestel attributes this to the inadequately cooked and coarse maize provided for children. In addition, it was noted that younger children often fall asleep before the evening meal, and thus miss out. A second period of childhood nutritional stress occurs around the time that a child begins to undertake herding duties, usually around 5-6 years. The nature of herding work entails prolonged absence from home during the daytime. The result is that children on herding duties are absent for meals, although they are entitled to milk animals whilst out. However, children anxious to please and demonstrate *enkanyit* will attempt to survive throughout the day on the minimum of milk in order to demonstrate responsibility with livestock to their elders (Pers. Ob.). Meegan *et al* (1994) report the findings of a growth monitoring team in

help her look after the baby. When your daughter becomes pregnant, your son-in-law visits your husband and asks his permission to have your help. He then leads you back to his village...There you stay until she has had her child and for two months more. Then, on the third you return home for the baby will have grown and you will have taught her how to hold her child" (Chieni in Spear and Waller 1993:165). It is also possible, although more unusual, for a woman to return to her natal home in order to give birth.

²³⁹ Maize-based porridge

²⁴⁰ Although it should be noted that for children aged less than 6 months, cow's milk should be diluted.

²⁴¹ Nestel determined the FAO indices to be inappropriate for the Maasai.

²⁴² Nestel's conclusion (1986) directly contradicts that of Vogel *et al* (1974), who suggest that 60-70% of Maasai infants have protein calorie malnutrition annually. Vogel *et al* attribute (unsubstantiated) high levels of infant mortality to protein calorie malnourishment.

Kenyan Maasailand, operating since 1983. Using a sample of 138 Maasai mothers, it was noted that female children below the age of five were especially underweight²⁴³.

During later childhood and early adolescence, male children become more nutritionally disadvantaged relative to females (Nestle, 1986). The reasons for this may be found in the gender-division of labour at older childhood. Whilst both boys and girls herd at younger ages, towards puberty girls spend their time working around the household, whilst boys herd at greater distances from the home. Girls are therefore more likely to receive calorie-rich grain-based foods during the day than boys. The only group noted by Nestle to suffer from severe deficiency in iron intake was that of children under two years old. She concluded that the deficiency was probably the result of insufficient food in general rather than a lack of any specific item. Vitamin C deficiency was noted for both sexes and all ages of children. One final point relating to child nutrition is that there is periodic community-wide nutritional stress. During the SRDS fieldwork, the Red Cross distributed food aid amongst the Maasai of northern Ngorongoro Conservation Area, following the El Niño weather phenomenon.

8.4.2 Injury

Operationally, this determinant refers to "the incidence of injuries, and the cumulative prevalence of injury-related disabilities" (Mosley and Chen, 1984:33). While no data are available on this topic for the Maasai, a useful indicator is an examination of childcare norms. The frequency and pattern of injury in a population reflects variation in exposure to risk. For children, one of the major factors (other than the physical environment) is the quantity and quality of childcare.

Following *entomonone*, a Maasai mother is expected to resume fully her duties around the *enkang* and household. Whilst breastfeeding remains more or less on demand, the care of the child (carrying and minding, for example) becomes the responsibility of another female member of the household. This might be an older sibling or, in the absence of older siblings, a girl brought to live in the household for that specific purpose. Once mobile, a toddler is normally free to move around the *enkang*. Beads placed around the neck and stomach are often used as growth indicators of the child, especially if it has had a severe illness episode in the past. Early herding duties are normally carried out under the supervision of an older sibling or other child from the *enkang*, but there are increased risks of accidental injury with increased exposure to the bush.

8.4.3 Personal illness control

This proximate determinant includes two aspects; personal preventive measure and medical treatment. The former includes both traditional and modern behaviours, from observing social norms to immunisation. The latter refers to any form of measure taken to cure an illness after it becomes manifest. Both aspects of personal illness control can be affected by beliefs about disease and illness causation and can inform behaviour that has an impact on the level of child survival. For example, among the Maasai infant diarrhoea is strongly associated with one of two factors; either with teething, or with violation of the "abstinence during breastfeeding" social norm (von Mitzlaff, 1994:117).

The use of "western" medical intervention for childhood illness is relatively low. This is a function of several factors, including; cost²⁴⁴, distance to facility, previous

²⁴³ The weight of 23% of these children was below the third centile.

²⁴⁴ In Kenya, fees for medical services have been introduced recently, following structural adjustment programmes.

experience of healthcare facility, and household decision-maker's preferences²⁴⁵. Comparable data on levels of formal healthcare use and immunisation are absent for the Maasai in either Kenya or Tanzania, and *ad hoc* data are summarised in Table 8.6.

Table 8.6: Evidence of Maasai childhood illness treatment

Author	Methodology	Result
Sindiga (1992)	Interviews with 213 Kenyan Maasai heads of household	First treatment given to a sick individual - 60% Herbs or traditional healer - 10% Bought medicines - 30% Formal healthcare facility
Conroy <i>et al</i> (1999)	Randomised controlled trial of solar disinfection of water: 349 Maasai children less than 6 years old	Two week period prevalence of diarrhoea of 58.1% in control group of children
Nangawe <i>et al</i> (1985)	721 individuals interviewed	17% of children under five years old had received any form of vaccination

The only data that are available are programme-related²⁴⁶, and therefore provide no information relating to the level of healthcare use or immunisation within the whole population. Levels of traditional herbal medicine use are extensive (Sindiga, 1994).

8.4.4 Environmental contamination

This subset of proximate determinants refers to the transmission of infectious agents to children (and mothers), and includes 4 main routes: air, food/water/fingers, skin/soil/inanimate objects, and insect vectors. The following section can do little more than summarise the main components of traditional Maasai lifestyle and their influence on these factors.

The nature of traditional Maasai huts has been associated with high levels of Acute Respiratory Infection (ARI) (AMREF, 1999²⁴⁷), due to the smoke from a cooking fire combined with very little ventilation. The presence of flies is strongly associated with a Maasai *enkang*, as with any society where livestock are kept in close proximity to the living quarters. Indeed, within some Maasai houses there is a small area specifically for the keeping of young smallstock. During tests of a low-technology plastic bottle fly trap, Meegan *et al* (1997) trapped, on average, 400 flies per day per *enkang*. This indirect information provides some indication of the levels of flies and likely associated transmission risks e.g.: trachoma and diarrhoea. A recent development with implications

²⁴⁵ The priority for bought medication often tends to be for livestock rather than for children (Pers. Ob.).

²⁴⁶ For example, the following data refer to levels of immunisation in Ngorongoro District, 1992-4 (Lembikas *et al*, 1996). No data are given on how these statistics were collected, or how baseline total numbers of children were obtained.

Reported total vaccinations, Ngorongoro District, 1992-1994

	BCG	DPT	Polio	Measles
1992	93	58	61	56
1993	89	71	70	73
1994	80	29	53	59

Percentage distribution of reported vaccination completion, Ngorongoro District, 1992-1994

	1992	1993	1994
Complete vaccination	50.0	56.0	63.3
Incomplete vaccination	11.5	13.0	16.5
No vaccination	38.5	31.0	20.2

²⁴⁷ For example, 28% of all outpatient cases recorded at ERHC in 1999 were attributed to ARI.

for child morbidity, has been the replacement of traditional calabashes with bottles for the storage of cow milk (Pers. Ob.). Calabashes are sterilised on a daily basis using hot ash and herbs, but bottles are not (cannot be) sterilised in the same way, leading to increased risk of exposure to diarrhoeal disease.

8.5 Discussion

This chapter has tried to bring together as many different pieces of evidence relating to Maasai early age mortality as possible. Perhaps what has been most clearly demonstrated is the need for good quality, routinely collected and timely data such as census data, available at a variety of scales. The availability of the Kenyan mortality data at the district level undoubtedly informed and added to the analysis of the SRDS data.

The influence of the HIV/AIDS pandemic on early age mortality, which has been noted throughout sub-Saharan Africa, cannot be ignored in a Maasai context. The impact of the pandemic throughout affected populations has been to contribute to a reversal in improvements in early age mortality. There is limited (and possibly out-of-date) evidence to indicate that levels of seroprevalence amongst the Maasai are very low (Section 7.9). However, the rapid evolution of the HIV epidemic, combined with the paucity of seroprevalence data, make it difficult to draw any firm conclusions with reference to the potential impact on Maasai early age mortality.

The impact of education on child survival has been well documented, albeit with differential impacts dependent upon context and type of education (Bicego and Ahmad, 1996). The relatively low levels of education for Maasai women in both Kenya and Tanzania precluded any mortality analysis by maternal education. Brass and Jolly noted that moderate mortality was estimated in Narok and Kajiado, despite extremely low levels of education relative to the rest of Kenya. In a plot of district child mortality declines from the mid 1950s to the mid 1970s against the percentage of women with education, Kajiado was consistently an outlier on the graph. Less than 25% of adults were recorded as literate, but a child mortality decline in excess of 40% between 1954 and 1974 was reported. Whilst noting the possibility of inaccuracy in the reporting of child deaths, they nonetheless conclude that "It is also possible that the environmental factors are affecting the death rates differently there than in the rest of the country" (1993: 146). I would argue that inaccuracy of reporting is probably a more likely explanation for the low levels of early age mortality reported by Brass and Jolly.

Mosley and Chen's framework provides a useful starting point for examining the Maasai context of early age mortality. The interrelationships between the structural socio-economic factors and the proximate determinants of early age mortality are complex. For example, the relatively low levels of childhood immunisation are a function of historical and contemporary exclusion of Maasai from healthcare service combined with a low density of population necessitated by a pastoral production system. For the majority of Maasai children, there is a virtual absence of preventive MCH services, including pre- and post-natal care, growth monitoring and immunisation. That episodes of high childhood mortality from immunisable diseases such as measles appeared on the event calendars used in the SRDS is unsurprising. Are there any elements of the Mosley and Chen framework that are inappropriate for a Maasai context? The only element that might be considered obsolete is that of "Intentional Injury" to children. Children under the age of five tend not to be beaten or physically punished, and there is no evidence of customary practices e.g.: infanticide that might lead to upward pressure on early age mortality.

Heterogeneity within the Maasai context must always be acknowledged. For example, the environments inhabited by Maasai are very varied, from moist and cool uplands to semi-arid lowlands, each with different implications for water sources and predominant morbidity patterns. For example, Lembikas *et al* (1996) note regional variations in morbidity within the NCAA. In upland Nainokanoka, only 9% of outpatients are reported as having malaria compared with 61% in low-lying Kakesio village. In terms of child healthcare provision, there are variations between SRDS sites, but generally most rural Maasai remain marginalised from healthcare providers. Although there is little substantive evidence, it is reasonable to assume that levels of childhood immunisation are relatively low for all Maasai (with occasional "pockets" of complete immunisation following mobile clinics). One common feature of all of the SRDS sites is relatively low population density, concomitant with pastoralism, which will act to lower the possibility of transmission of infectious diseases (Swift *et al*, 1990).

Based upon the available evidence on the context of Maasai early age mortality, and using the Mosley and Chen framework, it was expected that Maasai early age mortality would be relatively high. Nutritional stress begins before a Maasai child is born, with the restricted diet of the pregnant mother. Because of the strong seasonality in a semi-arid savanna environment, seasonal nutritional stress is also a feature of the rural Maasai context. Access to and use of preventive and curative health services are low, as demonstrated by the data on immunisation. In most of the study sites, malaria was endemic, frequent reference was made to previous measles epidemics, and ARI is associated with traditional Maasai *enkaji*. The only environmental factor that might be associated with lower risks of mortality is the relatively low population density of areas inhabited by Maasai.

That the SRDS managed to collect even deficient data on early age mortality should be interpreted as a "successful outcome", given the extreme reluctance to refer to the dead in a Maasai context. These estimates of Maasai early age mortality agree well with published data. However, that published data are subject to the same under-reporting of dead children as the SRDS data, must be accepted. The relatively low infant and child mortality levels published for "Maasai" areas are, in my opinion, a response to the under-reporting of dead children.

Chapter Nine Fertility

This chapter presents the SRDS data relating to fertility. Ethnographic references to fertility among the Maasai are described, from contextual information on Maasai attitudes towards childbearing to evidence of fertility-related behaviour such as breastfeeding. The absence of fertility data for the Maasai is highlighted, including a discussion of the validity of DHS data collected from Maasai women. In order to contextualise these data, current and recent fertility levels and trends in Kenya and Tanzania are presented. The quality of the SRDS data is explored, and Maasai fertility levels are calculated, using both direct and indirect estimation techniques. Marriage patterns and sterility (primary and secondary) are considered as proximate determinants of fertility. Using information from a variety of sources (ethnographies, hospital records, and medical surveys), the potential contribution of other proximate determinants to Maasai fertility is considered. This chapter forms the substantive basis for Chapter Ten, which explores reasons for some of the fertility differentials derived here.

9.1 Ethnographic evidence relating to Maasai fertility

Much of the ethnographic work relating to the Maasai is not specifically focused on fertility *per se*²⁴⁸. However, it is illuminating to realise just how much of the ethnographic work contains information (both directly and indirectly) relevant to a study of Maasai fertility. Several authors note the link between reproduction and Maasai spirituality. For example, Spencer suggests that “There is a general belief that, at times of childbirth, life is especially precious and God is especially close” (1993:154). This theme is reiterated by Talle who concludes “By having a womb, women embody life and continuity, recurrent themes in Maasai prayers and communication with the divine. In order to lead a full life as a Maasai it is imperative to marry and beget children, and those who have been blessed by old age and high fertility in children and animals symbolise the image of the good life” (1994:282). At the individual level, the importance of fertility for a woman is mirrored by the potentially disastrous consequences of being infecund or subfecund. Quoting from Llewelyn-Davies’ ethnographic film “If you bear children, your husband loves you. A woman who hasn’t given birth is like a wilderness”²⁴⁹. The use of infecundity as a reason for divorce, has been noted (Chapter Six).

Talle states that the “acquisition of [female] fertility is not recognised as a natural process, but has to be mediated and constituted culturally” (1994:280) among the Maasai. The construction of female fertility may be seen at both the community- and the individual- level, for both men and women. At the community level, ceremonies associated with female fertility have been described by several authors (Llewelyn-Davies, 1984; Spencer, 1988, 1993). Although there are variations by location, there are common features to these ceremonies. Following prolonged planning, a group of women travels from village to village within a specified area, levying fines from men who have violated *enkanyit* (respect) rules relating to their own or age-set children²⁵⁰. The “blessing” ceremony itself is a large-scale event, which Llewelyn-Davies estimates takes place every four years or so. Specific rituals such as the smearing of women’s stomachs with the amniotic fluid from a slaughtered pregnant cow have been noted (Spencer, 1993).

²⁴⁸ The only specific case is that of Jacobs (1973), answering very directed questions set by Molnos on attitudes and practices relating to fertility and family planning.

²⁴⁹ The women’s Olamal (BBC Video)

²⁵⁰ These fines relate to both incest (own- children) and quasi-incest (age-set children).

Prior to puberty, a Maasai girl gradually acquires her “right” to fertility. The process includes the gradual sexual initiation of a pre-pubescent girl by one or more *murran* of her choosing²⁵¹. The public ceremony associated with “choosing” a *murran* involves the girl giving the *murran* milk to drink. Talle suggests that “the exchange of milk and semen, two body fluids with inherent regenerative capacity, symbolizes a complementary, although not equal, relationship” (1994:281). A contrasting picture is drawn by Jacobs, who states that “There is a great deal of European mythology concerning the supposed sexual relations which young warriors are thought to have with young unmarried girls...Though some love-making and restricted petting does go on...it generally follows strict conventions that preclude coitus” (1973:404)²⁵².

Female circumcision represents the acquisition of social adulthood and sanctions childbearing²⁵³. A girl is normally circumcised around the time of the onset of puberty, or, “when a girl begins to “develop breast”” (Talle, Pers. comm.). It is important for a Maasai girl not to be a virgin by the time of her marriage, for reasons neatly summarised by Talle: “a virgin bride is looked upon as an awkward phenomenon and somehow brings embarrassment on her family. She is considered to be a child. The Maasai say that she does not have a “door” (1994:282)²⁵⁴. As *murran*, men are instrumental in constructing a girl’s societal approval of her fertility, mainly through sexual initiation. As a married elder, “the status of an elder ultimately hinges on the fertility of his wives” (Spencer, 1993:160). As a father, a man can blame his wife if a daughter is not, for example, fully initiated prior to her marriage.

Customs and practices relating to fertility pervade daily life, from food to personal adornment. With respect to food, the obligation of a woman to provide her husband and his age-mates with milk is representative of the reciprocal milk-semen relationship established when, as a pre-pubescent girl, she participated in the milk-giving ceremony. With respect to personal adornment, a woman’s jewellery changes significantly throughout her lifetime, normally following a development in her childbearing or childraising career²⁵⁵.

In terms of social, economic and political considerations, children represent a wide variety of opportunities for their parents. For men, children can represent increased social and political power and influence through a wide range of mechanisms²⁵⁶. For

²⁵¹ The Maasai have a widely held belief that semen help a girl to develop physically. *Murran* are considered the epitome of healthiness, therefore their sperm is best for pre-pubescent girls.

²⁵² Jacobs is probably referring specifically only to periods when *murran* are in *manyatta*, when sexual intercourse is considered inappropriate. Married elders have a vested interest in *murran* being the legitimate sexual partners with young girls as this preserves the social order (gerontocracy) and should theoretically reduce the likelihood of a *murran* having sex with a woman married to an elder. That Jacobs was writing over two decades earlier than Talle should be noted, which will have had implications for what was considered “acceptable” to publish.

²⁵³ “The Maasai say that an uncircumcised girl cannot conceive or will give birth to deformed children. The clitoris, if not excised, will continue to grow and hence not only obstruct the free passage of the child at delivery but, equally bad, also penetration” (Talle, 1994:282). A similar explanation is provided by Jacobs, who describes the “belief that any girl who has not had her clitoris cut will either be unable to conceive or will give birth to a deformed child” (1973:402). See Section 3.5.2.2 for information on female circumcision.

²⁵⁴ The use of “door” or “gate” metaphors to represent independence/ maturity is widespread in Maa. For example, when a man marries and has a household separate to that of his father, he literally acquires “gates”

²⁵⁵ The implications of dress and jewellery for data collection are explored in Section 4.11.

²⁵⁶ “They (the Maasai) tend to regard wisdom (as well as honour and respect) as being acquired mainly through the act of having many children who are instilled with a sense of community service and responsibility. They do not see the association as absolute, however, but only as relative, such that they

example, the “loaning” of a child to another household in order to help with household or pastoral tasks creates an obligation on the part of the destination household. The marrying of daughters represents the construction of important affinal relations. Indeed, the choice of husband for a daughter is normally predicated on such considerations. Similarly, a man who has sons who belong to a variety of age sets will be less likely to find himself in a precarious position politically following age-set successions. Likewise for women, children represent a wide array of opportunities. For example, women acquire milking rights in livestock held in trust for their children, married sons (or rather, their wives) will care for a woman if she is widowed, and unmarried daughters represent a significant source of childcare and housework labour.

Many ethnographies refer to the importance of *social* rather than *biological* paternity of Maasai children²⁵⁷. The sexual access of age-mates to each other’s wives has been noted by several authors (Jacobs, 1973; Llewelyn-Davies, 1978; Talle, 1994). Indeed, Talle goes on to suggest that “a husband may urge a wife to be impregnated by a certain age-mate of his, whom he admires either for his oratory skills, bravery or certain physical qualities” (1994:283). A comparison may be made with Kreager’s work on the Nuer, pastoralists from southern Sudan. Kreager states that “the critical matter is the child’s *pater* (i.e.: his or her legal father), not *genitor*” (1982:244). One of the effects of the primacy of social over biological paternity is the “disguising” of male infertility. If a man is infertile, then this would never be obvious due to the extra-marital sexual partners of his wife or wives. Any children born to a wife would automatically belong to the husband’s patriline, and the question of paternity would not be raised. Unless a man remains unmarried, therefore, it is virtually impossible for a Maasai man to remain childless. A further corollary of the disguising of male infertility is that it becomes easy to understand why childlessness is the “fault” of a woman, and never a man.

Whilst male fertility *per se* is relatively unimportant, sexual activity (pre-, extra- and marital) is very important. From the time that a Maasai male has become a *murrān*, he is expected to have a high level of sexual activity²⁵⁸, and *murrān* embody the height of male sexual prowess. Extra-marital sex is a very “open secret” in Maasai society, providing rules relating to acceptable sexual partners are observed²⁵⁹, together with a degree of discretion. The “openness” of extra-marital sex is clearly reflected in male jewellery. Only women make jewellery, and a man only receives jewellery if it is a gift from a lover. All Maasai men wear some jewellery, and Talle describes an unadorned Maasai man as “an unthinkable phenomenon in Maasai culture” (1995:74).

Despite the relative unimportance of *genitor* versus *pater*, there is limited evidence that a Maasai woman might try to control the identity of the biological father of her child. For example, Talle notes that women might try to manipulate the timing of extra-marital sex in order to prevent conception. There is a widely held belief among Maasai that fecundability is highest in the days immediately following menstruation. This

often inquire “How can a man with no children have wisdom and take an active part in public life?” or “How can a man without children advise others as to how best to command others?” (Jacobs, 1973:405)

²⁵⁷ The implications of social over biological paternity for the estimation of male adult mortality are discussed elsewhere (Section 7.5)

²⁵⁸ It should be noted that uncircumcised boys are theoretically not permitted to have sex with any female (of whatever age), and two authors (Kipuri, 1983; Talle, 1995) make reference to the use of donkeys by young boys for sex acts. However, there is evidence to suggest that uncircumcised boys are sexually active (Kipuri, 1983:205).

²⁵⁹ One of the most commonly flouted rules is that a married woman cannot have sexual relations with a *murrān*. However, it is very common for a newly married young woman to continue sexual relations with the *murrān* she chose as an uncircumcised girl, especially if she has been married to a much older man.

ethnographic report is substantiated by recent DHS surveys that include Maasai women in their sample. In Tanzania (n=51 Maasai women), for example, of 18 women who stated that there were times when a woman was more likely to become pregnant, 44% reported that this was immediately following menstruation.

Information derived from ethnographies would support the statement that, in general, there is a desire to have as many children as possible. Jacobs, for example, suggests that because the birth of twins is regarded as a “blessing” (1973:400), children are highly desirable²⁶⁰. Indeed, Jacobs is unequivocal in his statement that “I know of no Maasai woman who would wish to have a limited number of children” (*ibid.* 402)²⁶¹. However, two caveats should be noted. Firstly, while fertility is sanctioned at the societal level, its “abuse” is condemned, a common feature in almost all African populations. For example, if the birth interval between two births is considered too short, or if a woman conceives whilst still breastfeeding the preceding child, then both she and her husband will be liable to both criticism and a livestock fine (Pers. Ob.; Sindiga, 1987; Llewelyn-Davies, 1978). Secondly, the anthropological literature never makes any reference to the possibility that Maasai might want to limit fertility. For example, the increasing costs of educating children, combined with more parents wanting to send their children to school, might lead to the adoption of child spacing or limiting techniques by younger Maasai.

9.1.1 Personal observations

On a daily basis, Maasai demonstrate a genuine affection for babies and small children, regardless of whether or not the child is a relation. One of the most unexpected (to me), and common sights, was that of a *murran* playing with a baby or small child. Unexpected, because a *murran* is expected to behave in a way which belies emotion, unless towards a fellow member of his age-set. Similarly, elders will allow a small toddler to disrupt meetings, something that no other individual could do without reprimands. This general observation is echoed by Jacobs, who states that “The Maasai have a genuine, strong and open love of children” (1973:401).

In informal conversations, a woman described as a “good woman” was often characterised as one who bore many children at “decent” intervals, often determined by her husband. A young woman who had had three children in rapid succession was spoken of very negatively, the main reason being that she was endangering the health and well being of the preceding child with each birth. However, it is possible that, as a much younger second wife (with all of the associated power relations with the first wife), she was trying to establish herself within the household by having children. Her much older husband was seen as foolish for “allowing” her to have children so rapidly, and the first wife would encourage him to beat the second wife for her irresponsibility²⁶².

Whilst in the field in Kenya, when it became known what I was studying (probably combined with the fact that I was a “married” woman without children), I was often

²⁶⁰ Ibrahim & Ibrahim suggest that in the event of the birth of twins, one twin is given to the mother’s sister immediately after birth “which in the Maasai society is a common practice” (1995: 43). Such a “rule” was not encountered during the fieldwork, and several pairs of twins living together were recorded.

²⁶¹ Although Jacobs does suggest that “when asked to talk about “ideal” number of children per family, the Maasai are tempted to choose odd numbers...as these are associated symbolically with both maleness and superiority, whereas even numbers are female and slightly inferior by nature” (1973:401)

²⁶² It is also possible that the first (and older wife) may have been more jealous of the greater attention paid to the younger second wife by her husband.

approached by younger Maasai women for information about “the family”²⁶³. They would want to know what it was, how it worked, and where they could go to get it. A conversation with a dispensary nurse revealed that several Maasai women had approached him for advice on how to use “the family” without their husband’s knowledge. I later learnt that this nurse (himself a Maasai elder) had abused the confidential nature of the enquiries, and gossiped about these specific women to other members of the local community. The result had been the destruction of confidence among young married women in the local health service. The same nurse had also broken confidences of both men and women who approached him for STD treatment. These observations demonstrated the interest among some younger Maasai women in family planning, but highlighted issues surrounding reproductive health service delivery.

9.2 Extant Maasai fertility data

Within the ethnographic literature there are a few case studies presented “demographically”. However, the very small scale of these examples precludes them from being used for demographic analysis *per se*. For example, Spencer's detailed study of the Matapato Maasai provides many detailed case studies, including the number of times a woman has given birth and the number of dead children. However, the absence of basic demographic data such as age of the woman precludes the use of such examples. Further, because such studies were not carried out with the explicit intention of collecting demographic data, it is impossible to know whether, for example, “number of children” refers to biological or fostered children.

During the colonial period, two estimates of Maasai fertility were made, the first by Philip following the 1930-31 Medical Survey of Masai Province. He estimated an average of 3.0 births per woman among the Purko Maasai, 3.4 births per woman among the Kaputiei Maasai, and an average parity of 3.4 for Masai Province as a whole²⁶⁴. In 1950, a further field survey of the Maasai was carried out, estimating the average number of births per woman to be 2.4 among Purko Maasai and 4.4 among the Kaputiei Maasai, an average of 3.2 per Maasai woman (McKay, 1950). This apparent decline in Maasai fertility was taken as an indicator of high levels of venereal disease and sterility. The problem with both of these estimates is that there is no supporting information on the methodology used to collect the data or on the definitions used²⁶⁵. Jacob's estimate (guess) of completed fertility among the Maasai of 8 children per woman is perhaps the most widely cited figure for Maasai fertility. It can hardly, however, be cited as “data”. This brief survey of data sources demonstrates the complete lack of any substantive fertility data for the Maasai, in either Kenya or Tanzania.

Kenya and Tanzania have both had DHS surveys: Tanzania (1992, 1996)²⁶⁶ and Kenya (1989, 1993, 1998). The very small sample sizes for Maasai women in each country preclude the use of the DHS data for demographic analysis²⁶⁷. The DHS do contain detailed birth history data, data that is lacking from the SRDS. The birth histories contain some quantitative data on factors such as breastfeeding, contraceptive use, birth

²⁶³ “The family” is the colloquial term for modern family planning techniques.

²⁶⁴ Figures quoted from McKay (1950:451)

²⁶⁵ For example, it is unclear from Philip's (1930-31) Medical Survey whether the number of births refers to those children surviving or children ever born.

²⁶⁶ Also, 1994 (KAP); 1995 (in-depth experimental study); 1999 (interim).

²⁶⁷ For example, the 1992 Tanzania DHS included 51 Maasai women out of a total sample of 9,238. The 1998 Kenya DHS included 70 Maasai women out of a total sample of 7,881. Given that Maasai women represented 1.74% of the total Kenyan female population, the Kenya DHS sample of Maasai women (0.89% of the sample) is very small.

intervals, etc. However, given the issues surrounding the use of birth histories in the SRDS (Section 4.2), there must be serious doubts as to the quality of the birth history data collected from Maasai women in the DHS. There are two further sources of doubt relating to the representativeness of the DHS data collected from Maasai women. Firstly, one of the enumerators who worked for the SRDS had worked as an enumerator for the KDHS. Reports from this enumerator relating to the selection of the women for interview suggested that a degree of subjectivity was involved²⁶⁸. Secondly, a cursory examination of the background characteristics of the Maasai women included in the DHS suggests profiles that are "atypical" of rural Maasai women²⁶⁹. Therefore, the DHS data on Maasai women are available for this study, but must be used with caution. They can be placed within the context of the "norms" suggested by ethnographies in order to examine the degree to which the norms are some reflection of current reality.

9.3 National fertility trends and levels

Information on fertility levels in Kenya and Tanzania is derived from censuses and sample surveys. The attendant errors of sampling and survey implementation are noted, as is Blacker's caution that "Analysts who...accept survey results at their face value do so at their peril" (1994:200). Where possible, the summary data are presented using the most comparable data. These data are presented (Table 9.1) as context for the SRDS fertility data at the national level.

During the 1970s and 1980s there was a sustained increase in fertility at the national level in Kenya, attributed to declining levels of breastfeeding and post-partum abstinence (Lesthaeghe and Jolly, 1995). Despite initial scepticism regarding the evidence for a fertility decline (Blacker, 1994), the beginning of the fertility transition is undoubtedly underway in Kenya (Blacker, 1999²⁷⁰), driven by rising female age at first union and the use of contraception. Kenya is generally accepted to have been in the vanguard (together with Zimbabwe and Botswana) of the recent onset of fertility decline in sub-Saharan Africa.

Table 9.1: Fertility levels and trends, Kenya, 1962-1999

Data ²⁷¹	Kenya				
	Total	Rural	Rift Valley Province	Narok District	Kajiado District
1962 census	5.3*	-	-	-	-
1969 census	7.6*	-	-	-	-
1977 NDS ²⁷²	8.0**	-	-	-	-
1977 KFS	8.1***				
1979 census	7.4****	7.5	7.3	6.6	6.0
1989 census	7.4****	7.6	7.6	7.2	6.7
1989 KDHS	6.7*****	7.1	7.0	-	-
1993 KDHS	5.4***	5.7	5.4	-	-
1998 KDHS	4.7***	5.2	4.7	-	-

Sources: DHS 1989 Table 3.1; Kenya 1989 Vol. IV Tables 2.1a,b; DHS 1993 Table 3.2; DHS 1998 Table 3.3

²⁶⁸ He reported the selection of women based on their "accessibility", and often involved questioning women who worked in or around schools and health centres.

²⁶⁹ For example, the 1998 Kenya DHS sample of Maasai women reported that 21.4% had completed secondary school, 49.3% can read easily, and 29.0% watch TV every week. Such high levels of integration within a "modern" Kenya are not comparable with the sample of Maasai women included in the SRDS. The aim here is not to deny the validity of the data obtained from Maasai women in the DHS, but rather the degree of representativeness of the Maasai sample.

²⁷⁰ Seminar presented at the Centre for Population Studies, London School of Hygiene and Tropical Medicine, November 1999.

²⁷¹ The 1984 KCPS was excluded from this table, following Blacker's (1994) review

²⁷² National Demographic Survey

- * Based on reported ASFRs with no upward adjustment for under-reporting
- ** TFR women aged 15-49; Rates refer to the one-year period preceding the survey
- *** TFR women aged 15-49; Rates refer to the three-year period preceding the survey
- **** EI-Badry corrected average parities for women aged 45-49
- ***** TFR women aged 15-49; Rates refer to the five-year period preceding the survey

District-level fertility data are only available for census data, and indicate generally lower fertility relative to other rural districts and the rest of the Rift Valley Province. Fertility levels are consistently higher in Narok, relative to Kajiado for both 1979 and 1989, and both districts show a fertility increase for the intercensal period. The Kenyan fertility decline does not, however, necessarily herald a region-wide decline in fertility.

Evidence of fertility decline in Tanzania is limited, and Hinde and Mturi suggest that "Tanzania is one of the sub-Saharan African countries for which there is some, but not yet conclusive evidence of fertility decline" (2000:177). The most recent TZDHS (1996) shows a modest (7%) decline current fertility, compared with 1991-2. The SRDS study sites are located in the Northern Highlands Zone, which demonstrates fertility levels slightly lower (7%) than the national rural average.

Table 9.2: Fertility levels and trends, Tanzania, 1967-1996

	Tanzania		
	All	Rural	Northern Highlands
1967 census*	6.9	-	-
1978 census*	7.2	-	-
1988 census*	6.5	-	-
1991 DHS**	6.3	6.6	6.0
1996 DHS**	5.8	6.3	5.7

Sources: DHS 1996 Tables 1.1, 3.1, 3.2, 3.3

* Calculated by Mturi and Hinde (1994) using the p/f ratio.

** TFR women aged 15-49; Rates refer to the three-year period preceding the survey

Both Kenya and Tanzania are characterised by regionally variable levels of fertility. In Kenya, for example, completed fertility ranges from 7.4 in Nyanza province to 5.9 in Central Province (DHS 1998)²⁷³. In Tanzania, completed fertility ranges from 6.5 in the Coastal Zone to 7.6 children per women in the Lake Zone (DHS 1996). Current reported fertility is lowest in urban areas, notably the capital cities in each country.

9.4 SRDS fertility data

Standard "Brass-style" questions were asked, together with questions on the most recent birth, so that both parity and period fertility measures could be derived. Questions relating to children ever born were asked of only ever-married women, with the exception of "daughters of the village" (Chapter Six). The reason for this was that pre-marital childbearing is not condoned among the Maasai; it would have been inappropriate to address such questions to never-married females²⁷⁴. Unless specified otherwise, all of the following analyses refer to ever-married women.

9.4.1 Data quality

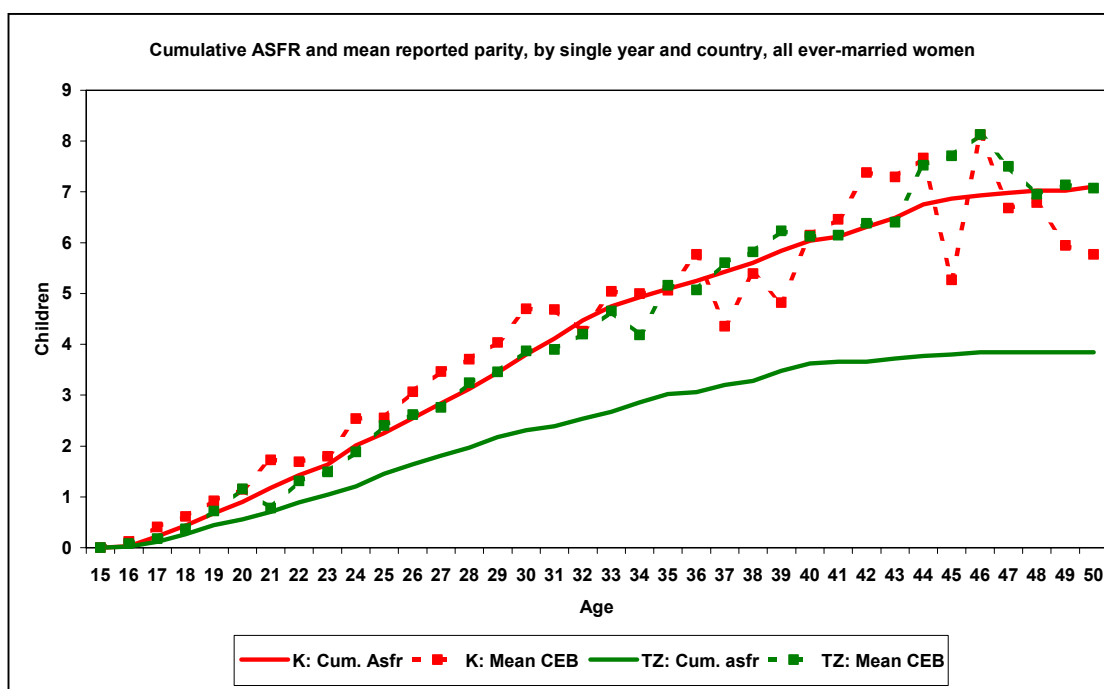
Graph 9.1 shows cumulated ASFRs (calculated from reported births in the last year) together with reported average parity by single years of age and country. If fertility has been constant in the three decades preceding the survey and if the births have been reported accurately for the past year, these curves should coincide. Since births are

²⁷³ Based on the mean number of children ever born to women aged 40-49.

²⁷⁴ Pre-marital conception does occur, but will almost always involve the girl being married prior to the birth.

probably more likely to be omitted in the more distant past, the reported parity would tend to be less than the cumulated ASFRs if the omission of past births is a problem. The relative size of this discrepancy would be expected to increase with a woman's age.

Graph 9.1



Source: SRDS data (Based on reports from 1,248 Kenyan women and 1,633 Tanzanian women)

The Kenyan data do not exhibit any consistent omission of births, with a small excess of mean reported parity over cumulative ASFR up to age 31. Overall, however, Kenyan cumulative ASFRs and mean reported parity following very similar trajectories. At every age, cumulative ASFRs in Tanzania are lower than mean reported parity, and the relative size of the discrepancy increases with age. What Graph 9.1 clearly shows is a misinterpretation of the reference period at all ages in Tanzania. The consistently lower level of the cumulative ASFRs in Tanzania implies an under-estimation of the length of the reference period (12 months) at all ages.

The use of the western calendar year being generally absent in a Maasai context, it is possible that some reference period error might have been introduced by errors surrounding the time of year used in the calculation of ASFRs. SRDS fieldwork in Tanzania took place during the exceptional El Niño weather event of 1998, which lasted throughout the first quarter of the year. Normally, the short rains occur in November-December, followed by the long rains, March-May. During the fieldwork, there was essentially no discernible short dry season. Although impossible to verify, it is possible that the Tanzanian respondents and enumerators confused wet seasons, resulting in a shortening of the reference period. It is possible to verify the existence of reference period error in Tanzania, by comparing the number of individuals aged less than 1 year with the number of births reported in the last year. In Tanzania, only 229 births were reported for the preceding twelve months, compared to 294 individuals reported as aged less than one year. The comparable figures for Kenya are 309 individuals and 293 births, respectively.

One further possibility is that the discrepancy between the cumulative ASFRs and mean reported parity is some function of extreme seasonality in Maasai births²⁷⁵. Such a pattern has been noted in other African pastoralist populations, most notably the Turkana of northern Kenya where more than half of all births occur between March and June (Leslie and Fry, 1989). Informal questioning during the fieldwork did not reveal any seasonality, either as a desired or real outcome. Further, the ethnographic literature does not include any reference to such seasonal timing of conception and childbirth.

9.4.1.1 Omission of dead children

The reporting of children ever born is a function of the reporting of children surviving and children dead. The possible under-reporting of dead children was anticipated before fieldwork as a result of the ethnographic literature. Efforts were made during the training of enumerators and throughout the data collection to limit this potential problem. The issue is not whether under-reporting occurred - that is taken for granted. Rather, to what extent was there under-reporting of dead children, and what are the implications for fertility analysis? Dead children as proportions of reported children ever born are extremely low.

Table 9.3: Proportion of children ever born reported as dead, by respondent's age group

Woman's age group	SRDS 1998		
	Kenya	Tanzania	All
15-19	0.023	0.079	.048
20-24	0.038	0.036	.037
25-29	0.047	0.053	.050
30-34	0.037	0.064	.053
35-39	0.043	0.085	.070
40-44	0.053	0.074	.065
45-49	0.067	0.076	.073

Source: SRDS

By age 45-49, less than 8 per cent of children ever born in the SRDS are reported as having died, an extremely low level. The under-reporting of dead children is a common feature of retrospective reports of children ever born. For example, Brass and Jolly estimate that "the relative under reporting in the DHS [1983] is about 30 percent for women aged 35 years and over" (1993:33)²⁷⁶. The implications for fertility analysis are profound, but it is impossible to estimate the extent of the under-reporting in absolute terms. Brass and Jolly's estimate of 30% under reporting by the 1993 DHS could be interpreted as a lower limit for the SRDS reporting. Their data included reports from educated women in urban areas from ethnic groups without such a marked reluctance to refer to dead children. In relative terms, the fertility levels reported or calculated from the SRDS must be an under-estimation of the actual level of fertility. In addition, the under-reporting is possibly more marked for the Kenyan SRDS data, relative to the Tanzanian, and most marked for Narok women aged 30-49 (Graph 8.2).

9.4.1.2 Conclusions on fertility data quality

The preceding review of the quality of the SRDS data shows elements of all of the problems normally associated with fertility data collected in a developing country

²⁷⁵ However, seasonality of births should not affect data for an entire year, given that in all seasons occur in most years.

²⁷⁶ It is interesting to note, however, that the DHS report notes "reveals no evidence of selective underreporting" (1993:84). This conclusion is based on the absence of an unusually low ratio of neonatal to infant deaths, based on the assumption that selective under-reporting will be most marked for early neonatal deaths.

context. The problems are different in magnitude for each country. In Tanzania, besides the under-reporting of dead children there is significant reference period error. In Kenya, the major issue of data quality is the under reporting of dead children, even relative to the Tanzanian SRDS data.

9.4.2 Results

In order to highlight both data quality and issues involved in the collection of fertility data, results are presented using a variety of fertility estimates and measurements.

9.4.2.1 Mean reported parity

Mean reported parity data are based on “Brass-style” questions on children ever born. Up to age 35, reported mean parity for Kenyan Maasai women is slightly higher than that for Tanzanian women (Graph 9.2). However, above age 45, the pattern is reversed, with mean reported parity for Kenyan women approximately one live birth lower than that reported by Tanzanian women²⁷⁷. The remarkably similar pattern of mean reported parities up to age 45 in each country should be noted.

Graph 9.2



Source: SRDS Data

Lower mean reported parities at older ages for Kenyan women when compared with Tanzanian women suggest one of two scenarios. Either, older Kenyan women are more likely to under-report the number of children ever born than their Tanzania counterparts. Or, fertility among Kenyan Maasai women has risen over the last 30 years, having previously been at a level lower than that of Tanzania.

The first scenario would be an example of what Dyson and Murphy call “the Potter effect” (1985:405). That is, that older women tend to fail to report some of their early

²⁷⁷ Sample sizes by age group were checked in order to make sure that the lower mean reported parity above age 45 in Kenya was not some function of particularly small sample size. Age groups 45-49 and 50-70 contain 72 and 37 women in Kenya and 91 and 53 women in Tanzania, respectively.

births²⁷⁸, a function of the fact that certain kinds of events are more likely to be omitted than others²⁷⁹, especially when these events are situated further away in time. Given the results of Section 8.3, it is clear that Kenyan women, particularly in Narok, are under-reporting dead children. The reason why Kenyan Maasai women would be more likely to under-report dead children than Tanzanian Maasai women is unknown. The second possibility, that the data represent a recent increase in fertility among Kenyan Maasai women, is explored next.

The concept of a pre-decline rise in fertility in historical populations has been mooted by several authors and demonstrated in contemporary populations by Dyson and Murphy (1985). With reference to sub-Saharan Africa, the region with the poorest data series, Dyson and Murphy suggest that “the dominant impression.... is of a sustained rise in fertility stretching back over the past two or three decades” (1985:410)²⁸⁰. The widely cited reasons for a recent rise in fertility include changes in post-partum sexual abstinence, breastfeeding and pathological causes of sterility (assuming no large-scale contraception use) (Nag, 1980). For example, Romaniuk (1980) and Frank (1983) both demonstrate a decline in STDs, with a concomitant decrease in secondary sterility, producing an increase in fertility in sub-Saharan Africa.

Henin *et al*'s (1982) study of Kenyan WFS data tentatively suggests a rise in fertility from the late 1950s to 1978. The increase is attributed to the introduction of antibiotics, specifically penicillin, for STD and other disease treatment. Their findings are cautious and imply an increase of not more than 0.2 of a child per woman over the period. Henin *et al* are at pains to underline that the evidence for an increase in fertility is limited, and potentially restricted to specific regions. They specifically note that “there may also have been a rise in fertility in the Rift Valley Province but from a high to an even higher level” (1982:29). Further, the diversity in ethnic composition of the Rift Valley Province (where the majority of Maasai live) is noted and concludes that the rise “may reflect changes for a subgroup only”(*op. cit.*).

9.4.2.2 Results using p/f method

In order to make full use of the available data (for both lifetime and current fertility), the p/f ratio was applied (after Brass, 1968 and modified by Arriaga, 1983)²⁸¹. The results, by location, are shown in Graph 9.3²⁸². An indirect estimate of fertility based on the p/f ratio is more robust than the previous two direct methods because the technique uses what is considered to be the most accurate information available (Hobcraft *et al*, 1982). This method is particularly useful for data that suffers from reference period error as it adjusts recent age-specific fertility rates using reported parities.

²⁷⁸ The “Potter effect” also includes a systematic tendency to misdate early births toward the survey date. However, because the data used in this analysis are not full birth histories, only the omission effect is considered here.

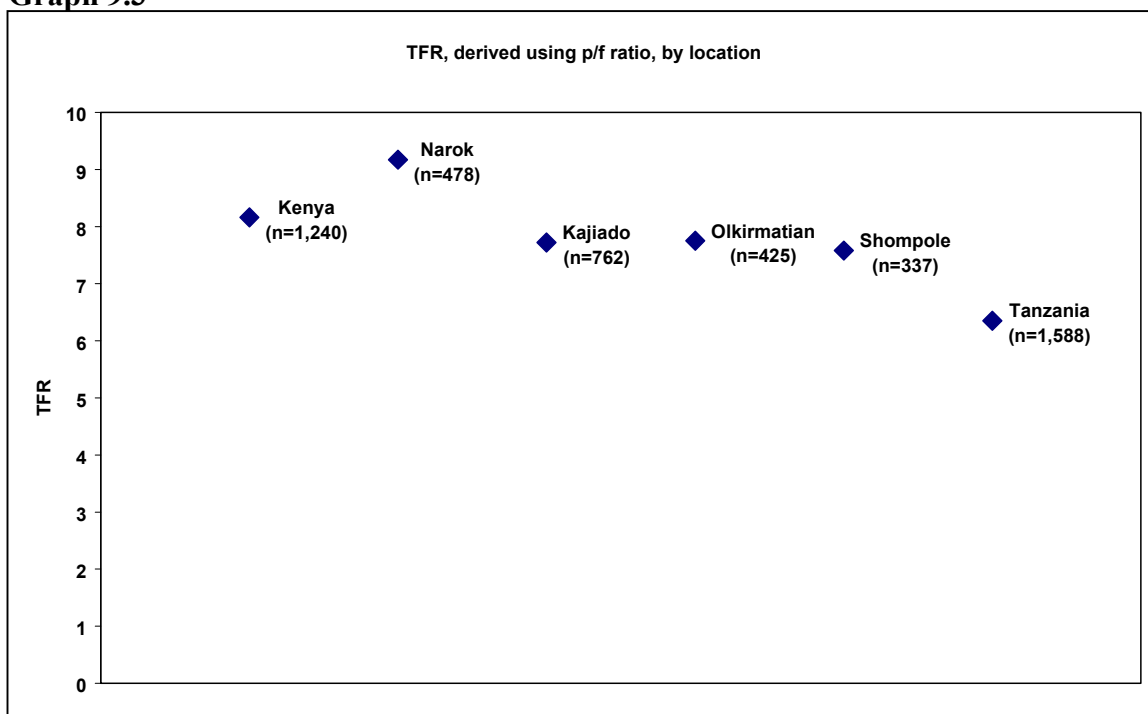
²⁷⁹ For example, children who have died or moved away.

²⁸⁰ Although they do emphasise that “In the absence of confirmatory evidence, however, we would not wish to emphasise the significance of these results” (Dyson and Murphy, 1985:410)

²⁸¹ The calculations were completed using the FERTPF procedure in UN MortPak Lite software. This procedure uses Arriaga's (1983) modification of the technique, which does not assume unchanging fertility. See Appendix 6 for calculation details.

²⁸² TFR for Kenya derived using p/f based on ages 20-30; TFR for Tanzania derived using p/f based on ages 20-25.

Graph 9.3²⁸³



Source: SRDS Data

At the country level, the TFR for Kenya (8.2) is considerably higher than that for Tanzania (6.4). Within Kenya, at the district level, fertility levels in Narok are substantially higher than those derived for Kajiado (9.2 and 7.7, respectively). These estimated fertility levels are despite much lower levels of reporting of dead children in Narok relative to Kajiado district. This suggests that given the under-reporting of dead children, then fertility in Narok is even higher than the estimate would suggest. Because the p/f ratio method incorporates the possibility of reference period error, the data suggest real and substantial variations in fertility within Kenya and between Kenya and Tanzania.

9.4.2.3 Enumerator influence on fertility data

In any large-scale demographic survey involving several enumerators working in more than one language²⁸⁴, there will be a range in the quality of work done by individual enumerators. It is all the more surprising, therefore, that the topic of enumerator influence on data quality receives little attention in the literature. There are very few studies that have explicitly studied the effect of enumerators on the data collected (Powell and Pritzker, 1965; Becker *et al*, 1995; Garenne, 1994). Even studies concerned with the details of types of enumeration fail to explicitly address the issue of the effect of the enumerator on the data collected (e.g.: Rumford and Greene, 1979). Given that all DHS surveys, for example, are available with coding for enumerator, such a study would not be difficult²⁸⁵, and it is surprising that such a potentially large contributor to data variability has not received more attention.

²⁸³ Locations in bold and underlined (**Kenya, Tanzania**) represent countries. Locations underlined (Narok, Kajiado) represent districts. Plain text represents group ranches. Because there was only one district of enumeration in Tanzania, this is represented by **Tanzania**.

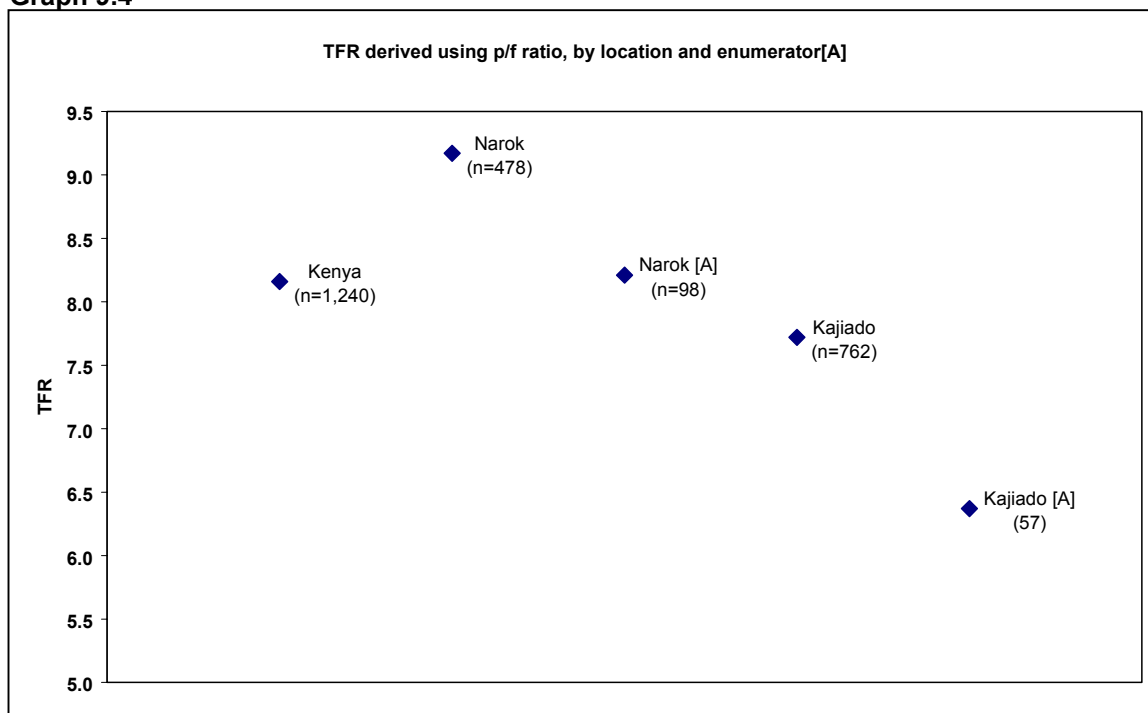
²⁸⁴ Questionnaire, manual and most training in English; *Lingua franca*, some interviewing and some training in KiSwahili; Majority of interviews in Maa

²⁸⁵ An exploration of the impact of enumerators on data collected on Maasai women in the 1998 KDHS and 1991 TDHS was not possible because of the small sample sizes. For example, in the 1998 KDHS

It was possible to examine the data in order to determine whether the district-level Kenyan fertility variations could be an artefact of enumerator bias. One enumerator (A)²⁸⁶ worked in both Narok and Kajiado districts in Kenya. It is reasonable to assume that his bias (if any) would not be altered by the location of his enumeration. It was therefore possible to code fertility data for enumerator (A) and calculate TFRs for both Narok and Kajiado using the p/f method for data collected by (A). These enumerator-specific TFRs could then be compared with the original data.

Graph 9.4 suggests that the fertility differentials between Narok and Kajiado district in Kenya are real, as the direction of TFR differentials by district and enumerator is the same. Whilst this exercise has been carried out with the intention of verification of the reliability of the Narok-Kajiado fertility differential, it has shown the usefulness of incorporating enumerator information into data collection and analysis. Given the reliance of much demographic analysis on survey data collected by proxy, the lack of work on the “enumerator effect” indicates one of two things. Either a lack of concern on the part of the demographer using the data set. Or, an unwillingness on the part of survey designers to acknowledge the potentially large effect of enumerators on data²⁸⁷.

Graph 9.4



Source: SRDS Data

9.4.2.4 Summary

Problems of data notwithstanding, there appears to be a substantial differential in fertility (calculated using the p/f ratio) by location. At the national level, data from Kenya show higher fertility than Tanzania. At the district level in Kenya, data from

only 3 enumerators worked in Narok and Kajiado on the Maasai population, and collected data from 25, 22 and 3 women, respectively.

²⁸⁶ This enumerator was the most highly trained of all the enumerators employed. He had worked for both the DHS and census enumeration, and his work required the least correction following check-up in the field.

²⁸⁷ A corollary of this is an acceptance that standardised enumerator training and supervision cannot entirely (or possibly even partially) remove the influence of the enumerator.

Narok district indicate higher fertility relative to that recorded in Kajiado. This district level pattern reflects that recorded in the 1979 and 1989 Kenyan censuses. Using the data from one enumerator, it has been demonstrated that the fertility differential between Narok and Kajiado is not simply some artefact of data collection. What, therefore, are the causes of these fertility differentials? An obvious place to start would be to use Bongaarts and Potter's (1983) proximate determinants approach. That is, to examine the relative influence of the proximate determinants (marriage patterns, postpartum abstinence, induced abortion, spontaneous intrauterine mortality, fecundability, contraception, lactational amenorrhea, primary sterility and secondary sterility) on fertility. With the exception of marriage patterns and indirectly estimated sterility levels, data to support a proximate determinants approach were not collected in the SRDS²⁸⁸. The following sections gather together circumstantial evidence relating to the major proximate determinants from a variety of sources, including ethnographies, service provider reports and epidemiological studies. Secondary sterility caused by STDs is commonly associated with the Maasai, in both historical and contemporary accounts and special attention is therefore paid to the persistence of this perception.

9.5.1 Induced Abortion

It is highly unlikely that induced abortion (medical or self-inflicted) is widely used by Maasai women. In both Kenya and Tanzania, induced abortion is illegal, and may only be allowed if a woman's life is in danger and if there is spousal consent (IPPF, 1999). Accurate data on abortion are notoriously difficult to obtain, especially in countries where the practice is illegal (Alan Guttmacher Institute, 1999). In addition, issues of data recording cannot be ignored²⁸⁹. The only study site at which induced abortion was available was at Entasopia Hospital (Olkirmatian, Kajiado).

Ethnographic references to induced abortion among the Maasai are rare. Jacobs, for example, suggests that there is no word in Maa for abortion. Devereux's (1976) compilation of references to abortion among the Maasai is inconsistent and dated. For example, he includes a report from a "white farmer who had much to do with uncircumcised girls" among his evidence for the use of abortifacients (reported from Bryk, 1939:113). Nearly all societies have some "folklore" method for self-induced abortion, and several of the older ethnographies do make reference to the use of herbal concoctions for abortion (Merker, 1910; Leakey, 1930). Given the legal environment in both Kenya and Tanzania, combined with the poor healthcare opportunities for Maasai, it is unlikely that induced abortion is a significant contributor to fertility levels²⁹⁰.

9.5.2 Contraception

The SRDS did not collect contraceptive histories, but out of a total of 138 women questioned in Endulen, only one had ever used contraception. The use of contraception is a function of supply and demand. In terms of supply, with one exception (Entasopia Hospital) the (SRDS) study sites were extremely poorly serviced (Table 9.4).

²⁸⁸ See Section 4.2 for a discussion of birth history data collection.

²⁸⁹ For example, given that induced abortion is illegal in both Kenya and Tanzania, healthcare providers have to deal with the consequences of incomplete induced abortion, with implications for record keeping.

²⁹⁰ The 1998 Kenyan DHS reports that 6 out of a total of 70 Maasai women had had a pregnancy termination in their lifetime. All of these women were resident in rural areas, and given the illegal status of abortion in Kenya, in my opinion it is unlikely that these replies refer to induced abortion. They may apply to attempts to self-induce an abortion, or may refer to miscarriage.

Table 9.4: Summary of Reproductive Health services, SRDS study sites.

SRDS location	Facility	Reproductive Health	Comments
KENYA			
Koyaki (Narok)	Private dispensary (Talek)	Contraceptive pill Condom	Payment for service
Olkirmatian/ Shompole (Kajiado)	Subsidised hospital (Entasopia)	Family Planning available	Run by AMREF - large medical team
Olkirmatian/ Shompole (Kajiado)	Dispensaries at Embirika, Shompole, Olkirmatian, Loodilikani, Magadi	Theoretically available ²⁹¹	Lack of supplies/ adequately trained staff
TANZANIA			
Irkeepus (NCA)	Government clinic	Theoretically available	Lack of supplies/ adequately trained staff
Endulen (NCA)	Mission hospital	Complications of pregnancy dealt with, but no FP	Run by Catholic church
Meshilli (NCA)	Government clinic	Theoretically available	Lack of supplies/ adequately trained staff
Ngorongoro District	Wasso Hospital	Theoretically available	Payment for service e.g.: delivery cost TS6,000 in 1996

Levels of reproductive health provision in the study areas were very low, particularly at the Tanzanian sites. For example, there is a large hospital at Endulen, to which people will travel long distances to visit. However it is run by the Catholic Church and therefore does not provide contraceptive advice or services. In most locations service is theoretically provided by government institutions, but informal discussions revealed lack of supplies and insufficient staff training²⁹². Only at one location, Entasopia Hospital (run by AMREF) in Olkirmatian was there a good standard of supplies and staff competency.

There is a generally held view among both non-Maasai and educated Maasai that rural Maasai are extremely traditional and conservative. Indeed, the use of the adjective "conservative" to describe the Maasai is common²⁹³. The various conceptualisations of Maasai have tended to rely on images and preconceptions relating to Maasai men, both in historical and contemporary accounts (Hodgson, 1999b). The result has been a marginalisation of Maasai women, both culturally and economically. Ideas of Maasai traditionalism and conservatism are closely bound together with images of the Maasai male alternately as a fierce warrior or recalcitrant pastoralist. The result, in terms of service provision, has been an "overlooking" of Maasai women, relative to many other ethnic groups. Service providers, in perpetuating the male Maasai images tend not to view Maasai women as capable of initiating or "accepting" the use of contraceptive services.

Given the very low levels of quality service provision combined with low levels of female education and autonomy, it is unlikely that very many Maasai women included in the SRDS had used or were using contraception. Maasai women, particularly younger ones who had been to school were aware of family planning and might have an

²⁹¹ "Theoretically available" in this table refers to those service delivery points which are supposed to provide RH services, but anecdotal evidence suggests that in practice the service is not available. Not attempt was made to check the veracity of these statements.

²⁹² Government publications in both Kenya and Tanzania support such statements. For example, "The total number of dispensaries and other health centres in the district [Kajiado] are not adequate and most...are under-equipped and have inadequate and infrequent medical supplies as well as a shortage of trained personnel" (Kenya, 1997).

²⁹³ For example "The Maasai are not labelled Kenya's most conservative tribe for nothing" (Rugene and Newbery, 1998:76)

unmet need for contraception²⁹⁴. However, the possibilities for supply of service within the study areas were extremely low. For example, the Narok District Development Plan includes lack of awareness, poor communications networks and long distances to health service providers as reasons for the low levels of contraceptive take-up (Kenya, 1994a). No ethnographies to date have referred to the use of contraceptives by Maasai men or women. Hollos and Larsen suggest that the Maasai "are known to have only a negligible use of contraception" (1997:366), although they provide no data to support this statement.

As an example of the way in which a non-contracepting (in the technological sense) population manipulates its fertility, one case deserves particular attention (Case Study 9.1).

Case Study 9.1

A Kenyan Maasai married man in his thirties had one wife and three surviving children. His wife had expressed a desire not to have any more children, in order that she might both avoid the risks of future childbearing and that they might afford to educate their children. The husband was in agreement with his wife, but rather than using "modern"²⁹⁵ contraception, his solution was to stop having sex with his first wife, and to acquire a second wife.

Thus, an acceptable substitution for contraception was the use of marriage patterns to accommodate both the husband's need to be sexually active within marriage, and the joint husband-wife desire to cease childbearing for that wife. This is an example of a decision to "graft new cultural norms and technologies onto...extant repertoires" (Bledsoe *et al*, 1994:108).

9.5.3 Lactational amenorrhea²⁹⁶

Breastfeeding on demand is a common feature of Maasai infant feeding practices. An informal survey of shops in the study sites showed that milk substitutes were available. However, the cost of these products, combined with the Maasai reliance on cow's milk suggests very low overall use of breastmilk substitutes. Overall, the ethnographic literature suggests an average breastfeeding duration of two years (Jacobs, 1973; de Vries, 1984; Kuria, 1989; von Mitzlaff, 1994). However, no distinction is made in the literature between full and partial breastfeeding.

9.5.4 Post-partum abstinence

Prolonged breastfeeding combined with post-partum abstinence is a common feature of many sub-Saharan African societies (Lesthaeghe, 1989), particularly polygynous ones. Since the earliest ethnographic writings on the Maasai, reference has been made to the practice of post-partum abstinence. For example, Hollis states that a man "may not again have connection with her [his wife] until the child cuts the two middle incisor teeth of its upper and lower jaws" (1910:480). Huntingford (1953) also makes reference to abstinence being linked to the dental development of the preceding child, suggesting up to two years' duration. Kramer notes that the Human Relations Area Files "codify the Maasai as having a postpartum sex taboo of between 6 months and 1 year duration"(1980). Jacobs suggests a short period of abstinence, suggesting that "the Maasai regard it as bad for a man to have sexual intercourse with his wife for the first six months following childbirth" (1973:403). More recently, von Mitzlaff states that

²⁹⁴ See Section 9.1.1 for questions from Maasai women.

²⁹⁵ The term modern is placed in inverted commas because, as Bledsoe *et al* point out "in the United States, this method [abstinence] is declared by contraceptive brochures to be 100 percent effective" (1994:82).

²⁹⁶ See Section 8.4.1 for a more detailed discussion of breastfeeding.

"Sexual abstinence is expected of breast-feeding women" (1994:116), but does not indicate the age at weaning.

This brief review of ethnographic references to abstinence demonstrates a widely reported practice of post-partum abstinence. However, the length of the abstinence is open to debate. Informal discussions on the topic of post-partum abstinence revealed varying reports from 6 months to until the preceding child had achieved some developmental stage²⁹⁷. Aside from the obvious issues of sensitivity in discussing such a topic, there is the problem of separating the actual cessation of abstinence and the "correct" timing for the subsequent child - the timing of the two are very different yet tightly bound together in a Maasai context.

9.5.5 Nuptiality

The one proximate determinant that can be examined with some certainty is marriage. Age at first marriage represents "the onset of exposure to the risk of socially sanctioned childbearing" (Bongaarts & Potter, 1983:57). Measures of nuptiality have been presented in Chapter Six, and reference was made to socially sanctioned childbearing by women who are divorced, separated or widowed. Decomposition of ASFRs by current marital status demonstrate that post-marriage childbearing does occur.

Table 9.5 Age-specific fertility rates, by current marital status

Age group	Current marital status	
	Married (n=2,525)	Ex-married (n=303)
20-24	0.285	0.400
25-29	0.294	0.343
30-34	0.236	0.293
35-39	0.179	0.224
40-44	0.149	0.123
45-49	0.061	0.000

Despite the considerably smaller sample size for ex-marriage women, the ASFRs in Table 9.5 demonstrate continued childbearing, even for those women currently not with a spouse.

9.5.6 Sterility

Sterility is "the inability to produce a live birth" (Wilson, 1985). In this discussion, the level of sterility is demonstrated by its outcome, that is, the levels of infertility. Two components of sterility, primary and secondary, are investigated. This section addresses three issues relating to sterility among pastoralists in general and the Maasai in particular. Firstly, Maasai attitudes and behaviours towards subfecundity are described. Secondly, primary and secondary sterility rates are estimated for Maasai women using data from the SRDS. Thirdly, issues of data quality are addressed, with specific reference to the effect of high levels of child fostering on sterility estimates.

9.5.6.1 Maasai attitudes and behaviours relating to subfecundity

Maasai tend to regard levels of childbearing per woman as a circumstance dealt with by God (*Enkai*). Women who give birth to only one live child are likely to be viewed as being unfortunate but are "not treated with any less respect or dignity" (Jacobs, 1973). However, a woman who is infertile (*olopi*) or has recurrent miscarriages tends to be viewed with some mistrust.

²⁹⁷ For example, a common expression was when the preceding child could run after a piece of food that had been thrown to it.

Attitudes of men towards subfecund women have changed considerably in the last two decades. Until recently, it was considered reasonable for a man to disown a wife who was infertile. It is more common nowadays for such a woman to be superseded by another wife, and for her status to be very low within the household. As a Maasai woman only accumulates access to wealth (in terms of milk) via animals held in trust for her children, a woman with no children will find herself reliant upon only those animals which were bestowed upon her at the time of her marriage. People will go to great lengths to find a "cure" for sterility (both primary and secondary). Treatment tends to be sought from a traditional healer rather than from the formal healthcare sector. It is not uncommon for such treatment to be paid for by a male relative of the woman.

When the topic of sterility was discussed, informants suggested that nowadays it was generally accepted that the cause was not necessarily the fault of the woman. However, it was acknowledged that until recently, it was possible (and reasonable) for a husband to chase his wife away if she remained childless. It is possible that this situation still occurs, especially when the husband is considerably older than the wife, common in polygynous marriages.

9.5.6.2 "External" perceptions of sterility among Maasai

Historical and contemporary perceptions about levels of STDs among the Maasai are very constant. From the very earliest ethnographic accounts of the Maasai, there are many references to high levels of STDs. However, these statements must be placed within the context of how the Maasai were viewed by the colonial administrators. The high "visibility" of Maasai women²⁹⁸ in colonial settlements as prostitutes, and the assumption that Maasai women were promiscuous and hence riddled with STDs is a common theme. As early as 1902 statements such as "Masai females are becoming increasingly sterile" (The Uganda Protectorate Vol.ii 1902:829)²⁹⁹ can be found.

White notes that "Women and girls from pastoral societies figured prominently in descriptions of prostitution in early Nairobi. An anonymous, undated and I suspect imaginative account by a missionary from Sagala claimed that the most expensive prostitutes were Somali and Maasai at the turn of the century" (1990:38). A similar account is provided by Foran where he states that "in 1909 the Chief of Police reported the jocular roundup of almost 300 prostitutes, the Maasai being greatly in the majority" (1936:146)³⁰⁰. The description of Maasai women as promiscuous, possibly based on the European fascination with the Maasai norm of sexual access by a husband's age mates to his wives, appears frequently. Occasionally, however, such references were excised from the colonial record. For example, Dawson compares Harold Mackinder's early travel diaries with the subsequent published reports from those diaries. He noted "in order to spare the government embarrassment Mackinder felt obliged to exclude the following passage: *"Ainsworth taxes every Masai hut in Machakos one rupee a month. They usually belong to loose women."*" (1987:30). In contrast, Merker reported in 1910 that gonorrhoea was quite rare among the Maasai (of German East Africa) and that fertility was very high³⁰¹.

²⁹⁸ Which probably included other ethnic groups who dressed in a fashion similar to the Maasai

²⁹⁹ Quoted in White (1990)

³⁰⁰ Quoted in White (1990)

³⁰¹ Merker states that he questioned 87 "old" women, and that they reported 548 children or 6.3 on average (p.177, 191-2, 333).

In 1931 Orr and Gilks carried out a detailed medical survey of Maasai living in Maasai Province, Kenya. They concluded that "Gonorrhoea and all its sequelae and complications is practically universal...it is the most common sterilising disease of women and the Masai themselves know that large numbers of their womenfolk were sterile...it is...now believed by the Masai with whom the question was discussed that gonorrhoea is much more prevalent than of yore and that the increase in prevalence is partly due to the Moran (warriors) through their giving up of their old custom of living with unmarried girls, becoming infected by prostitutes and married women" (1931:30). A subsequent Medical Survey in 1935 appeared to substantiate Orr and Gilk's earlier conclusions, concluding that "as a result of a high incidence of this disease [gonorrhoea]...the tribe perhaps in danger of ultimate extinction"³⁰². The subsequent association of Maasai and STDs, hence sterility and low fertility is not difficult to trace.

Perhaps the most interesting commentary on STDs and the Maasai during colonial rule is that provided by White (1990). She described how the colonial administration controlled access to a new treatment for gonorrhoea, dependent upon ethnicity. She suggests that the colonial authorities "sought to construct a demand for paid venereal disease treatment" (1990:117) by limiting its distribution. In 1939 the colonial government was trying in vain to persuade Maasai to sell their cattle in order to meet the growing demand for beef. The Chief Medical Officer at the time decided to supply the drug MB693 to the Maasai in return for cattle. In Paterson's words "the discovery of the drug 693 has provided an unrivalled opportunity for encouraging the Maasai not only to sell large numbers of cattle for the provision of Medical Services, but to get into the habit of selling cattle"³⁰³. As White concluded, "Beef was the main issue here, not babies. Areas with birth-rates as low or lower than the Maasai were neither given nor sold 693 until the end of the war" (*op. cit.*).

Henfrey (1937) went on a "Venereal Safari", and treated 1,908 cases of gonorrhoea and 435 cases of syphilis in Narok District. In 1944 new adult admissions (n=647) to the Native Hospital, Narok, were tested, and the conclusion was that approximately 20 per cent of all Maasai in Narok District were suffering from syphilis. In 1950 a further medical survey was carried out in Masai Province, by McKay, who begins his report by stating that "For many years it has been common talk that the Masai are in danger of dying out owing to the sterility and miscarriage induced by venereal disease" (1950:451). McKay's study was in order to provide treatment, rather than an epidemiological survey, and "sufferers naturally did their best to be included in the sample when they knew that treatment was available after examination" (1950:454). Therefore, his results cannot be taken to be representative of the Maasai population as a whole. He concluded, however, that "there has been little change in the high incidence of gonorrhoea in Maasai in the last twenty years, and that the disease is so widespread among them that it will require heroic measures to achieve success in even partial eradication" (1950:456)³⁰⁴. Treating venereal disease was obviously accorded relatively high importance under the colonial rule, and there can be no doubt that STDs were present. However, the way in which the data were collected, including the self-selection of infected individuals into the "sample" does not permit any population-level infection rates to be calculated. The fertility "data" collected during these surveys were taken as

³⁰² Quoted in Kuczyinski's (1948) survey.

³⁰³ Quoted from White (1990)

³⁰⁴ McKay provides two reasons for a possible increase in STDs. Firstly, he suggests that following the introduction of western medical interventions for STDs, the Maasai ceased to quarantine people infected with syphilis. Secondly, that with a change in clothing away from animal skins to cotton *shukas*, it is easier for an individual to hide their infection.

a priori evidence that STD-induced sterility was causing low fertility among the Maasai.

The theme of high levels of STDs among the Maasai continues throughout the literature (both ethnographic and demographic). For example Jacobs states that the "spread of venereal disease, particularly in women" (1973:399) is a factor likely to lower overall fertility among the Maasai. Gulliver (1979) estimated that 20% of all adults in Kenyan Maasailand had venereal disease³⁰⁵. Sindiga (1987) suggests sterility as a result of STDs amongst the Maasai in Kenya as one factor in explaining their apparently lower fertility (although he provides no data to support this statement). He suggests that high levels of culturally acceptable sexual mobility amongst the Maasai are responsible for the increased incidence of sexually transmitted diseases that lead to depressed fertility.

More recently Talle notes that "the pastoral Maasai of Tanzania and Kenya are held to be a group at particularly high risk regarding the spread of sexually transmitted diseases. This view is held by non-Maasai people working in Maasai areas, and also by educated Maasai" (1995:69). She goes on to note that "in a recent syphilis epidemic in a Maasai area, girls estimated as young as 9 contracted the disease" (1995:78). What is perhaps most pertinent about Talle's comment is that perceptions of STD prevalence amongst the Maasai are so widespread. The only recent substantiated study of STD among the Maasai is provided by Valadez *et al's* (1999) study of antenatal women (n=2,082) in Kajiado. Over the period 1989-1992 syphilis prevalence increased, from 2.9% in 1989 to 5.3% in 1992.

There are methodological problems with direct reporting of infertile women. For example, Nangawe *et al* noted that "although infertility was stated to be a problem generally, no specific cases could be confirmed" (1984:10)³⁰⁶. The AMREF medical reports (1997, 1998, and 1999) for Entasopia Rural Health Centre (Olkirmatian Group Ranch) all note that STD cases are common, but again these statements do not provide any information on the population-level incidence of the diseases³⁰⁷.

Two elements of Maasai culture, female genital mutilation (FGM) and wife beating are both associated with higher levels of sterility. For example, health consequences of FGM include infection, which can lead to reproductive tract infections and chronic pelvic pain, and the formation of scar tissue (Kiragu, 1995). Wife beating is widely practised, and there are reports of women miscarrying following particularly severe beatings. There is, however, no substantive evidence relating these practices to subfecundity among the Maasai. The contextual evidence (high levels of sexual networking, polygyny, marginalisation from health services, pre-menarchal sexual debut for females) leads to the expectation that sterility levels among Maasai women are high.

9.5.6.3 Estimation of sterility levels

In this study sterility is measured under conditions of natural fertility, therefore there is no bias in estimation as a result of contraceptive use (after Larsen, 1994). Primary sterility levels and age specific secondary sterility rates are estimated, followed by age specific sterility rates using "proportions subsequently infertile" (Larsen 1994).

³⁰⁵ Probably based on Haynes' (1944) investigations.

³⁰⁶ Campbell *et al's* study of primary sterility among Turkana note that primary sterility "is so low as to invite skepticism" (1999:341). Out of a total of 358 women, only 2 were nulliparous by age 45+.

³⁰⁷ In 1999, for example, STDs represented 5% of all new outpatient attendance at Entasopia Rural Health Centre.

9.5.6.3.1 Primary sterility³⁰⁸

Table 9.6 shows the estimates of primary sterility, by five-year age group for Maasai women in Kenya and Tanzania. It is possible that estimates of childlessness may understate primary sterility because childless women tend to be underrepresented in reproductive surveys (Larsen, 1994).

Table 9.6: Primary sterility of Maasai women by country, SRDS Data.

Age group	Kenya		Tanzania		All	
	n	%	n	%	n	%
25-29	247	3.6	336	1.5	583	2.4
30-34	162	1.2	263	0.8	425	0.9
35-39	131	4.6	223	0.9	354	2.3
40-44	110	0	168	1.8	278	1.1
45-49	1.3	1.9	143	0	246	0.8
50-54	44	2.3	81	0	125	0.8
55-59	39	2.6	57	0	96	1.0
60-64	37	5.4	42	9.5	79	7.6
65-69	20	5.0	30	3.3	50	4.0
70-74	18	11.1	14	7.1	32	9.4
75-79	11	0	7	0	18	0
>80	17	5.9	13	7.7	30	6.7
All	939	2.9	1,377	1.4	2,316	2.0

Levels of primary sterility derived from reported levels of childlessness are substantially higher in Kenya (2.9%) than in Tanzania (1.4%). Bongaarts *et al* (1984) suggest an average primary sterility of 3% for sub-Saharan Africa. Given the largely congenital causes of primary sterility, there is no reason to believe that Tanzanian Maasai women have significantly lower levels of primary sterility than either Kenyan Maasai women or sub-Saharan African women in general. What are the possible reasons for these very low estimates of primary sterility in Tanzania?

An examination of the derived levels of primary sterility by five-year age group for Tanzania suggests strongly that there is under-reporting of infertile women. Above age 44 only 7 cases of primary sterility are recorded (n=387), with no cases of primary sterility reported in 4 of the 8 age groups. The discrepancy in levels of primary sterility at the country level is probably an artefact of enumeration. It is unlikely that infertile women have been systematically excluded from the SRDS. Young (of childbearing age) nulliparous women are “hidden” because of the practice of giving a young child to a woman who is currently childless in an attempt to stimulate her fertility. Older women, regardless of their parity, often have children living with them in order to help with household and pastoral tasks. These non-own children may then be reported as own children.

Larsen (1994) suggests a slightly different method for calculating childlessness³⁰⁹. She calculates childlessness levels for Kenya (1977-78 and 1989) at 2%. When Larsen's definition of childlessness was applied to the SRDS data for Kenya, childlessness of

³⁰⁸ Primary sterility calculated as
$$\frac{\text{Nulliparous women* at the time of the SRDS}}{\text{All women*}}$$

* Ever-married women with a duration since first marriage of at least five years

³⁰⁹ Childlessness as defined by Larsen (1994)
$$\frac{\text{Women* with no live birth}}{\text{All women*}}$$

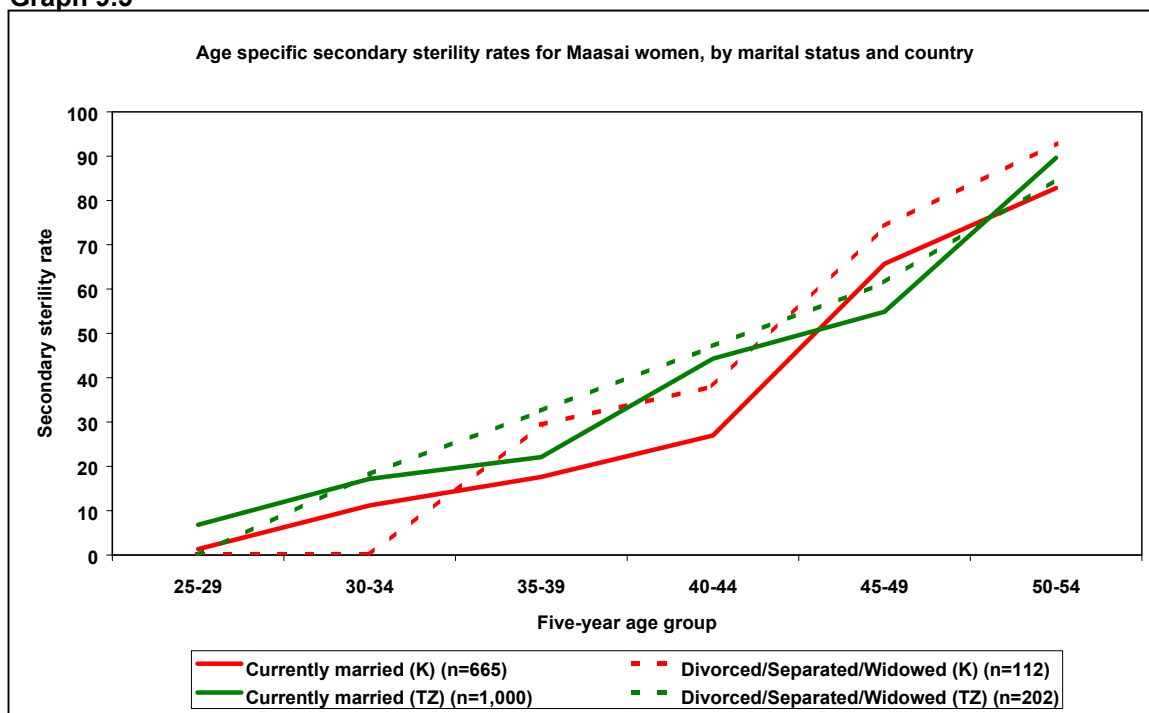
* Women married for at least 7 years and married before age 20

2.3% (n=799) was derived³¹⁰. Larsen does not provide comparable estimates for Tanzania, precluding any comparison.

9.5.6.3.2 Secondary sterility

For any level of primary infertility there is an accompanying larger proportion of women who have incurred secondary infertility (Bongaarts *et al*, 1984). Age-specific secondary sterility rates are shown, by country and marital status, in Graph 9.5. Theoretically, calculation of secondary sterility should use only those women who were married continuously for the 5 years prior to the survey, as a proxy for sexual activity. However, marriage histories were not collected in the SRDS. Instead, rates of secondary sterility are calculated³¹¹ separately for both married and “ex-married” women (i.e.: divorced/widowed/separated) as Maasai women tend to remain sexually active, regardless of marriage instability or dissolution (Section 3.5.2). Any children borne after marriage remain the property of her husband’s family, irrespective of the biological father’s identity or the husband’s survival status. These children are unlikely to cause the woman to be ostracised.

Graph 9.5



Source: SRDS Data

Above age 34, women who have been married but are currently “ex-marriage” report higher levels of secondary sterility than currently married women. It is possible that some of these women have been divorced or separated because of their subfecundity. Further, the higher levels of reported secondary sterility might be due to lower levels of coital frequency among widowed women. However, it is not possible to further decompose this group of women further into widowed and divorced/separated, due to the very small sample sizes. Up to age 44 years, currently married Maasai women in

³¹⁰ The comparable figure using Larsen (1994) for Tanzania was 1.5% (n=1,789).

³¹¹ Secondary sterility calculated as:

$$\frac{\text{Women* with no live birth in the 5 years preceding the SRDS}}{\text{All women*}}$$

* Currently/Ex-married married women with a duration since first marriage of at least five years with at least one live birth

Tanzania report consistently higher levels of secondary sterility than their Kenyan counterparts. The country-level differences in secondary sterility may be due either to lower STD prevalence, or to differences in health service provision (maternal healthcare and pathological disease treatment) between the two countries.

9.5.6.3.3 The role of fostering in sterility calculations

Inter-household fostering of children is a common feature of Maasai society³¹². Children may be resident in a non-natal household for a variety of reasons, including school attendance and to provide help with household and pastoral tasks. The SRDS collected data on the relationship of individuals within the household. It is possible to identify those children who were resident in the household at the time of the survey, but who were not the biological offspring of a woman resident in the household. These data permit the estimation of levels of child fostering³¹³ among the Maasai.

The data for Tanzania women estimate very low levels of primary sterility (1.4%). This low level of primary sterility may, in part, be due to the reporting of “non-own” children as “own” children. With the available data, it is impossible to test this suggestion rigorously, or to prove a causal effect between levels of fostering and the prevalence of subfecundity. However, an examination of the levels of child fostering by country and/or fecundity, will provide circumstantial evidence regarding the potential influence of fostering on estimated sterility levels. Overall, levels of reported fostering are higher in Kenya compared with Tanzania (12.3% and 5.6%, respectively). Levels of reported fostering by age show a particularly marked pattern in Tanzania (Table 9.7).

Table 9.7: Proportion of ever-married women, by five year age group, who had a fostered child living with her at the time of the SRDS.

Age group	Kenya (n=1,150)	Tanzania (n=1,613)
20-24	11.8	10.0
25-29	10.0	5.2
30-34	12.9	4.2
35-39	11.5	2.2
40-44	10.9	7.1
45-49	18.4	7.0
50-54	25.0	7.4
55-59	20.5	15.8
60-64	32.4	31.0

In Tanzania, between the ages of 25 and 39, there is a marked decrease in the proportion of women reporting a fostered child. This trend may represent a systematic fostering of children by young women, in keeping with the traditional belief that the presence of a child helps to stimulate a woman’s fecundity. Levels of fostering rise sharply in both countries above age 60. This represents the practice of young children (often grandchildren) living with a grandmother in order to help with pastoral and household tasks.

³¹² In a small-scale (n=268 individuals) repeat-round migration survey I undertook in Narok District (Kenya), of all those individuals who were absent from their normal *enkang* of residence for more than four months, 30% were aged below 10 years.

³¹³ Fostering in this context refers to any child (aged 16 years or less) who was reported as being a member of the household but who is not the biological offspring of the woman with whom s/he is living. No information on the length or cause of residence is implied through the use of the term “foster”. The figures refer to all ever-married women aged at least 20 years who report a non-own child resident in her *enkaji*.

Of those women defined as having primary sterility, 25.0% in Kenya and 30.4% in Tanzania reported a fostered child at the time of the SRDS. Women not defined as having primary sterility report fostering levels of 9.8% and 3.6% for Kenya and Tanzania, respectively. What information can be derived from these crude estimates of levels of child fostering? There is strong evidence in both countries for the practice of fostering by subfecund women. Women with primary sterility have the highest reported levels of child fosterage. However, the fact that a high proportion of subfecund women report relatively high levels of fostering does not preclude the possibility that there may be other subfecund women with fostered children who then report these children as their own. For example, if sterile women in Tanzania are fostering just one child, then the higher estimated levels of secondary sterility in Tanzania may be a function of low reported primary sterility.

9.6 Discussion

Based on a combination of the SRDS results and ethnographic evidence, a summary of the results presented here could conclude that the Maasai are an archetypal "natural fertility" population (after Henry, 1961). This is commonly interpreted as the fertility of a population that does not use contraception or induced abortion. Typical characteristics of a natural fertility population include a high mean age of mother at the birth of the last child and "fixed" or highly regular birth intervals. Although birth histories were not collected in the SRDS, the ethnographic evidence suggests such features among the Maasai. There are repeated references to the wantedness of all children, and of the alien nature of fertility limitation. Such statements should not necessarily be taken at face value. The problems surrounding "ideal family size" or "desired completed family size" are well known. In all societies there is a degree of reticence to "predict the future", no matter how obliquely.

It is not the intention here to create the Maasai as "prisoners of biology or rigid social norms" (Bledsoe *et al*, 1994:107). The case of the man who married a second wife in order to "limit" his first wife's fertility is a case in point. A feature of ethnographic references to fertility among "traditional" societies is the implicit assumption of a natural fertility regime, even if not expressed in such demographically explicit terms. A cursory examination of Maasai norms surrounding childbearing would appear to be at odds with such a statement. In common with many sub-Saharan African populations, for example, closely-spaced births are not condoned among the Maasai, exemplified by the existence of livestock fines for couples that flout such norms. The methods for ensuring "responsible" child bearing are many, including prolonged breastfeeding and the manipulation of the timing of intercourse to avoid conception.

Technological contraceptive use and induced abortion are rare among the rural Maasai women included in the SRDS. Taken at face value, this could indicate a natural fertility population with little desire to limit fertility. On the other hand, it could reflect an inadequate service provision environment that dismisses Maasai women as conservative subordinates to their husbands. The unusually bold behaviour of Maasai women asking questions about family planning during the fieldwork suggests that demand for contraception might not be as low as expected. As Bledsoe *et al* point out, we need to "acknowledge that people are always ready to seek out technologies that could improve their lives and those of their children" (*op. cit.*). In relative terms, however, the fertility differentials seem to have emerged recently both between Kenya and Tanzania and within Kenya. An exploration of these differentials is contained in the following chapter.

One of the strengths of ethnographies is to provide background information on the potential contribution of proximate determinants to fertility levels. By their very nature, these reports have to be used with care - the information they contain is often subsidiary to the main focus of the ethnographic work. However, in the absence of any other information sources, and providing attention is paid to a critical framework (e.g.: Hammersley, 1998), there is justification for their use. The need to remember that there is a difference between what people say they do (or are reported as doing), and what they actually do, is taken for granted.

The central role of ethnographies in perpetuating rather than challenging preconceptions about a group of people has been clearly demonstrated using the example of sterility. What becomes clear is that pathologically induced sterility among the Maasai has become "accepted fact" based on preconception rather than reality³¹⁴. For example, the prominence given the colonial authorities in pre-Independence Kenya to acquiring beef cattle from the Maasai probably overshadowed the real extent of the levels of STDs in Maasailand.

³¹⁴ The association between pathological sterility and fertility for pastoralists as a whole is considered in detail in Chapter Eleven.

The preceding chapter highlighted fertility differentials among the Maasai at two geographic scales: between Kenya and Tanzania; and within Kenya. The purpose of this chapter is to explore the possible reasons for such recent differences in fertility within one ethnic group. What can explain the difference in TFR of nearly two children between Kenya and Tanzania? Is there a significant difference in one of the proximate determinants? Or, is it some function of reporting? Similarly, within Kenya, how are women in the Narok study site achieving higher fertility than women in Kajiado? Ideally, such a discussion would incorporate a proximate determinants approach in order to identify the biological and behavioural differences between the sub-groups. Because such an approach is not possible here, the following discussions must of necessity be based on scanty evidence. However, lack of evidence does not preclude the generation of new hypotheses, only their testing. Why might men and women in the Narok study site want to achieve higher fertility than men and women in Kajiado? Rising levels of formal education for Maasai combined with mounting evidence for a relationship between education and fertility make a consideration of the fertility-education relationship among the Maasai appropriate. The final section therefore addresses the possibility of a link between education and fertility in Maasailand.

10.1 Kenya-Tanzania fertility differentials

Estimated TFR for Kenyan Maasai women is almost two births more than for the Tanzanian women included in the SRDS, at 8.2 and 6.4 births per woman, respectively. The major problem with the Tanzanian data appeared to be reference period error, which is taken into account when estimating fertility using the p/f ratio method. In terms of data quality, the major difference between the Kenyan and Tanzanian data is that the under reporting of dead children appears to be more marked in Kenya, relative to Tanzania. The differential in under reporting of dead children by country does not alter the direction of the fertility differential - it serves to possibly increase it. The following discussion is therefore directed towards a consideration of the *relative* fertility difference between Kenyan and Tanzanian Maasai women included in the sample, rather than the *actual* fertility.

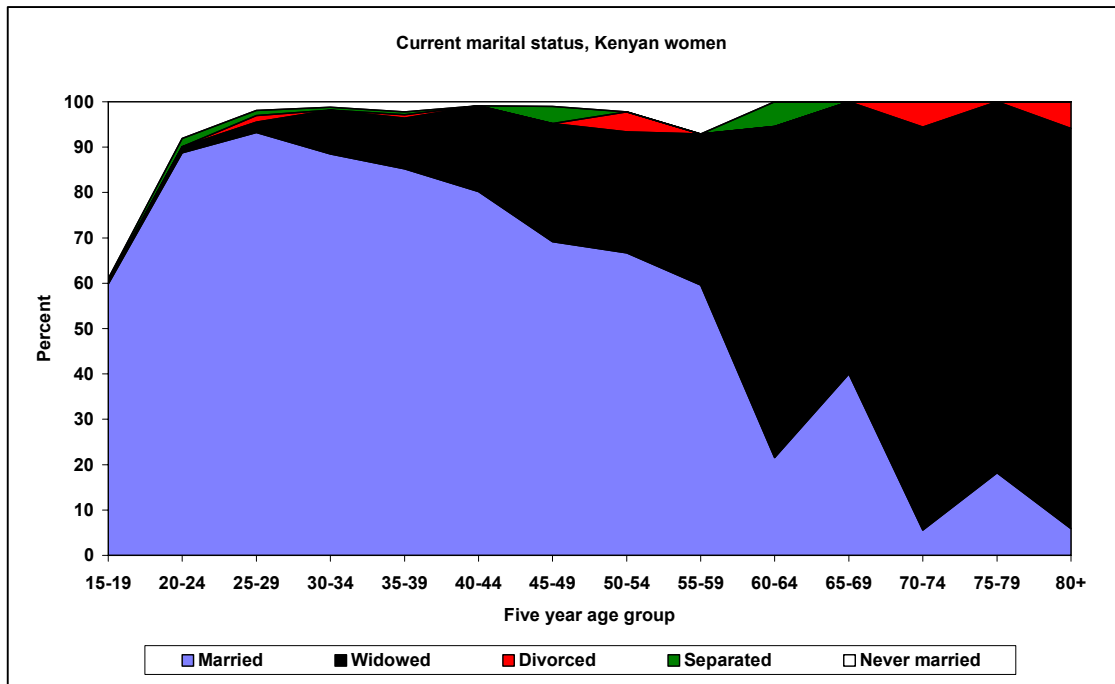
10.1.1 Nuptiality

The timing of marriage for women varies relatively little between Kenya and Tanzania (Chapter Six), and graphs 10.1-2 show the current marital status of women by country. In terms of current marital status, the only major difference between the two countries is for the youngest age group, 15-19 years. In Tanzania, 38.2% of this age group are married whereas in Kenya over half (59.8%) of women aged 15-19 are married. By age group 20-24, the percentages currently married are very similar for Kenya and Tanzania, at 88.7% and 83.3%, respectively. Is it possible that this relatively small difference in the entry into marriage contributes to higher reported fertility in Kenya, relative to Tanzania? If one assumes that childbearing begins soon after marriage (or, indeed, marriage may be predicated on pregnancy), then it is possible that the slower entry of Tanzanian Maasai women into marriage relative to Kenyan women, might account for some of the difference in fertility. However, it cannot account for all of the difference. Above age 20 exposure to the risk of childbearing in terms of marriage is virtually identical in the two countries. It is unlikely that such a small differential in the

³¹⁵ Maasai proverb, quoted from Galaty (1992:26)

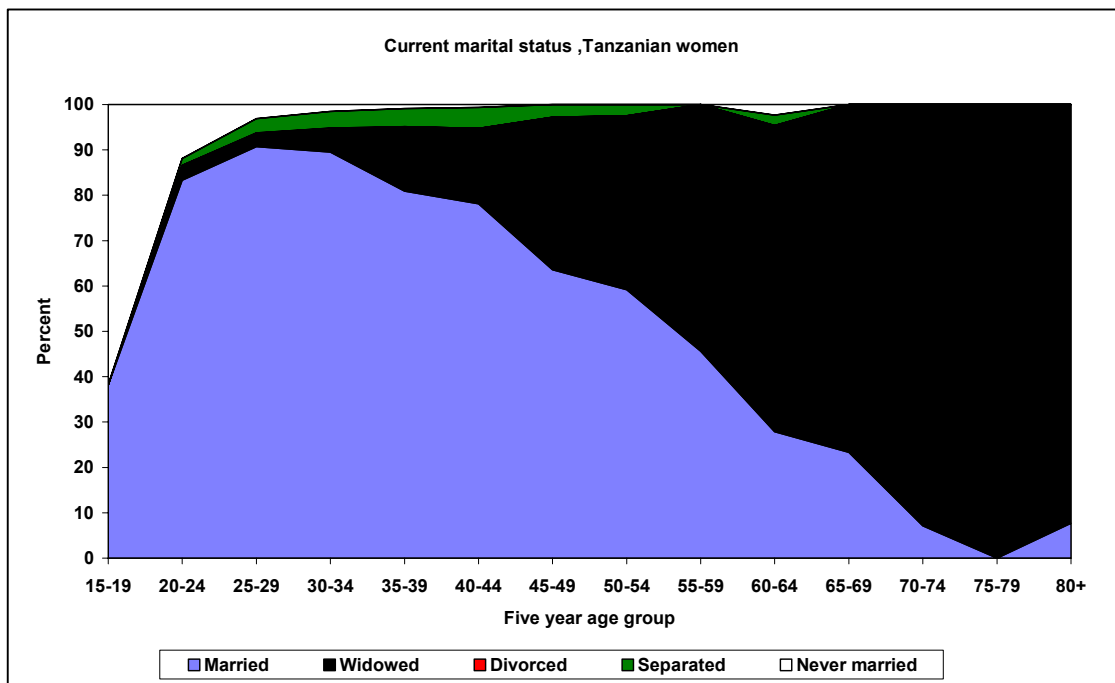
timing of entry into marriage could account for a difference in total fertility of two live births.

Graph 10.1



Source: SRDS Data (n=1,591 women)

Graph 10.2



Source: SRDS Data (n=2,154 women)

The possibility that polygyny raises fertility at the population level is subject to debate (Section 6.8.2). Overall, levels of polygyny prevalence and intensity vary very little between Kenya and Tanzania (Table 6.11), with 46% of all marriages reported as polygynous in both Kenya and Tanzania. The intensity of polygyny is slightly higher in

Tanzania, relative to Kenya, at 2.84 and 2.72 wives per husband, respectively. It is therefore possible that this translates into the ability to breastfeed and abstain from sex post-partum for longer in Tanzania, relative to Kenya. It may also act to reduce coital frequency. It is not possible, however, to test either hypothesis here.

10.1.2 Sterility

Up to age 44, levels of secondary sterility are higher for Tanzanian Maasai women relative to Kenyan Maasai women, although primary sterility is relatively higher in Kenya (Chapter Eight). Secondary sterility is caused either by complications of the first birth or some untreated infection, the incidence of both being influenced largely by health service provision. At the national level, data on healthcare provision are available at only the crudest level inasmuch as they provide indication of the relative situation between the two countries (Table 10.1). However, it must be reiterated that Maasai are marginalised in both countries with respect to the receipt of healthcare provision, and that national figures are not representative of healthcare for most rural Maasai.

Table 10.1: Indicators of maternal health service provision, Kenya and Tanzania

	Kenya	TZ
<u>Per 100,000 people</u>		
Doctors	15	4
Nurses	23	46
<u>Antenatal care provided by (%)</u>		
Doctor	25.6	5.7
Trained nurse	65.6	81.6
Birth Attendant	2.4	9.3
No one	6.2	2.7
Missing	0.1	0.7
<u>Place of delivery (%)</u>		
Health facility	36.2	38.1
At home	62.4	58.0
DK/missing	1.4	3.8
<u>Assistance during delivery (%)</u>		
Doctor	9.8	4.0
Trained nurse	28.6	34.3
TBA	23.5	20.4
Relative	26.4	32.3
No one	11.5	8.4
DK/missing	0.2	0.6

**Refer
to
rural
women
only**

Sources: DHS (1998); DHS (1996) United Nations (1999)

Maternal healthcare provision for rural women is broadly similar in Kenya and Tanzania, with approximately one third of births taking place at a health facility. It is perhaps this figure that highlights most clearly the alienation of Maasai women from healthcare provision. In all of the SRDS study sites, formal healthcare for delivery was really only available at Entasopia Rural Health Centre (Kenya) and Endulen Health Centre (Tanzania). Even at these facilities, however, it was only in cases of complicated deliveries that services were used. The DHS data can be examined by ethnic group in order to examine the use of reproductive healthcare services. However, it was decided not to use these data here due to the extremely small sample size and issues of representativeness (Section 9.3). The above indicators are only presented as the broadest proxy for healthcare provision in Kenya and Tanzania in order to determine whether differential access to healthcare provide a plausible explanation for the different levels of secondary sterility.

10.1.3 Contraception

The likely low levels of modern contraception use by Maasai women have been outlined in Section 9.5.2. At the country level, are there differences in family planning provision, and might this help to explain the lower fertility in Tanzania relative to Kenya? Again, broad indicators of the family planning service provision are provided only as background information, and are not meant to represent the access of Maasai women to family planning services.

Table 10.2: Indicators of contraceptive use and demand, Kenya and Tanzania

	Kenya	TZ
<u>Source of contraceptive supply</u>		
Government	58	71
Private	42	29
Pharmacy	3	5
NGO	17	11
Other	22	13
<u>Programme Effort Scores</u> (Out of 100)		
Total	56	48
Policy	48	54
Services	56	45
Evaluation	61	44
Availability	63	45
<u>% MRWA with unmet need for</u>		
Spacing	21.3	15.3
Limiting	14.2	8.5
Total	35.5	23.8
<u>% Use of any modern method</u>		
Urban	41.0	26.6
Rural	29.0	9.8
Total	31.5	13.3

Sources: Ross et al (1999); KDHS (1998); TZDHS (1996)

The indicator with the most relevance for rural women is that of the Programme Effort Score (PES) for contraceptive availability. This indicates substantially higher levels of contraception available in Kenya, relative to Tanzania. However, these indicators operate in a direction that would imply higher access to contraception in Kenya relative to Tanzania, and therefore do not contribute to an explanation of why fertility in Kenyan Maasai women is so much higher relative to Tanzanian Maasai women.

10.1.4 Breastfeeding

Is there any reason to suspect shorter breastfeeding (and hence lactational amenorrhea) in Kenya, relative to Tanzania, as an explanation for higher fertility in Kenya? Indirect evidence for shorter or less intense breastfeeding includes a more diversified diet and greater availability of breastmilk substitutes, including baby milk formula. In terms of shops where baby milk formula could be bought, the Kenyan study sites are certainly better provided for. In addition, the greater diversification of livelihoods for the Kenyan Maasai might indicate greater access to cash income in order to buy breastmilk substitutes.

10.1.5 Fecundability

Fecundability (represented by frequency of intercourse) is a very difficult topic to quantify. However, the traditional Maasai practice of transhumance might have implications for intercourse frequency. In order to examine whether intercourse frequency might vary as a result of country-level differences in transhumance, household-level transhumance data were examined (Table 10.3).

Table 10.3: Household transhumance type, by country, SRDS data.

	Household transhumance ³¹⁶ (%)		
	None	Partial	Whole
Kenya (n=630)	50.2	24.8	25.0
Tanzania (n=915)	26.2	58.3	15.5

It is important to remember that these data are presented as a proxy for spousal separation and coital frequency. It is assumed that women from households where either no transhumance is practised or where the entire household goes on transhumance have comparable coital frequency. That is, in neither situation is a woman separated from her husband. Levels of spousal separation, as represented by transhumance are much higher in Tanzania, relative to Kenya. In Tanzania, over 58% of households were separated during the year prior to the SRDS, whereas in Kenya less than 1 in 4 households were similarly separated. However given the high levels of sexual networking, it should also be remembered that spousal separation does not necessarily translate into sexual abstinence. The relatively higher levels of spousal separation might also translate into longer periods of postpartum abstinence and breastfeeding in Tanzania, relative to Kenya.

10.1.6 Discussion

The foregoing discussion on the reportedly higher levels of fertility in Kenya has, of necessity, been based on scanty evidence. In the absence of detailed birth history data, it is not possible to apply a rigorous proximate determinants approach. However, it is possible to use the proximate determinants framework as a starting point for incorporating data and information, and developing hypotheses. The level of Maasai fertility in Kenya is markedly higher than in Tanzania, and the incorporation of under reporting of dead children only serves to increase the differential. The exposure to risk of childbearing as represented by marriage and spousal separation is lower in Tanzania, relative to Kenya, supporting the direction of the inter-country fertility differential. There is some evidence for higher levels of secondary sterility in Tanzania, which might be explained by relatively lower levels of healthcare service provision. Finally, the opportunities to replace breastmilk with other substitutes are greater in Kenya relative to Tanzania, again facilitating a shorter period of lactation amenorrhea (and indirectly post-partum abstinence). All of these suggestions make intuitive sense, based on limited primary data and circumstantial evidence. Ideally, a more rigorous analysis using data collected in birth histories would have greatly supplemented this discussion. However, this is more than a lament of a lack of data. Rather, it serves to highlight the fact that it is precisely those populations in which demographic data collection is difficult that one is forced to make poorly substantiated statements.

10.2 Kenya district-level fertility differentials: an exploration

Any discussion of the fertility differential between Narok and Kajiado must answer one question. How are women in Narok achieving higher fertility than women in Kajiado? The only proximate determinant, which can be studied with quantitative data, is that of marriage patterns. There is no evidence to suggest differences in age at first marriage between the two districts (Table 10.4).

³¹⁶ Based on SRDS data on absence from home for more than one week in the 12 months prior to the SRDS

None = No member of household reported transhumance

Partial = At least one member of household reported transhumance

Whole = Entire household reported transhumance

Table 10.4: Measures of age at first marriage, by sex and district, Kenya.

	Male		Female	
	Narok	Kajiado	Narok	Kajiado
Mean	24.7	26.0	16.8	17.1
Median ³¹⁷	25.1	23.3	16.2	15.9
Range	36	36	24	22
Min	13	14	10	10
Max.	49	50	34	32
n	269	499	269	881

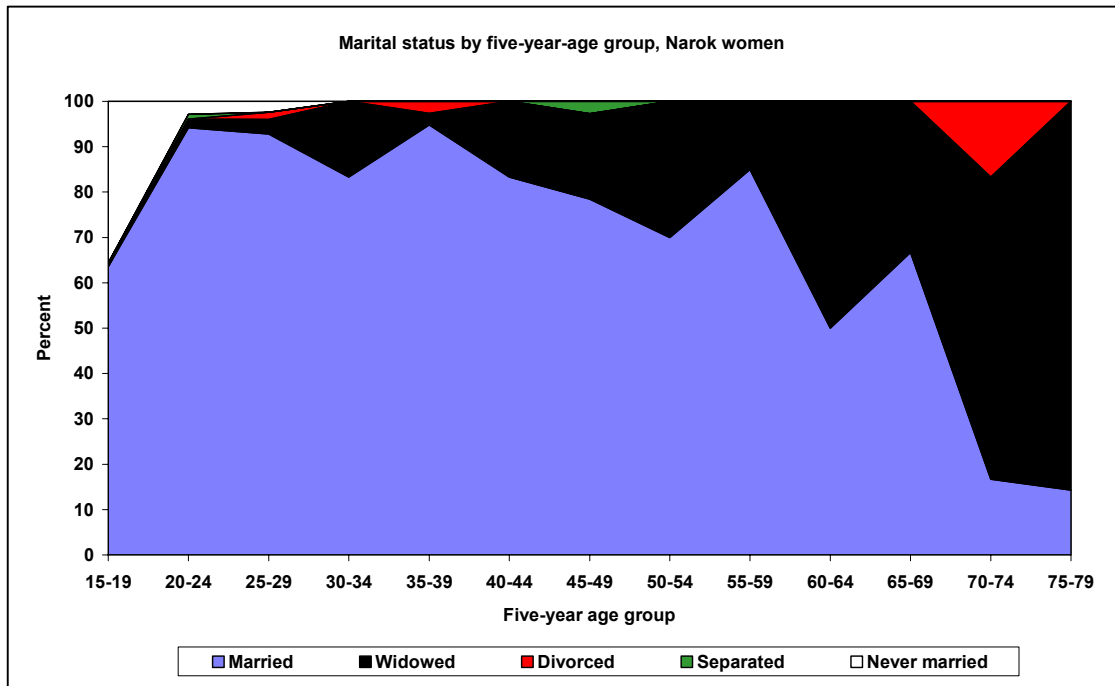
Source: SRDS Data

If there are insignificant differences in age at first marriage, are there substantial differences in what happens after marriage? Are there marked variations in patterns of widowhood or divorce at the district level?

Female marital status by age shows a rather different situation between Narok and Kajiado. In Narok, women are far less likely to spend a proportion of their life as widows compared with Kajiado. Is it possible that these district-level differences in nuptiality can contribute to an understanding of the fertility differentials between Narok and Kajiado? At older ages, the proportions of women currently widowed in Kajiado continue to be markedly higher than those reported for Narok. This implies that there is some difference in nuptiality patterns between the two districts, which may potentially help to explain the fertility differential. In a non-contracepting population, changing marriage patterns is the easiest way to manipulate fertility (Bongaarts and Potter, 1983).

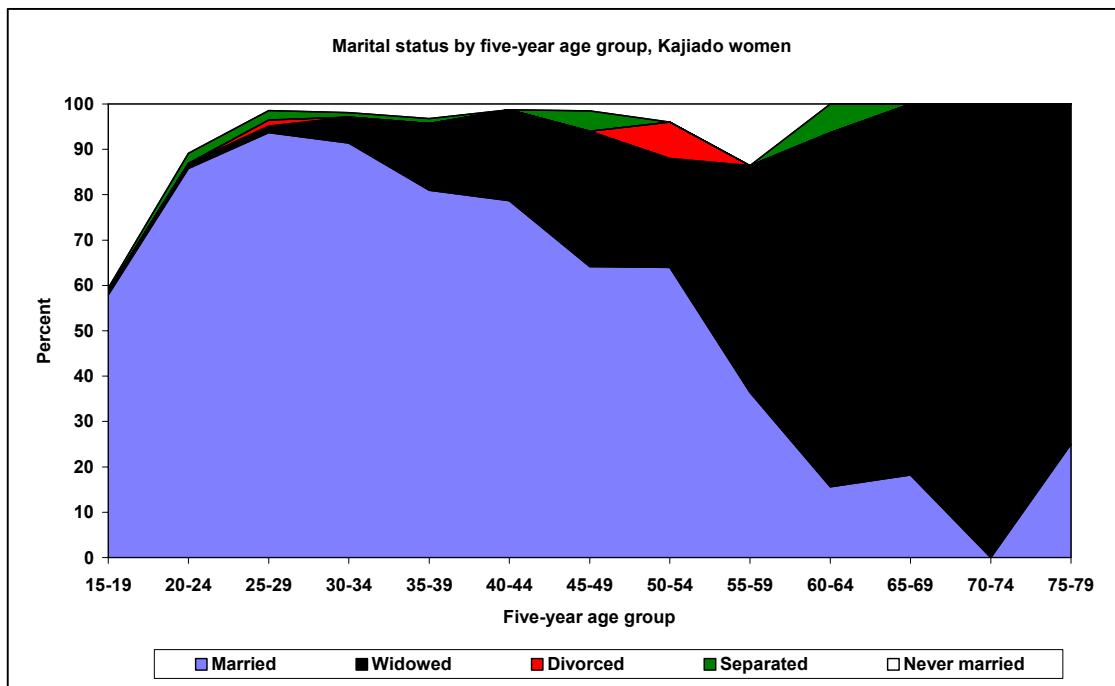
³¹⁷ Interpolated median, based on age at which 50% of the population is married.

Graph 10.3



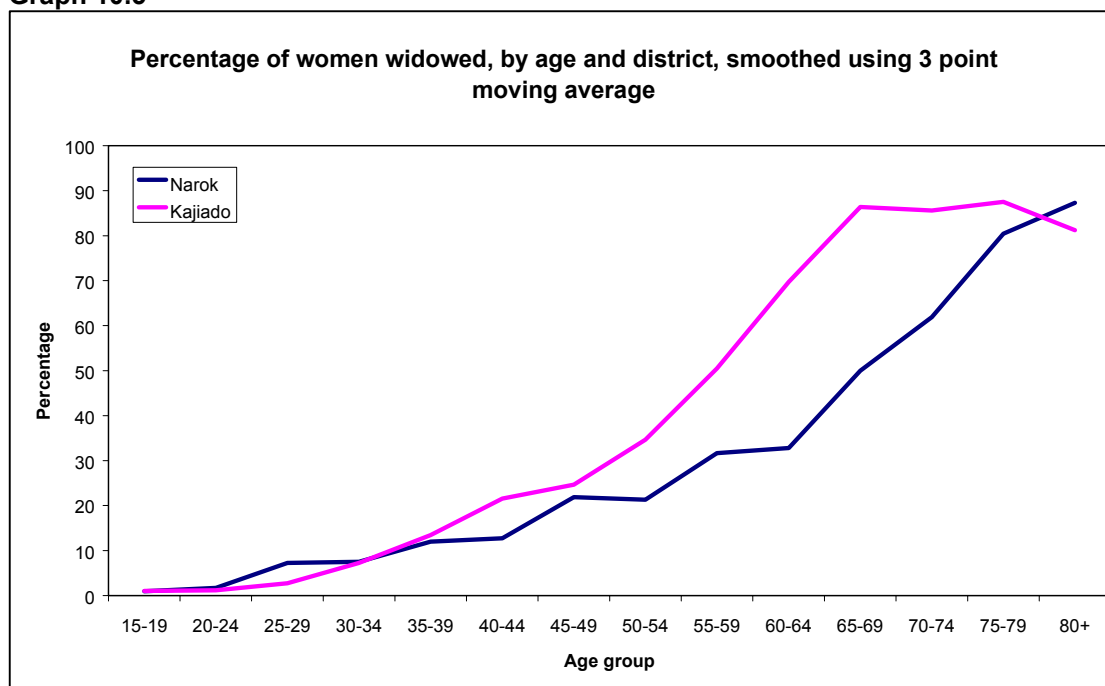
Source: SRDS Data

Graph 10.4



Source: SRDS Data

Graph 10.5



Source: SRDS Data

There are three possible explanations; either, levels of adult male mortality are higher in Kajiado than Narok; or, the spousal age difference is significantly greater in Kajiado relative to Narok; or, widows in Narok are more likely to remarry.

Are the higher levels of female widowhood in Kajiado a reflection of higher levels of male mortality, resulting in increased proportions of widows? In order to answer this question, therefore, one has to have some estimate of levels of adult male mortality. However, the only methodology that can be used in this context to estimate adult male mortality is the widowhood technique. The result is a degree of circularity: we want to investigate whether or not differences in widowhood by district are some function of male mortality, but the only data which can be used to assess male mortality are female widowhood data. Therefore, the same data (proportions of women widowed by age and district) are used both to describe and explain the situation. Lower levels of reported female widowhood in Narok, when applied to indirect estimation techniques of adult male mortality, will produce lower estimates of male mortality, relative to Kajiado. It is therefore impossible to determine whether or not the reported pattern of female widowhood is a result of lower levels of male mortality in Narok relative to Kajiado. This argument does not mean that the reported widowhood figures cannot be used to estimate adult male mortality, only that such an approach would be inappropriate to answer this specific question.

Given the caveats relating to age data (Section 5.1.3), combined with misreporting of a current spouse as first spouse (Section 7.4), it is not possible to test rigorously the suggestion that spousal age difference is greater in Kajiado compared to Narok. The mean spousal age difference in Narok [n=244] is 11.2 years, compared with 9.3 years in Kajiado [n=409]. The median spousal age difference shows a similar pattern³¹⁸. The data therefore do not support the suggestion that the different age-specific marital status by district is some function of spousal age difference.

³¹⁸ Median spousal age difference in Narok is 10 years, compared with 8 years in Kajiado.

Using transhumance as a proxy for spousal separation, the possibility for spousal separation in Narok is considerably lower than in Kajiado. Supporting evidence including the ownership of permanent housing³¹⁹ also shows an increasingly sedentary Maasai population in Narok, relative to Kajiado.

Table 10.5: Percentage distribution of households by socio-economic indicators, Narok and Kajiado Districts, SRDS data.

	Narok [n=182]	Kajiado [448]
Transhumance		
No transhumance	69.3	42.2
Partial transhumance	30.2	22.5
Household transhumance	0.5	35.3
Permanent housing	47.8	8.0

In terms of the potential influence on proximate determinants, the relatively more sedentary Narok population is likely to have lower levels of spousal separation, relative to Kajiado, resulting in an upward pressure on fertility.

Individual-level socio-economic indicators for ever-married women reveal very little difference by district. Levels of education for ever-married women are very similar in each district³²⁰, and serve to highlight the marginalisation of Maasai women from formal education systems. The reported occupations of ever-married women were also very comparable between the two districts³²¹. There is therefore little evidence to suggest, for example, that socio-economic influences on proximate determinants such as duration of breastfeeding and use of modern contraception vary greatly at the district level.

Mainly for reasons of data availability, a convincing quantitative explanation for differences in fertility at the district level cannot be found. Using the proximate determinants framework, potential differences by district were explored and rejected. Such discussions can only be tentative, grounded in evidence from the SRDS and personal interpretations of the current situations in Narok and Kajiado. However, what this discussion has highlighted is the need to seek explanations beyond the “normal” demographic parameters. There appear to be substantial variations in levels of fertility between the two districts, explanations for which cannot be found solely through reference to indicators such as age at first marriage or spousal age difference. The following section explores ways in which the reported demographic behaviour may be interpreted within a wider socio-economic context.

10.2.1 The wider district-level context

In order to begin to fully understand the fertility differentials within Kenya, it is necessary to contextualise the data firmly within their district-level setting. This will be illustrated with reference to differences between Narok and Kajiado in terms of land tenure in order to “sketch in the institutional reality of particular settings and to incorporate this reality in analyses of individual reproductive behaviour” (Cain, 1985:15). Land tenure refers to the extent and nature of an individual’s/household’s/community’s access to use and/or derive benefit from land.

³¹⁹ Represented by ownership of a building with an iron (*mabati*) roof.

³²⁰ For example, 9.5% and 9.4% of all ever-married women had attended a minimum of 3 years formal schooling in Narok (n=560) and Kajiado (n=886), respectively.

³²¹ The dominant occupation reported by ever married women in both Narok and Kajiado was "Pastoralism": 69.5% and 66.7%, respectively. "Pastoralism + other activity" was the second most commonly reported occupation in both districts, representing 25.4% and 13.1% of occupations in Narok and Kajiado, respectively.

Land reform refers to a changing distribution of ownership or *usufruct* rights to land. The description begins with a summary of recent population dynamics in Narok and Kajiado.

In-migration by non-Maasai into Narok and Kajiado has been very high in recent decades. Intercensal district population growth rates of 6.4% *per annum* and 5.5% *per annum* for Narok and Kajiado respectively indicate the extent of in-migration contributing to net population growth. Both districts outstrip Nairobi's intercensal growth rate of 4.7% *per annum*, and Narok had the highest rate of population growth of all 41 Kenyan districts³²². Between 1979 and 1989 population density in Narok almost doubled to 22 persons/km², although population density in Kajiado remained considerably lower at 12 persons/km². Lifetime in-migrants represent over a quarter of the total populations of both Narok and Kajiado. The availability of land is widely cited as a key variable in the movement of people into Narok and Kajiado Districts (Kenya, 1996 Vol. IV). The changing ethnic composition of Narok and Kajiado over the last three decades (Section 3.6.2.1) bears witness to the influence of in-migration on the population of the two districts.

This discussion acknowledges the arguments concerning landholding and fertility as presented in the demographic literature (Mueller and Short, 1983; Cain, 1985; Stokes and Schujter, 1984; Cain, 1986a, b; Stokes *et al.*, 1986; Thomas, 1991; Clay and Johnson, 1992; Renne, 1995). However, unlike these studies, it is not the purpose of the present discussion to provide substantive data in order to test for a relationship between land tenure and fertility. Rather, it is an exploration of the potential linkages between land tenure and fertility in Narok and Kajiado.

Whilst rooted historically in the same administrative context, land tenure patterns in Narok and Kajiado have followed divergent paths in the last three decades³²³. The study sites are all Group Ranches, originally established in the late 1960s under direction from the national government. Initially, the emphasis was on individual land tenure, but when it became obvious that such a system was “neither ecologically nor economically viable” (Homewood 1995:338), co-operative group ranches emerged. These were composed of groups of herd owners who could register for larger, communal areas of land (Group Ranches). In the Kajiado Group Ranches studied here (Olkirmatian and Shompole), traditional communal grazing rights and access persist. Group Ranch members (and their households) have access and rights to both wet and dry season grazing, access that is decided at the community level by a grazing committee for the whole Group Ranch. Despite the development of export-market vegetable plots in Olkirmatian Group Ranch, the traditional grazing range has been preserved³²⁴. Subdivision of the Kajiado group ranches is not underway, and individual land rights are not an issue. Indeed, the Group Ranch leaders in the Kajiado study sites have acted to prevent the development of such a situation. Thus, the dominant land use (both in terms of human activity and land area) in Kajiado is agro-pastoralism. Membership of the Group Ranch is acquired at birth, and ratified through continued

³²² Kajiado was ranked third.

³²³ This discussion refers explicitly only to the Group ranches included in the SRDS. The use of the term “Kajiado” is no in way meant to refer to all Group Ranches in Kajiado District. Rather, it is used here as shorthand for Olkirmatian and Shompole Group Ranches. Ditto for Koyaki Group Ranch in Narok.

³²⁴ The export vegetable plots occupy a different ecological niche to that of pastoralism, resulting in little competition between the different land uses. The allocation of land for a vegetable plot is also decided at the Group Ranch level.

residence as an adult. The right of access to a plot for vegetable cultivation is mediated in the same way.

In Narok, however, the situation is very different for a number of historical, political, geographic and economic reasons. Firstly, the study Group Ranch in Narok (Koyaki) immediately abuts the Maasai Mara, a major destination for international tourism with a highly developed tourist industry. There is pressure by influential individuals from both within and outside the area for land to be converted to tourism use (campsites, tourist lodges etc.). Secondly, the privatisation and sub-division of land has continued apace, with individual adjudication currently underway. Thirdly, the development of large-scale commercial wheat farms to the north of the Group Ranch (largely run by non-Maasai commercial farmers) represents an opportunity for income derived from rental. Maasai with individual land tenure have the right to derive income through the leasing of that land to a third party. The potential returns from the leasing of land can be very high, up to thousands of US Dollars for individual families. Lastly, institutionalised corruption and “land grabbing” in the wider Kenyan context should not be under-emphasised. Once an individual (Maasai or otherwise) has been awarded individual ownership of land, it is almost impossible to reverse the decision, regardless of how the title deed was obtained.

These thumbnail sketches of the two districts show two very different contemporary positions. In Kajiado, the traditional communal land tenure system has persisted, both on paper and in reality. In Narok, there are many forces driving conversion, both in terms of land tenure and land use. It must also be noted that individuals living in Narok are aware of the finite amount of land available for individual tenure. Bordered on one side by the boundaries of the Maasai Mara and on the other by encroaching large-scale mechanised agriculture, people in Koyaki know that once land adjudication has taken place, there will be no more land available in the area. As a topic of conversation, issues relating to land tenure and access to land, abound (Pers. Ob.)³²⁵. There have been several recent violent clashes between the Maasai and neighbouring tribes, ostensibly as a result of cattle rustling.

A review of the debate on land and fertility in the demographic literature reveals that no authors have considered a situation comparable to that found in Narok. There are two main schools of thought relating to the land-fertility relationship: the “land-labour demand hypothesis” and the “land-security hypothesis” (after Cain). The former hypothesis suggests a positive relationship between size of landholdings and fertility, operating through the value of child labour on the land. The latter proposes a negative relationship between land ownership and fertility, with land replacing children as security against risk. Much of this debate has been based on work by Schujter and Stokes (1982) and Cain (1985), in a variety of contexts³²⁶. A careful examination of the studies, however, reveals that none of the studies relating to the land-security hypothesis are comparable to the situation in Narok. The supporting evidence for Cain’s and other work has been drawn from situations in which it is possible to categorise people into “own land/don’t own land” or “farm labourer/farm tenant/farm owner”. The land tenure

³²⁵ For example, the local chief at one of the study areas was known to be in negotiation with a major international tourist company to “sell” the rights to use land adjacent to the Maasai Mara for a campsite. The financial returns would have been considerable, as the Chief would receive an annual income from the tour company for the right to use the land. It should be noted, however, that the chief did not have legal right to the land in question. A similar situation had already developed in an adjacent Group Ranch, where just 9 families had the right to use all of the money derived in rent from a highly lucrative Lonrho tourist venture.

³²⁶ Nepal, India, Philippines, Bangladesh, Thailand, Egypt, Iran.

situation in Narok represents a different situation entirely. Children in Narok represent access to land that is currently “communal” in ownership. Further, the only production system studied by Cain *et al* is cultivation, rather than a pastoralist-agropastoralist production system.

De Vany and Sanchez’s (1977) study of the *ejido* system of land reform in Mexico is perhaps the most similar case to that being studied here. Under the *ejido* system, a collective of individuals holds land and parcels are assigned to individuals who cultivate the land on an *usufruct* basis. De Vany and Sanchez conclude that such a land tenure system encourages fertility for a number of reasons. Firstly, children represent a source of labour. Secondly, children represent a future investment in family wealth. Finally, children help parents to secure their rights to the land. The more members a family has who are of a voting age or of an age to acquire land, then the family extends the amount of land it brings under its control (although the land cannot be bought or sold, leased or mortgaged). It is this final point that allows for a comparison to be made between DeVany and Sanchez’s study and the Narok situation. In both cases, “adult” children represent access to land and an aggrandisement of access to income. In the Mexican study, however, the rights are *usufruct*, and do not confer permanent ownership of that land.

In Koyaki Group Ranch, boys and youths represent one of the few ways in which a family can gain “extra” land rights, providing their father is able to register them in time for land adjudication³²⁷. It should be underlined that this is a situation that has been developing for the last two decades, and is not simply a recent event³²⁸. In contrast, the number of (male) children has no bearing whatsoever on access to land for a household in Kajiado. To summarise, land rather than cattle has become the dominant resource in Narok, with the reverse situation persisting in Kajiado (Olkirmatian and Shompole Group Ranches). More specifically, rights to land tenure have become the ultimate resource in Narok, and male children represent access to that resource. It is recognised that land subdivision is also taking place elsewhere in Kajiado district, and that residents of Olkirmatian and Shompole Group Ranch are aware of these developments. However, in terms of these two Group Ranches, the decision to retain communal land ownership has been settled, and for the foreseeable future, land subdivision is unlikely to occur (Rutten, 1991).

Brass and Jolly (1993) noted that Kenyans are aware of these changing land issues, and that some evidence exists to suggest that this is beginning to have an impact on fertility behaviour. For example, scarcity of land was cited as one of the primary motives for voluntary surgical contraception in four districts in Kenya (Bertrand *et al*, 1989). A second example is provided by Hammerslough (1991), who through the use of focus group discussions found that lack of arable land was a key factor in the decision to use contraception. Obviously, both of these examples operate in a direction opposite to that being suggested here. However, it is not the direction of causation that is of importance. Rather, it is the fact that issues surrounding access to land *can* impact on fertility-related

³²⁷ Galaty (1992) noted this phenomenon in Group Ranches in Kajiado (not those included in the SRDS). “In addition to their awareness of pressure from outsiders to acquire land, Group Ranch members have seen the increase in local population over the past 20 years, and feel that if subdivision is inevitable it should be done soon before everyone’s portion has been diminished. However, the question of “shares” hinges in part on what principle is used for registering new members.....Members of families with few children, especially boys in the current age set, resented that other families were doubling or tripling their “shares” in the ranch just before subdivision” (1992:29)

³²⁸ During the fieldwork, it was mentioned several times that influential elders managed to have their sons circumcised at very young ages in order to acquire increased family rights to land.

behaviour. The knowledge that male children represent an opportunity to acquire land rights has possibly resulted in a (not necessarily conscious) reason for increased fertility in recent decades in Narok. The direct relationship between male offspring and “once-in-a-lifetime” land rights represents a valid reason for higher fertility in Narok compared with Kajiado.

The influence of ethnicity on decision-making in a Kenyan context cannot be underestimated (Kokole, 1994). For example, William ole Ntimama, an influential Maasai politician has expressly stated that Maasai should not practice family planning because population numbers are linked to political power³²⁹. The current Kenyan vice-president is a *de facto* Maasai, who uses this fact in order to create support and build links with the current President Moi's ethnic group, the Kalenjin. These pressures are very evident in Narok, particularly in the SRDS study site of Koyaki Group Ranch, with its proximity to the income-generating Masai Mara and the agro-ecological potential for large-scale mechanised wheat farming. In Kajiado, similar pressures exist around Amboseli National Park, but not in the SRDS study sites, where land subdivision has been rejected (for now). To conclude, the recent and ongoing adjudication of land in Narok has led to subtle incentives to fertility, which are absent in Kajiado. One possible outcome is higher fertility in Narok compared with Kajiado, possibly due to an increased incentive to produce male offspring in order to acquire rights to land. The foregoing discussion is highly speculative, and one of the major problems is that land reform is implicitly connected to other changes. Effects of change in land ownership cannot be extricated from the effects of other policies and developments. However, a comparison of the situation in Kajiado and Narok demonstrates that the main difference between the two districts is land ownership³³⁰. The wider ethnically determined political context in Kenya, combined with the pressure to acquire individual title deeds to land in Narok, in my opinion provide a convincing argument for higher fertility in the Narok study sites relative to those in Kajiado.

10.3 Fertility and education

This section examines the relationship between education³³¹ and fertility for Maasai women. A brief description of the current state of knowledge relating to education and fertility is followed by a review of literature specifically relating to sub-Saharan Africa, particularly Kenya and Tanzania. Using all of the available data, levels of education among the Maasai are examined, together with anthropological studies of Maasai attitudes towards education. Finally, the SRDS data are used to examine the relationship between fertility and female education for the Maasai in both Kenya and Tanzania.

10.3.1 Education-fertility: an overview

The relationship between formal education and fertility - women with more schooling have lower fertility than those with less - is a tenet which has achieved an unquestionable status³³² in recent decades. The research and literature relating to

³²⁹ Daily Nation Newspaper, Nairobi April 19 2000.

³³⁰ Informal discussions with Maasai and non-Maasai from Narok who agree that this hypothesis makes "intuitive" sense - Participants at Project Workshop April 2000

³³¹ For the purposes of this study, no distinction is made between “schooling” and “education”, and the two terms are used interchangeably. However, it is acknowledged that there is an important distinction between the two concepts.

³³² Bledsoe *et al* (1999) quote the 1994 International Conference on Population and Development in Cairo “The increase in the education of women and girls contributed to greater empowerment of women, to a

fertility and education is almost unparalleled in demography, summarised by Bledsoe *et al* “Aside from a woman’s age and marital status, educational attainment is probably the variable most frequently included in fertility analyses in developing countries” (1999:3). The reasons suggested for the education-fertility relationship include: later age at female first marriage and childbearing; greater likelihood of contraceptive use (linked to greater acceptability of family planning techniques combined with improved ability to access and use reproductive health services); increased female domestic autonomy and interspousal communication; and, smaller desired completed family size (from Cleland and Kaufmann, 1998).

10.3.2 Female education and fertility in sub-Saharan Africa

Several examples, mostly in sub-Saharan Africa have found a positive relationship between education and fertility at very low and very high levels of schooling (Jejeebhoy, 1995). Jejeebhoy noted 7 countries in which there was either no or a positive relationship, 6 of which were in sub-Saharan Africa (Côte d’Ivoire, Ethiopia, Lesotho, Mali, Mauritania, Togo). However, as Diamond *et al* (1999) point out, several of the data sets used in Jejeebhoy’s study were relatively old. They cite instead Muhuri *et al*’s (1994) study, which used only DHS between 1985 and 1992, where only 4 out of 14 sub-Saharan African countries recorded a positive relationship between education and fertility (Cameroon, Kenya, Liberia, Nigeria).

The important point to remember about such cross-country comparisons is that they are just that: large-scale analyses without much contextual information. To quote Cleland and Kaufmann “Education should not be regarded as a context-free variable” (1998:130). That is, any formal education is itself embedded in a country- and often region-specific context (political, social and economic). The way in which an urban woman with a job translates the education she has received into fertility behaviour is probably quite different to a rural woman with no employment opportunities, but who has received the same number of years of schooling.

The number of societies in which there is a positive relationship between education and fertility, especially with low amounts of education “are now relatively rare and confined largely to specific social contexts” (Diamond *et al*, 1999:42). The “specific social contexts” referred to include the absence of both mass education and a strong family planning programme. The reasons suggested by the literature for partial schooling associated with increased fertility include: decreased postpartum breastfeeding and sexual abstinence (Lesthaeghe *et al*, 1992); ability of educated women to achieve fertility goals (irrespective of what these goals are) (Cleland and Kaufmann, 1998); decreased breastfeeding and increased use of breast milk substitutes.

10.3.3 Most recent data for Kenya and Tanzania

Current published census data for both Kenya and Tanzania do not allow for the decomposition of fertility data by detailed educational groups. Therefore, data on female education and fertility from the most recent Kenya and Tanzania DHS are shown in Table 10.6.

postponement of the age at marriage, and to a reduction in the size of families” (United Nations, 1994:Ch. XI, Para. 11.3).

Table 10.6: Total Fertility Rates by education, Kenya and Tanzania

	Tanzania (1996)		Kenya (1998)	
	TFR	% women	TFR	% women
No education	6.4	28.5	5.8	19.0
Primary incomplete	5.9	20.1	5.2	51.2
Completed primary	5.4	46.0	4.8	12.9
Secondary/ higher	3.2	5.4	3.5	15.9
Total	5.8	100	4.7	100

Source: DHS (1998), DHS (1996)

Jejeebhoy notes the intra-country variation in the fertility-education relationship in Kenya, “where the overall relationship tends to be curvilinear, the relationship tends to be inverse in less agricultural areas. In more agricultural areas, women with a small amount of education experience higher fertility than uneducated women, followed by uniformly lower levels of fertility among women with further amounts of education” (1995:29). In addition, out of a sample of 20 countries, Kenya is one of only six countries that record a non-inverse relationship between education and fertility between two points in time (1977 and 1989). For Tanzania, (1991-2) Jejeebhoy noted a “7-type³³³” relationship between education and fertility. Muhuri *et al*’s (1994) study did not include any data for Tanzania.

10.3.4 Maasai and formal education

Data on school enrolment are unavailable by ethnic group for either Kenya or Tanzania. Given the high ethnic mix in both Narok and Kajiado, it would not be possible to make any substantive statements on Maasai school attendance. While there are several small-scale studies of education among the Maasai (King, 1972³³⁴; Gorham, 1980; Nkinyangi, 1981; Arhem, 1985; Narman, 1990; Bonini 1995; Lembikas *et al*, 1996), there are very few large-scale data relating to Maasai involvement in formal education, and none relating to Maasai in both Kenya and Tanzania. The SRDS data, comparable across Kenya and Tanzania, are presented in Section 3.7.5. However, the principal message of all of the studies is the same. The provision of formal schooling in traditionally Maasai areas did not begin until relatively recently (late 1960s), and attendance levels have always been, and continue to be, low. For example, King (1972) estimated that in Narok District (Kenya), only 5% of Maasai boys and less than 2.5% of Maasai girls who were eligible to attend school, did so. By the late 1990s, Holland noted that in Narok only one in six of eligible Maasai children was being educated.

Holland’s (1998) work in Narok District, Kenya is the most recent (and extensive) study of Maasai education. Holland not only collected data on school enrolment and attendance, but also on attitudes towards education. The reasons given by respondents for non-education of children included herding duties, cost (fees, books, uniform), poor parental perceptions on the value of education to the household³³⁵ and community³³⁶,

³³³ The difference between moderately educated (those with less than some secondary education) and uneducated women is less than 5 per cent, followed by declines (exceeding 5 per cent) among better educated women.

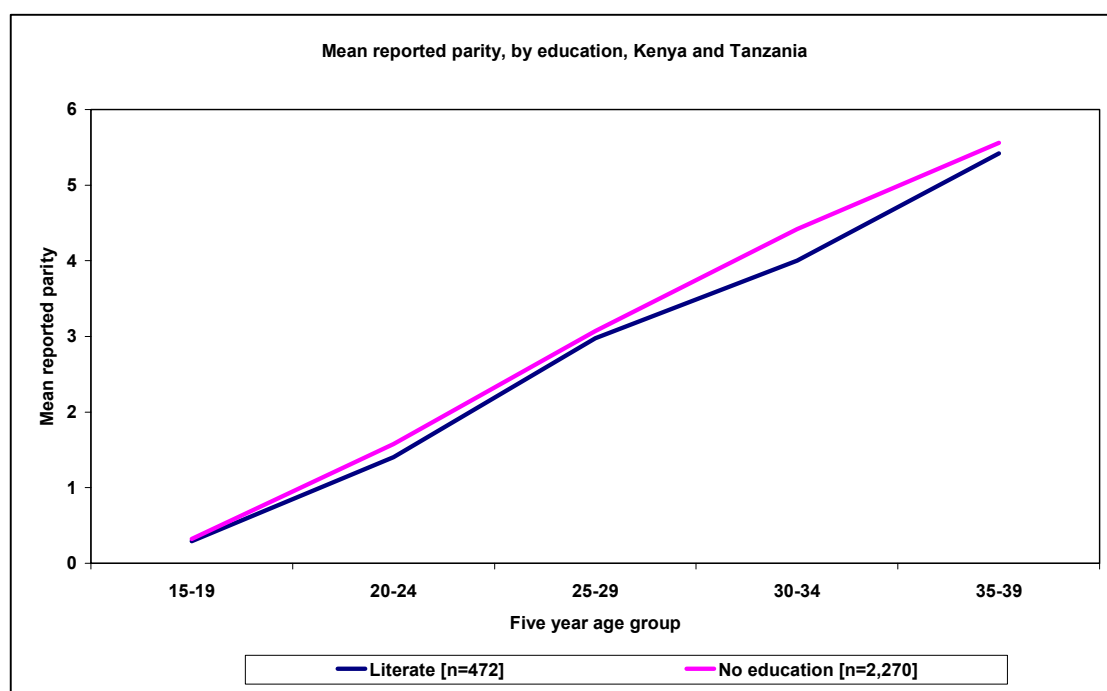
³³⁴ By 1971 there had only been 85 secondary school leavers who were Maasai in Narok district (of which only 5 were female). King noted the system used to enrol children at school. Sectional chiefs were required to provide lists of school-goers that may be expected to report at the beginning of each academic year. It was strongly believed that the chief would only give the names of those children he believed would be “least useful to the traditional Maasai sector” (1972:395). The lack of any form of prosecution of the parents of non-attending children meant that there was very little compulsory attendance of school.

³³⁵ A fear of many Maasai parents is that an educated child would either move away for employment, or would remain in the original area but be unemployed. The net result is the same; no source of old age care for parents.

and historical reasons based on experiences during the colonial era³³⁷. It is interesting to note that Holland's work revealed a consistent response regarding the (non-)education of girls. The majority of respondents cited a fear of the girl becoming too independent and choosing her own husband rather than that chosen by her family. There are two main reasons why a Maasai parent would not want a daughter to choose her own husband. Firstly, it would deprive the girl's family of any input into future affinal relations, an important feature of Maasai marriage arrangements. Secondly, if parents were not involved in marriage negotiations, they would not be in a position to recoup any of the costs of a daughter's education through brideprice. This is borne out in the fact that educated Maasai girls tend to command a higher brideprice compared to non-educated girls (Talle, 1987). However, as Holland notes "nowhere was evidence given to support this fear of a daughter "running away"" (1998:275).

10.3.5 SRDS education-fertility data

The numbers of Maasai women with formal education included in the SRDS are extremely small (Graph 3.1). The results are therefore presented using two categories: "No education" and "Literate", and are presented only up to age 39 (Graph 10.6). Literacy in both Kenya and Tanzania was assumed to be functional after 3 years of education.



Graph 10.6
Source: SRDS Data

There is very high congruence in mean reported parity by education level, suggesting that education (where it exists) has a negligible impact on Maasai fertility. Despite country-level commitments to mass education in both Kenya and Tanzania, Maasai tend to live in areas where mass education is not available. The result is an absence of what

³³⁶ An expectation of many Maasai is that those older, educated Maasai should use their education for the benefit of the community as a whole. However, to date, experience has shown that better-educated Maasai have tended to use their education in order to further their own families, for example, through the acquisition of land rights.

³³⁷ Parents who failed to send a child to school were liable to livestock fines.

Diamond *et al* summarise as “the interaction among knowledge, ideas, and increased opportunities afforded by mass education through the restructuring of family and community relationships” (1999:31). In addition, the provision of family planning services in predominantly Maasai areas tends to be negligible. Entwistle and Mason (1985) suggest that in developing countries, the relationship between education and fertility is positive when the family planning provision is absent or very weak.

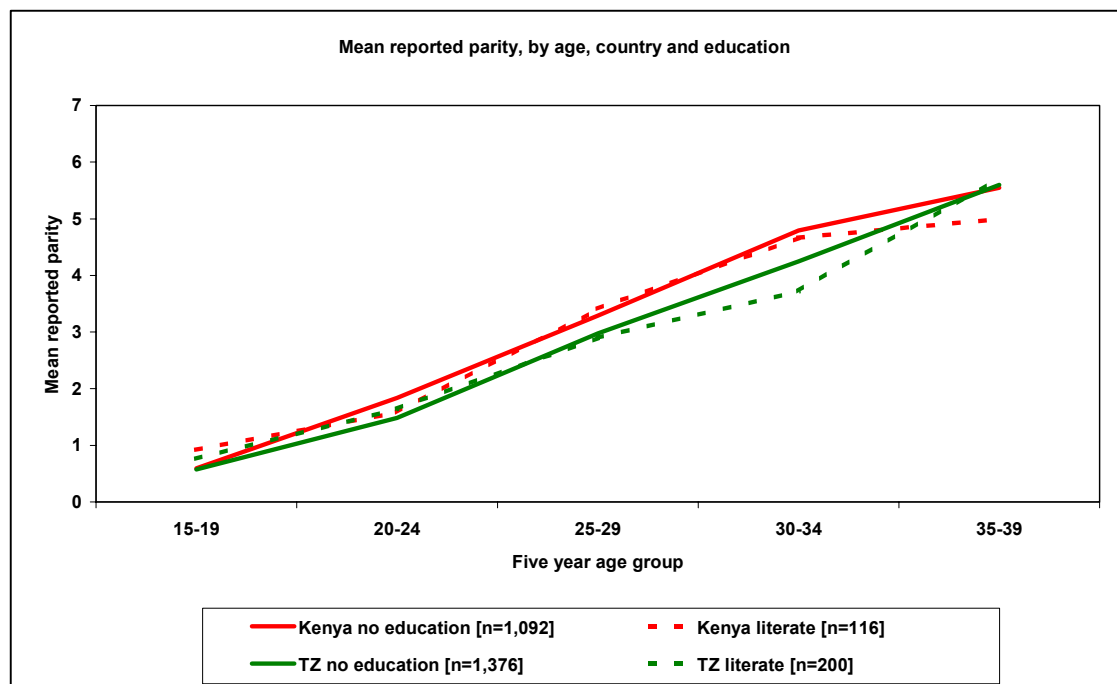
Are there any other factors, other than the absence of mass education and a strong family planning programme, specific to the Maasai context, which could explain the total lack of an education effect on fertility? Much of the literature suggests increased employment/income generating opportunities with education. Is it possible that Maasai women with some education are more likely to be generating some form of cash income, potentially allowing them to buy milk substitute, thus reducing the impact of breastfeeding on fecundity?

One of the most frequently cited reasons for raised fertility with some education is the reduction in length of breastfeeding as a result of the use of milk substitutes. In order for a woman to be able to use milk substitutes, she must be in a position to purchase them. It therefore follows that one would expect educated women to be more likely to be engaged in income-generating activities. The SRDS data support this hypothesis [n=2,927, df=1, p<0.001, significant]. In order to be able to participate in income-generating activities (such as selling milk to local shops or jewellery to tourists), a Maasai woman would have to have some command of the *lingua franca*, KiSwahili. It is interesting to note that Bonini (1995) highlighted that among Maasai in northern Tanzania, the most important reason cited for school attendance was the acquisition of KiSwahili skills, rather than qualifications *per se*.

10.3.6 Effect of country on the education-fertility relationship

Given the different education provision contexts of Kenya and Tanzania, it is pertinent to analyse the data by both country and education, in order to identify if there is any “country effect” on mean reported parity and education.

Graph 10.7



Source: SRDS Data

The data show differentiation in mean reported parity by country, rather than education, reinforcing the statement that education has little demonstrable effect on Maasai fertility. Although the numbers involved are extremely small, literate ever-married women aged 15-19 reported slightly higher parity than women with no education. It is possible that this result is a function of some form of selectivity. Pregnant schoolgirls are legally obliged to leave school and marry, and parents might manipulate this legality in order to remove a daughter from school. Kipuri, for example, refers to "part-time" or "false" marriages whereby a girl's parents will compel her to live with her husband whilst she is at school in the hope that she will become pregnant and be expelled from school.

10.3.7 Data quality

There is a possibility that the data might include some selection bias. Potentially, well-educated Maasai women may no longer be resident in the traditional, rural Maasai areas. It is possible that those women who have completed secondary school and have some career or formal employment, will have moved to urban centres of employment³³⁸, and are therefore underrepresented in this survey. In the only study of education-employment links among the Maasai, Holland (1998) reports extremely low levels (less than 1%) of outmigration for employment by educated Maasai women in Kenya. Similarly, Bonini (1995) notes that "drift from the land is very seldom for primary school leavers who still have a place in their community"³³⁹.

10.3.8 Female Maasai education and fertility

In both Kenya and Tanzania, levels of female Maasai education are very low, even within the national contexts. The reasons for low female participation in education among the Maasai may be divided into two main groups: parental and structural. Given the absence of an effective system of ensuring that school-age children (both male and female) attend school, it is essentially a parental decision as to whether or not an individual child attends school. The incorporation of children above age 5 or 6 within the household labour in a Maasai pastoral or agropastoral context, means that there will be ramifications for the wider household if one or more of its members is absent for schooling. Young children of both sexes traditionally take responsibility of the herding of smallstock near to the *enkang*. At older ages, boys are responsible for the herding of larger stock (either near to the *enkang* or to accompany older members of the household on transhumance). Girls are a major source of help within the *enkang*, for fetching water and childcare. Beyond the natal household, children are used as a source of labour for other relatives, and this can form an important relationship between their natal household and the receiving household. To simply state that children are needed for herding as an explanation for low school attendance would be to ignore the more detailed context of a parental decision not to send a child to school.

The expense of sending a child to school should not be underestimated, both in terms of direct costs (equipment and fees) and indirect costs (loss of labour and potential source of reciprocity and links). Holland noted that Maasai "educational participation is positively correlated with wealth" (1998:273). The rising costs of education in the context of national Structural Adjustment Programmes will probably only serve to increase the wealth differential in school participation. Finally, unless parents have themselves been educated, and benefited from that education, Maasai generally do not

³³⁸ In the absence of recent census migration tables tabulated by ethnic group for either Tanzania or Kenya, it was not possible to explore this outcome.

³³⁹ A second interpretation of this statement is that primary school leavers who (for whatever reason) no longer have a place in their community do in fact "drift from the land".

believe that education will help either the immediate family or the community in general. Several authors have noted the implications of rising levels of female Maasai education for factors such as age at first marriage. For example, Talle suggests that "the female marriage age has been lowered by sharper competition for nubile girls, which is related to the fact that more girls are withdrawn from the marriage market as a consequence of growing school attendance while the rate of polygyny continues to be high" (1995:85)³⁴⁰.

The "structural" factors relate to education service provision within predominantly Maasai areas. They include: poor facilities and resources; low teacher qualifications; poor teacher morale; high levels of teacher turnover; high ratio of students to teachers (resulting in several grades taught in one class); long distances from *enkang* to school (with few schools having boarding facilities); possible whole household seasonal transhumance; and, few teachers are themselves Maasai or able to speak Maa (Lembikas *et al*, 1996).

10.4 Discussion

The primary objective of the preceding chapter was to document levels of contemporary Maasai fertility. That there are real differences in levels of current fertility reported by Maasai women between Kenya and Tanzania has been demonstrated. The lower levels of reporting of dead children in Kenya only serve to increase the fertility differential by country. Within Kenya the data show higher fertility in Narok, relative to Kajiado, a differential that cannot be explained in terms of data quality. Having identified the most robust elements of those data, the next step was to understand why and how fertility differs within this one ethnic group.

This chapter began with the explicit aim of incorporating both individual and structural factors in order to understand better why this fertility differential exists. The use of such an approach is not simply a reaction to a lack of more substantive data. Of course, the analysis would have benefited from detailed birth history data, were such data possible to obtain from this group. Rather, in the absence of such data, attention to the structural elements of the fertility context can provide plausible reasons for the differences. This analysis has attempted to examine why the proximate determinants might differ from location to location. Indeed, it is only by attention to these institutional issues, for example land tenure, that hypothesis building can proceed.

There are large populations in less economically developed countries for whom data availability is as bad as the current context. Recourse to structural and institutional factors is one valid option in order to "sketch in" the possible contributing factors. Of course this approach still leaves many questions unanswered. However, it forms the first step in informing an understanding of the fertility situation in contemporary rural Maasai populations.

These examples have also demonstrated that to simply examine fertility by ethnic group ignores the heterogeneity within that one group. Ethnicity provides a useful framework within which to study and analyse fertility behaviour. But, to examine fertility levels by ethnic group alone ignores the wider social, economic and political context within which that ethnic group lives and accepts a structural-functionalist interpretation of behaviour. The aim here has been to demonstrate both the practical utility of using ethnic group as an organising principle, but that this provides only the starting point for

³⁴⁰ Talle's statements refer to Tanzania, but the SRDS data provide little evidence of the "growing school attendance" she suggests for Tanzanian Maasai females (Section 3.7.5).

understanding behaviour. It is not the intention to create Maasai "prisoners" of some unchanging ideal of "Maasai fertility behaviour". Rather, an acknowledgement of Maasai normative behaviour combined with an understanding of what "being Maasai" means in contemporary Kenya and Tanzania, provides a departure point for a more detailed picture to be assembled.

"we know more about the population dynamics of pastoral livestock than about the human populations who tended and depended upon them " (Roth, 1986a:63)

Since the time of Malthus, demographers, economists and anthropologists have considered the relationship between production system and fertility. A "pastoralist fertility regime", characterised by low fertility, is one such example. This chapter examines the evidence for a pastoralist fertility regime, drawing upon both existing research and SRDS data. A study of the relationship between production system and fertility requires that women be "categorised" by production system. From national censuses to sample surveys such as the DHS, people are categorised according to occupation, ethnic group, race, religion, etc. Descriptions of the role of pastoralism for Maasai are drawn together in order to highlight the issues surrounding the "classification" of the Maasai. The potential implications of such classifications for fertility analysis are explored. Using the SRDS data, and acknowledging the methodological implications of the preceding review, Maasai fertility is analysed by the practice of pastoralism. A common theme of explanations for a pastoralist low fertility regime is relatively high levels of pathological sterility. Evidence for a link between pathological sterility and pastoralism is reviewed, together with a consideration of why such themes persist in the literature.

11.1 Maasai as archetypal pastoralists

The relative role of pastoralism for contemporary Maasai in Kenya and Tanzania has been outlined in Section 3.7. What is of interest here is *how* these categories are created and used, with specific reference to production system categories. Which is the more appropriate approach - a coding by the researcher based on some indicator or a "free answer" statement by the individual? To what extent are social categories rooted in historical and outmoded normative assumptions about a group of people? Further, does the choice of category affect the way in which something is studied or "measured"?

Given the acknowledged role of cultivation for the Maasai over many decades, it is all the more surprising that Maasai have tended to be included as "pure pastoralists" in demographic analyses (for example, Roth (1994), Borgerhoff-Mulder (1992)). If the Maasai have been subject to classification based on some outdated normative conception of "What is Maasai?" then similar considerations must exist for other ethnic groups. With this caveat in mind, the next section reviews the literature relating subsistence production system to fertility.

11.2 Production system and fertility

The level of fertility in "pre-industrial" societies has played an important part in the formulation of theoretical models in demography. For example, the classical description of the Demographic Transition assumes that pre-industrial societies are characterised by uniformly high fertility rates, combined with high, fluctuating mortality rates resulting in low levels of natural increase. Several cross-cultural studies (Bentley *et al*, 1993; Campbell and Woods, 1986; Woods, 1990) have attempted to determine whether fertility in non-agricultural traditional societies is low relative to the fertility of agricultural groups. Based on a variety of data, these studies have suggested that there is an association between the intensification of subsistence technology and increases in human fertility. The nature and quality of data, which tend to be highly variable, limit such studies. As Bentley *et al* highlight "in some reports it is not even clear which subsistence techniques are practised by the populations studied" (1993:271). Using

pastoralism as an example of a production system, the next section explores whether there is any validity in the concept of a “pastoralist fertility regime”.

11.3 Fertility of pastoralists: a history

Any comparison of studies conducted by different authors at different times and places suffers from the inherent problem of comparability: different definitions (e.g.: of a household) and measures are used³⁴¹, often without adequate explanation of how the measures were derived. A further complication derives from the confusion of "pastoralist" and "nomad" in such analyses. The following extract, taken from Thebaud's study of the demography of *pastoral* societies in the Sahel is illustrative: "the rate of natural population growth among *pastoral* communities is lower than that among agricultural communities...the immediate causes of this lower rate of population growth among *nomadic* societies are..." (1995: 38). The distinction between *pastoralist* and *nomadic* is an important one, but rarely addressed explicitly in the literature. The reason for the confusion is simple: many pastoralist societies are nomadic to some degree, and the extensive nature of most African pastoralism requires mobility of both livestock and people. The following review of the literature is therefore conducted with this distinction in mind. Rather than examine every study of pastoralist fertility in detail, three studies (Henin, 1968, 1969; Brainard, 1991; Campbell *et al* 1999) will be highlighted. Table 11.1 contains a summary of studies of pastoralist fertility in sub-Saharan Africa.

Henin's (1968) innovative work on the fertility of pastoralists in the Sudan has formed the basis of much of the subsequent thinking on pastoralist fertility. Whilst the central focus of Henin's work was a comparison of nomadic/settled populations, his work can be examined from a pastoralist/non-pastoralist perspective. Henin compared fertility levels for two pastoralist ethnic groups, the Baggara and Kawahla, each of which was divided into nomadic and non-nomadic sections. Thus, Henin did “control” for nomadism, and was one of the few researchers to do so. However, whilst his work “controlled” for nomadism and ethnicity, it should be noted that the non-nomadic sections were agropastoralists, not “pure” pastoralists, further complicating the picture. It is, however, a feature that is repeated elsewhere because nomadic pastoralists only tend to sedentarise if they have to practise cultivation.

For each main ethnic group (Kawahla and Baggara) Henin noted lower completed parities and period TFRs for the pastoralist sections than the agropastoralist sections (1968:152). Henin suggested two main sets of causes for these fertility differentials: nuptiality regimes and what he termed “medical and physiological factors” (1969:197). For the pastoralist groups the former included later age at marriage, less universal female marriage and higher levels of marriage instability due to “many men having deserted their traditional way of life to seek an easier existence in the towns or in agriculture” (1969:197). The more broadly biological factors included higher foetal wastage (attributed to nomadism and camel riding), higher disease levels (STDs and malaria), lower nutritional standards and longer average breastfeeding duration. It should be noted, however, that Henin did not provide any substantive data to support the

³⁴¹ For example, this review of pastoralist fertility noted the following measures of fertility: completed fertility for women aged 50+ (Ganon, 1975); Average number of children ever-borne by women aged 40-49 (Ganon, 1975); Average number of children born alive to women aged 50 years and over (Henin, 1968); Mean parity for women aged 50+ (Brainard, 1991); An estimate of average children ever born (Jacobs in Molnos, 1972); Average number of live births for post-menopausal women (Borgerhoff-Mulder, 1992); p/f estimate (Hampshire, 1998; Hill *et al*, 1985); Number of live births to post menopausal women, corrected for under-reporting of child deaths (Leslie *et al*, 1988).

statements about disease and nutrition levels, length of breastfeeding, nomadism and camel riding.

Methodological considerations persist when Brainard's (1991) study of fertility differentials among Turkana "pastoralists" is examined. In Brainard's study, Turkana are divided into those that were long-settled and those that were recently settled at an irrigation scheme. Brainard argues that because recently settled Turkana underwent most of their fertility experience whilst still nomadic pastoralists, then this group's experience may be used to approximate that of nomadic pastoralists. The experiences of the long-settled Turkana are used by Brainard to approximate the experience of cultivators. Based on mean parity for women aged over 50, Brainard's results indicate a situation opposite to that which she had assumed: the recently settled Turkana had higher completed fertility than the long settled population. Brainard concludes that the higher fertility of the "pastoralist" group compared with the long settled cultivators may be attributed to lower levels of child mortality among the long settled group, leading to a decreased impetus for "replacement" children.

Brainard's study contains an inherent bias; those individuals who were recently settled (and have had to abandon a pastoralist lifestyle) were most likely to be a disadvantaged section of the nomadic pastoralists. As Randall points out "pastoral nomads are very attached to their lifestyle and traditional economy and usually only settle when destitution, animal loss or other disasters force settlement upon them" (1994:327)³⁴². The demographic implications are many and complex. For example, the recently settled pastoralists experienced greatly elevated levels of early age mortality³⁴³, with implications for other proximate determinants of fertility, including the duration of lactational amenorrhea. Brainard examines other proximate determinants, but does not note major differences between the populations. As such, Brainard's "pastoralists" are not necessarily an accurate reflection of pastoralists *per se*³⁴⁴.

A more recent study is that by Campbell *et al* (1999), part of the same STEP³⁴⁵ research as Brainard's work, and also referring to the Turkana (Kenya). Their sample included both long-term and recently settled Turkana, and nearly the entire recently settled sample had been forced to sedentarise following livestock loss (due to drought and raiding). The study design thus varies the "nomadism" of the Turkana women. Completed family size and total fertility rates for the recently nomadic women³⁴⁶ are higher (although not significantly) than those for long-settled women, leading to their conclusion that "sedentarism in Turkana seems to be associated with lower fertility" (1999:340). Drawing together both STEP studies, the substantive statement that can be made is that, relative to nomadic Turkana women, long-settled women have lower fertility.

Despite a lack of quantitative data support, the suggestion that pastoralists (regardless of level of nomadism or practice of agriculture) are typified by low fertility levels, persists (Swift, 1977; Meir, 1987; Sindiga, 1987; Borgerhoff-Mulder, 1992). An examination of

³⁴² Indeed, this selection of disadvantaged pastoralists into the "recently settled" group probably explains the higher childhood mortality of this group.

³⁴³ It was estimated that "offspring of recently nomadic women...experienced greater than 60% higher mortality than the offspring of the always-settled women" Campbell *et al* (1999:342)

³⁴⁴ This query is raised by Campbell *et al* "we are left with the question of the representativeness of the recently nomadic women in Nakwamoru" (1999:343).

³⁴⁵ South Turkana Ecosystem Project

³⁴⁶ Refers to those women who had been nomadic pastoralists, and who either had been married for at least 10 years before settling or had been settled for less than 5 years.

Table 11.1 highlights two important features. The first is methodological: statements on “pastoralist” fertility have been founded upon varied research with differing definitions among populations with a wide range of production systems, from nomadic pastoralists to sedentary agropastoralists. The second feature is substantive: the data provide very little support for the hypothesis that pastoralists have low fertility. Of those studied which “control” for ethnicity (Henin, 1968; Hill *et al*, 1985, Hampshire, 1998), only Henin’s study really supports the “low pastoralist fertility” hypothesis, while Hampshire’s (1998) work refutes it. What is particularly interesting to note is that authors (Sindiga, 1987; Borgerhoff-Mulder, 1992; Roth, 1994) have quoted Jacob’s “guesstimate” of Maasai fertility, without any apparent misgivings. Indeed, there is only one statement which may be made with any certainty: Populations which rely in part or in total on a pastoral production system exhibit a very high level of heterogeneity in their fertility levels (and the methodology used to determine them). In addition, because of the issues of collecting data from such populations, demographic statements tend to be based on relatively small sample sizes and low quality data.

The idea that pastoralists have low fertility is present throughout the literature. For example, building largely on Henin’s data and that of national censuses, Swift (1977) created a simple hierarchical model of pastoralist fertility: climate → vegetation production → livestock numbers → human fertility. Swift presents CBRs (based on retrospective sample surveys reporting on events in households in the previous year) in order to support his argument³⁴⁷. Although Swift acknowledges the paucity of accurate pastoral demographic data (1977:465), this does not prevent him from stating that “pastoral populations have low rates of natural increase of population compared to neighbouring agricultural peoples” (1977:468). He suggests that pastoralists have low fertility for two main reasons. Firstly, relative to cultivators, pastoralists have less demand for children as a source of labour. Secondly, pastoralists depend on livestock which in turn depend on vegetation that in turn is subject to the vagaries of the savanna climate. The net result is low fertility and natural increase, based on a resource-equilibrium *status quo*. Swift’s ideas have been pervasive and highly influential on work on pastoralist demography. For example, Roth (1994) quotes Rendille pastoralists’ low fertility levels as a function of the low reproductive rate of the camel.

Beyond the construction of a pastoralist fertility by academics, the wider social construction of pastoralist fertility must also be taken into account. That is, historical conceptualisations can and do inform contemporary perceptions about groups of people. The Orr and Gilks study of Kikuyu and Maasai health and nutrition, begun in the late 1920s is one such case in point. As Brantley notes there were differences in “what this study of African diet and disease in Kenya discovered, how the findings were interpreted, and how they were used...But Orr and Gilks’ study was constrained from the beginning by contemporary assumptions regarding African diet and health” (Brantley, 1997:50). Thus, whilst venereal disease among the Maasai were acknowledged, Foster³⁴⁸ argued that this was not responsible for the high levels of sterility and infant mortality. Rather, he focused on a hypothetical relationship between diet and pregnancy outcomes, contrasting the more varied Kikuyu diet against the (theoretically) more monotonous Maasai diet. Brantley suggests that such an emphasis was in keeping with contemporary colonial government moves towards the

³⁴⁷ As Randall points out “where households are not clearly defined fixed entities, as is the case in many pastoral populations, CBRs [and CDRs] based on events in households in the previous year will be very unreliable” (1994:326).

³⁴⁸ A researcher on the Orr and Gilks’ study “An enquiry into the correlation between diet and the incidence of disease in two contrasted African tribes” MD Thesis, University of Aberdeen 1929.

development of mixed farming practices, and not necessarily the interpretation suggested by the scientific "facts". The long-standing influence of colonial interpretations should not be under-emphasised, particularly in Kenya.

Table 11.1: Summary of pastoralist fertility research

Country	Ethnic group	Nomadic	Production system	Fertility	Author	Sample size ³⁴⁹
Eastern Africa						
Kenya	Maasai	Semi	Pastoralist	8 ³⁵⁰	Jacobs (quoted in Molnos 1973:241)	256
Kenya	Rendille	Yes	Pastoralist	4.8 ³⁵¹	Roth (1994:134)	212
Kenya	Turkana	Yes	Pastoralist	6.5 ³⁵²	Leslie <i>et al</i> (1988:709)	63
Kenya	Turkana (Nakwamoru) - Turkana - Ngiketak	Recently No	Agropastoralist Cultivator	7.2 ³⁵³ 5.7	Brainard (1991 ³⁵⁴ :113)	88 281
Kenya	Turkana - nomadic - settled	Yes No	Pastoralist Agropastoralist	4.6 5.0	Leslie <i>et al</i> (1992:733)	32 25
Kenya	Turkana (Morulem) - settled - recently settled Ngisonyoka	No Recently Yes	Agropastoralist Agropastoralist Pastoralist	6.4 ³⁵⁵ 6.9 ³⁵⁶ 7.1	Campbell <i>et al</i> (1999:339)	66 14 217
Kenya	Gabbra	Yes	Pastoralist	5.6 ³⁵⁷	Mace & Sear (1996)	1,142
Botswana	Herero	Yes	Pastoralist	7.2 ³⁵⁸	Poukouta (1994)	391
Sudan	Kawahla - Gezira -Blue Nile Nomads Baggara - Baggara - Muglad	No Yes Yes No	Agropastoralist Pastoralist Pastoralist Agropastoralist	6.1 ³⁵⁹ 3.6 3.5 4.6	Henin (1968:152)	1,027 ³⁶⁰ 733 1,157 335
Sudan	Toposa	Semi	Agropastoralist	6.7 ³⁶¹	Roth (1994:134)	N.D.
Tanzania	Datoga	Semi	Agropastoralist	6.9 ³⁶²	Borgerhoff-Mulder (1992:391)	102
Western Africa						
Burkina Faso	Fulbe DjelgoBe Fulbe GaoBe Fulbe Liptaako	Yes Semi No	Pastoralist Agropastoralist Agropastoralist	9.2 ³⁶³ 6.3 6.4	Hampshire (1998:243)	302 570 395
Mali	Delta Fulani Seno Fulani Delta Tamasheq Gourma Tamash'q	Semi Semi Yes Yes	Agropastoralist Agropastoralist Pastoralist Pastoralist	7.1 6.6 6.6 5.2	Hill (1985:55)	1,615 ³⁶⁴ 1,214 1,428 1,682
Niger	Fulani	Yes	Pastoralist	4.8 ³⁶⁵	Ganon (1975 ³⁶⁶ :697)	N.D.
Niger	Tuareg	Yes	Pastoralist	3.9	Ganon (1975:697)	N.D.

³⁴⁹ Refers to number of women used in calculations, unless indicated otherwise

³⁵⁰ Guess

³⁵¹ Approximation of TFR based on ASFRs

³⁵² Number of live births to postmenopausal women, correcting for underreporting of dead children

³⁵³ Mean parity for women aged 50+

³⁵⁴ Based on fieldwork conducted 1978-9

³⁵⁵ TFR

³⁵⁶ "Not reliable-small numbers of women in each age group" (Campbell *et al* 1999:339 fn.3)

³⁵⁷ TFR

³⁵⁸ p/f estimate

³⁵⁹ Average number of children born alive to women aged 50 years and over

³⁶⁰ Total sample

³⁶¹ Mean parity (Unable to determine methodology due to being quoted from an unpublished paper on file at UNICEF-Sudan)

³⁶² Average number of live births for post-menopausal women

³⁶³ p/f estimate

³⁶⁴ Women aged 15-50.

³⁶⁵ Completed fertility for women aged 50+

³⁶⁶ Based on 1966 fieldwork

Much of the research on the relationship between production system and fertility regimes is based on spurious classifications of production systems. Pastoralism is an umbrella term, and may be used with validity to describe a very wide range of circumstances, along a continuum with highly specialised nomadic pastoralism at one end to sedentary agropastoralism at the other. Galaty and Bonte suggest that “generalizations constitute a romantically archaic pastiche of the pastoralist” (1992:4). The level and type of dependence of a population on pastoralist products varies significantly, yet work relating “pastoralism” to fertility regimes fails to specify exactly the nature of the pastoralism being practised. For most authors some reference to the study population as, for example, “a cattle owning nomadic tribe” (Henin, 1969:171) or “a semi-nomadic pastoralist population” (Borgerhoff-Mulder, 1992:387) appears to suffice. However, even within one ethnic group there can exist such a diversity of production systems as to render such categories meaningless.

Anthropological work on the nature of pastoralism has for a long time recognised the nuances and continuum of pastoralism³⁶⁷. However, none of the demographic work on “pastoralist” demography has paid much attention to this discourse. Failure to at least acknowledge the wide variety of pastoralist experience results in two major shortcomings. Firstly, at the societal level, the result has been the comparison of groups that are not legitimately open to direct comparison. For example, the inclusion of highly specialised nomadic camel herders (e.g.: Rendille) in the same broad category as semi-nomadic agropastoralists (e.g.: Toposa) would appear to be, at best, unrealistic and at worst, misleading. Secondly, at the scale of the individual ethnic group, a description of pastoral or agropastoral can only serve to disguise large “internal” variations in production system, which might potentially confound any fertility analysis predicated on production system.

11.4 Explanations for pastoralist fertility regime(s)

What factors, relating specifically to pastoralism, have been used to support the “low fertility” hypothesis? Are these factors indeed specific and unique to a pastoralist production system? Randall (1994) suggests four main areas that might profitably highlight the reasons why pastoralists might have a different fertility regime to non-pastoralists: livestock demography; labour requirements; environment stress; and, isolation and marginality. Using this classification, the following section will explore how each of these areas can impact on pastoralist fertility regimes, again with specific reference to sub-Saharan Africa.

11.4.1 Livestock demography

The first (and perhaps most obvious) explanatory factor is that of livestock demography. Indeed, Stenning’s treatment of reproduction was tellingly contained in a chapter entitled “Fertility of women and cattle” (1959). The relationship between livestock and human reproduction rates is intuitively simple: a human population that is largely dependent on livestock products for its survival is readily assumed to need some sort of balance between the two populations. As Dahl and Hjort summarise “The keeping of large herds is closely linked to the need to protect the household against the effects of drought or epidemics as well as to food requirements during a particular dry period. A

³⁶⁷ Galaty and Bonte describe a “body of myths, misconceptions, simplifications [sic], and overgeneralizations about pastoralists that pervade our popular and academic vision of Africa” that includes “myths: of an irrational African “cattle complex”; of either (paradoxically) the ecological determination or ecological sensitivity of pastoral systems; of closed, self-regulating pastoral subsistence systems; of the intrinsically expansionist nature of pastoralism; and of the inherently egalitarian nature of pastoral systems” (1992:5)

sufficient number of animals must survive a disaster in order that the household can exist while the herd is being rebuilt” (1976:17). Whilst the relationship appears outwardly simple, livestock populations can reduce very rapidly (disease, starvation) whilst human populations have only two voluntary routes to rapid population decrease, outmigration or livelihood transformation.

It is important to remember that pastoralism can involve the keeping of cattle, camel and smallstock in varying proportions, and that the species have very different reproduction rates³⁶⁸. Spencer (1973) and Stiles (1983) have suggested a link between predominant livestock type and human reproduction rates, with camel pastoralists having a lower rate of natural increase than cattle pastoralists. Swift suggests “social regulation” (1977:469) as the method through which pastoralist fertility achieves stasis with herd growth. He describes the Gada system (involving strictly controlled age grades, late age at marriage, and infanticide) of Borana pastoralists in southern Ethiopia as an example of the way in which fertility may be regulated. However, it should be noted that there are no data to support the hypothesis that the Gada system produced low fertility as an outcome. Indeed, there are no demographic data to document that fertility was even low. Randall suggests a range of mechanisms that could mediate fertility, including “systematic and legitimized out-migration or control of female marriage either through later age at marriage or high marriage instability” (1994:328).

11.4.2 Labour requirements

With specific reference to pastoralism, suggestion has been made that the labour requirements of this production system have a direct effect on fertility levels. However, there is disagreement as to the direction of this relationship, which given the heterogeneity of pastoral production systems, is unsurprising. Pastoralism can be typified as a system requiring low levels of labour input relative to agriculture, thus lowering fertility (Swift, 1977). At the other extreme, pastoralism with extreme specialisation and division of labour tasks has been associated with an increased demand for children and hence increased fertility (Leslie *et al*, 1988; Galaty and Bonte, 1992). The relationship between labour demands and fertility is, at best, hypothetical and unproven. Even if a relationship does exist, it is not necessarily unidirectional. Sobania (1992)³⁶⁹, for example, demonstrates that herd growth is constrained by limits on the availability of labour.

11.4.3 Environmental stress

Inter- and intra-annual ecological variability is an inherent feature of the savanna environment, which most sub-Saharan African pastoralists inhabit. In terms of inter-annual variability, the idea that pastoralists in some way regulate their fertility as a response to this general ecological uncertainty pervades the work of many authors (Swift, 1977; Sindiga, 1987; Leslie *et al*, 1988). The effect of intra-annual variability or extreme seasonality on pastoralist fertility has also attracted research attention. For example, Leslie *et al* (1988) demonstrate that Ngisonyoka Turkana nomadic pastoralists have one of the most highly seasonal patterns of births ever recorded among a human population, with 25% of all births occurring in April and May. However, as Randall points out, they fail to “examine the effect this has on fertility over the entire reproductive span” (1994:329).

³⁶⁸ Dahl and Hjort (1976), for example, suggest typical herd annual growth rates of 1.5% and 3.4% for camel and cattle, respectively. Maximum herd annual growth rates of 7.5% and 15.0% are suggested for camel and cattle.

³⁶⁹ Quoted in Galaty and Bonte (1992)

11.4.4 Isolation and marginality

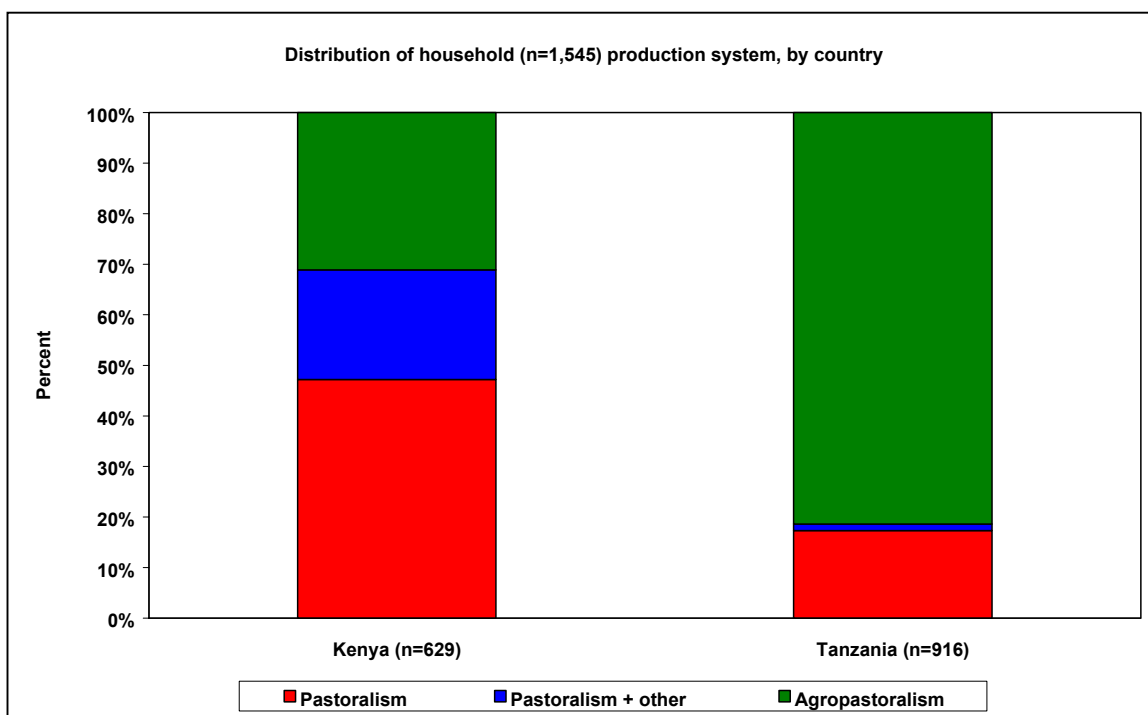
"Isolation and marginality" is brought about as a result of low population densities in inhospitable areas unsuitable for cultivation. Most work on this subject concentrates, however, on the potential effects of isolation and marginality on mortality. In terms of fertility, the focus of this section, inhabiting a remote and/or marginal area could have an impact, through low levels of reproductive and maternal healthcare and family planning availability (Swift *et al*, 1990).

11.5 SRDS evidence

The issues, frameworks and evidence relating to the debate about pastoralist fertility have been reviewed. The next section addresses two main issues. Do the SRDS data support the hypothesis that pastoralists have lower fertility than non-pastoralists? What are the methodological implications for fertility analysis of classifying a population according to their production system?

11.5.1 SRDS occupation data

The SRDS collected occupation³⁷⁰ data from all individuals aged above 6 years. Data were also collected at the household level relating to recent³⁷¹ and current practice of cultivation. Using broad categories of "pastoralist", "pastoralist + other occupation"³⁷² and "agropastoralist", it is possible to look for country-level differences in production system (Graph 11.1).



Graph 11.1

Source: SRDS data

Before an interpretation of these broad-scale production system data, however, it is important to underline exactly what is included in each of the categories. Despite living

³⁷⁰ Occupation was a "free answer" question, not related to the income derived from the activity.

³⁷¹ 10 years ago

³⁷² Other occupations include: Government employee, tourism employee, artisan, beadwork manufacture, livestock trader, trader, shopkeeper, traditional midwife, local politician, bee-keeper, firewood seller, beer seller, traditional medicine seller, tobacco seller

in contiguous areas with the same broad climatic conditions, the opportunities for and constraints on cultivation vary greatly between the study sites. Cultivation varies from intensive commercial vegetable production to subsistence grain and bean cultivation. In Kajiado, perennial streams at the foot of the Nguramen escarpment, combined with good road access to Nairobi have led to the development of intensive vegetable cultivation, exclusively for the export market. Even within "small" areas the types of cultivation can vary greatly. In NCAA (TZ) several different types of cultivation are practised. In Irkeepus, for example, the presence of a tourist lodge to provide a guaranteed market, combined with a cool and wet highland weather system, have resulted in high levels of potato cultivation. In Meshilli, on the other hand, the weather is much drier and warmer, and there is no external, guaranteed market for produce; the result is small-scale subsistence grain cultivation. The important point, therefore, is the extreme heterogeneity within any one production system classification such as "agropastoralist".

In the Tanzanian study sites, agropastoralism is the dominant production system (81.4% of households), with very few households [n=12] reporting pastoralism combined with some other occupation. In the Kenyan study sites, pastoralism is the major production system, accounting for 47.2% of households. The greater opportunities for diversification away from pastoralism and/or agropastoralism in Kenya are marked, compared with Tanzania. Does the country-level variation in fertility (Section 10.1) remain when production system is introduced? When individuals are classified according to the household production system, are there any variations in fertility by production system? Before analysing the data, it must be recognised that there are methodological implications in attributing an individual woman to one production system. The following section will therefore explore some of the methodological considerations that should be integral to any fertility analysis related to production system.

11.6 Maasai fertility and pastoralism

Much of the current debate on the relationship between production system and fertility in "pre-industrial societies" focuses on the potential impact of a diversification away from pastoralism towards some ill-defined "agropastoralism". The point about classification is being stressed here in order to provide the background for exploratory analysis of the SRDS data. Namely, how does one define a population (or, for the purposes of fertility analysis, an individual) as "pastoral" or "agropastoral"? Most of the research included in Table 11.1 provides no evidence of how a classification by production system was arrived at. Using the SRDS data it will be shown that the system used to classify or code population data in terms of production system can have implications for subsequent conclusions. Further, insufficient specification of the system of classification precludes comparability of different data sets.

The following analysis of SRDS data involves two ways of "coding" an individual woman as pastoralist or agropastoralist. The two classifications are called "Individual occupation" and "Household cultivation". In creating the classifications attempts have been made to use all of the available data in ways that make sense, both intuitively, and practically. In order to highlight the methodological and analytical implications of the different categories, there follows a brief description of each.

Table 11.2: Description of occupation categories

	Description
Individual occupation	An individual woman's response to questions relating to occupation ³⁷³ (both primary and secondary). Pastoralist includes women who have other occupations ³⁷⁴ , but excluding cultivation. Agropastoralist includes women who have other occupations alongside agropastoralism.
Household cultivation	Household-level response to the question "Does anyone in the household currently practice any form of cultivation?" Pastoralists defined as those individuals from households where no cultivation is practised. Agropastoralists defined as those individuals from households where pastoralism and cultivation are practised (irrespective of type).

Using each classification, the TFRs were derived using the p/f ratio (Table 11.3). What is of interest here is not so much the TFRs *per se*. Rather, the different results (actual and relative) derived using different classification schema.

Table 11.3: Total Fertility Rate (p/f), by country and occupational category

	Kenya			Tanzania		
	Pastoral	Agropastoral	Highest TFR	Pastoral	Agropastoral	Highest TFR
Individual occupation ³⁷⁵	8.0 [1,142]	7.6 [114]	Pastoral	5.0 [520]	6.6 [1,332]	Agropastoral
Household cultivation ³⁷⁶	8.3 [807]	7.8 [594]	Pastoral	4.4 [208]	6.9 [1,701]	Agropastoral

Numbers in square brackets [] refer to number of women aged 15-49

The Tanzanian data, irrespective of which classification system is used, show consistently higher fertility for agropastoralist women than women classified as pastoralists. The Kenyan data, however, show the opposite pattern, with higher fertility estimated for pastoralist women.

The hypothesis relating production system to fertility has at its basis some degree of subjective judgement regarding just what that production system involves. Which is a more realistic representation? The household economy in which an individual woman lives, or the occupation on which she spends most of her time? Within an individual household, how does one define a household as pastoralist or agropastoralist? Is a household in which 1 or 2 members practise cultivation to be considered as having the same production system as a household in which every member undertakes some cultivation? The point is an important one, especially in the light of the explanations suggested for lower pastoralist fertility relative to other production systems³⁷⁷. In my opinion, the most robust of the two classification systems used above is "Household cultivation". The responses to this question were straightforward in all of the study sites, and did not require any subjectivity during data coding. It is, however, a crude classification, including a wide range of cultivation types, each with different socio-economic implications. In addition, a current "snapshot" of cultivation status provides no information on the cultivation history of that woman or her household. For example,

³⁷³ Open-ended questions on occupation were used, and verbatim responses recorded in the field. Enumerators were trained to refer simply to the occupation that an individual spent the most time on, not necessarily the one from which they derived the most income.

³⁷⁴ For example, making and selling beadwork jewellery, selling milk/tobacco/local beer/traditional medicine, running a shop, traditional birth attendant.

³⁷⁵ Individual woman's primary and secondary occupation combination

³⁷⁶ Household current cultivation status (all included households currently own livestock)

³⁷⁷ The discussion here is, of necessity, forced to use a cross-sectional approach to livelihood description. It is recognised that this ignores large inter-annual variations in production system. Further, the "moving in and out" of pastoralism by Maasai over longer time periods cannot be incorporated here, either.

with the banning of cultivation in NCAA, much of the past childbearing may have taken place in the context of a very different production system.

Although there are methodological and analysis implications dependent upon which classification system is used, the SRDS data for Tanzania would appear to support the suggestion that agropastoralists have higher fertility than pastoralists. Using Randall's four main headings (livestock demography; labour requirements; environment stress; and, isolation and marginality) as a framework, the following section will explore how agropastoralists might be achieving higher fertility relative to pastoralists³⁷⁸.

11.7 Pathways for fertility differentials by production system

Firstly, in terms of livestock demography, all of the Maasai studied were cattle and smallstock pastoralists³⁷⁹. Therefore arguments relating to livestock type (c.f. Spencer, Stiles) and human fertility cannot be applied here. Secondly, if one were to develop a simple hierarchical model along the lines suggested by Swift (1977), a distinction between pastoralists and agropastoralists in terms of labour requirements would suggest greater production system diversification among agropastoralists, requiring more intensive labour requirements. Thus, one could infer that agropastoralists have a higher demand for children, relative to pastoralists. However, such extrapolations are at best, simplistic, and at worst completely ignore the diversity of production systems and labour requirements. Within the study sites there are very different labour requirements among agropastoralists, from small fields with seasonal subsistence cultivation to intensively cultivated plots for vegetables to sell. Similarly, for pastoralists, the variety of opportunities and constraints for pastoralism and the way it is practised preclude any real distinctions being made.

Finally, reference to the concepts of isolation and marginality do not apply in this study as all of the different production systems operate side by side geographically. Thus, all individuals, regardless of production system, are equally disadvantaged in terms of service provision. The one exception might be pastoralist households that practise a high degree of seasonal transhumance, and therefore experience variations in the degree of isolation and marginality, relative to sedentary agropastoralist households.

When searching for an explanation for the perceived low levels of fertility amongst pastoralist societies (Henin, 1969; Swift, 1977; Gulliver, 1979; Sindiga, 1987), sterility is suggested frequently. Implicit in these statements is that sterility is due mainly to secondary sterility caused by pathological diseases, namely STDs. In populations with high levels of sterility, it is possible that one of the main causes is the high incidence of a number of diseases which impair conception or which produce high foetal mortality. Among these diseases are gonorrhoea, syphilis, rickettsiae, toxoplasmosis, goitre, chlamydia and malaria. The following sections review the evidence for a relationship between a pastoralist production system and pathological sterility.

11.8 "External" perceptions of levels and causes of sterility among pastoralists

The evidence relating to sterility in sub-Saharan Africa (for example, Larsen's 1994 comparative study) tends to be based upon samples not necessarily comparable to pastoralist populations. For example, Mammo and Morgan examined childlessness in

³⁷⁸ It is noted that the discussion related to the differences between nomadic pastoralists and sedentary cultivators, but it is felt that the headings provide a useful framework for this comparison of agropastoralists and pastoralists.

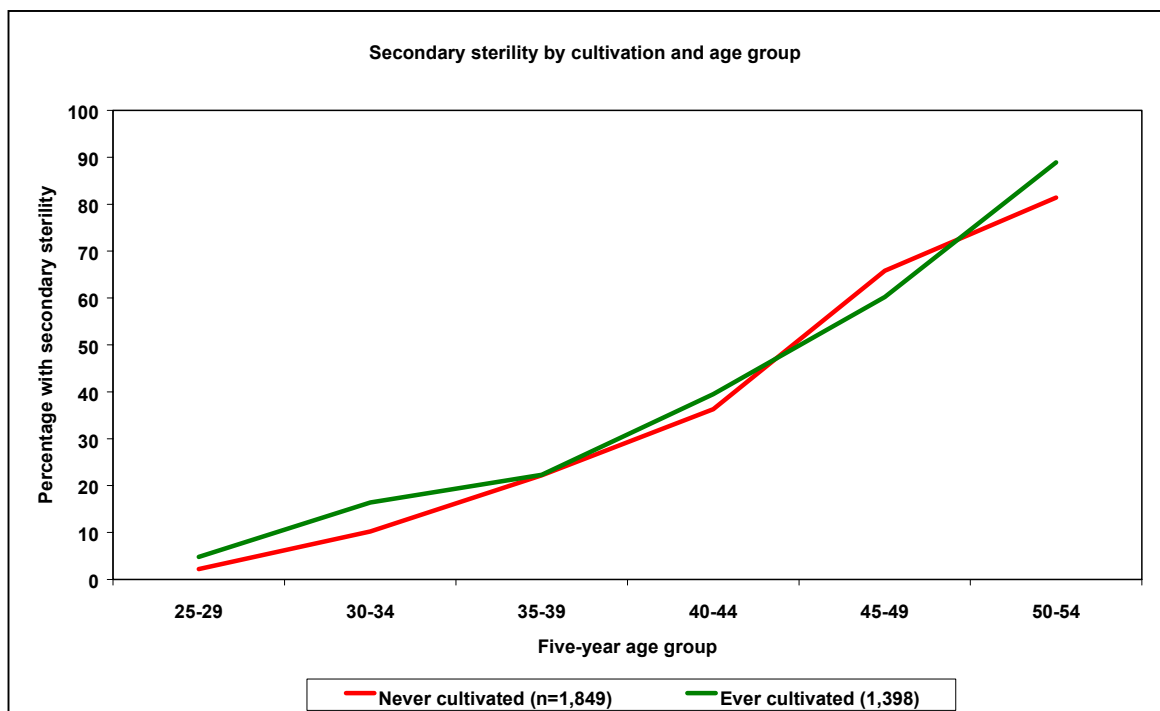
³⁷⁹ With the exception of one household in Meshilli (Tanzania) which kept camels as part of a livestock development experiment.

rural Ethiopia. However, their sample “used data from only sedentary rural areas” (1986:534) and excluded those “regions which were sparsely populated, mostly by nomadic groups” (*op. cit.*). Swift (1977) suggests sterility as a factor for lower fertility amongst pastoralists, citing high levels of women who reach the end of childbearing ages without ever giving birth in the Niger Republic (from Ganon, 1975). Henin (1969), based on his work in the Sudan, observes a higher proportion of childless women among nomadic populations when compared with settled, controlling for ethnicity.

However, Randall (1994) states that “a pastoral economy does not predispose towards sexual behaviour likely to increase risks of venereal disease”. It is conceivable that the preoccupation of researchers and administrators with STDs as a cause of sterility and hence depressed fertility amongst nomadic pastoralists has its roots in what Hill and Randall describe as an “idealised stereotype” of nomadic people as “aimless wanderers, immoral, promiscuous and disease-ridden” (1985:21). A review of historical and contemporary "external" perceptions of STDs and sterility among the Maasai has been presented in Section 9.5.5.2. Both colonial and contemporary accounts of Maasai frequently refer to high levels of STDs among the Maasai, although no evidence is provided to support these statements. The sample population included in the SRDS was representative of a wide continuum of Maasai production systems, from sedentary agropastoralist to transhumant pastoralists. It is therefore possible to examine levels of sterility by pastoralism, whilst controlling for ethnicity.

11.8.1 Testing the link between sterility and pastoralism using SRDS data

Given the absence of quantitative data to support the widely held view of high levels of sterility among pastoralists, the SRDS data provide an opportunity to look for such a relationship in the case of the Maasai. Of necessity, crude categories of pastoralism must be used and recognition is given to the potentially arbitrary nature of these categories. Because of the difficulties in creating meaningful yet mutually exclusive categories to reflect pastoralism system at the individual level, the broadest categories of "ever-cultivate"/ "never-cultivate" were used.



Graph 11.2
Source: SRDS Data

There are no consistent patterns of differences in the levels of secondary sterility among currently married Maasai women by cultivation category. In order to examine the strength of the relationship between secondary sterility and pastoralism, logistic regression³⁸⁰ was carried out (Table 11.4). Even when age was controlled for, the country of residence remained the strongest explanatory variable. A Tanzanian Maasai woman has a significantly higher risk of secondary sterility than a Kenyan Maasai woman, consistent with the findings of Section 9.5.5.3.2.

Table 11.4: Odds ratios for logistic regression on the likelihood of secondary sterility by occupation and country of residence.³⁸¹

Variable	Odds Ratio
Occupation	
Pastoralist	Reference
Agro-pastoralist	1.275
Agro-pastoralist + secondary activity	0.817
Pastoralist + secondary activity	0.937
Cultivator	0.793
Business (owner or employee)	1.653
Country	
Kenya	Reference
Tanzania	1.555 *

* Significant at the 90% level

The SRDS data do not support the hypothesis that pastoral populations exhibit significantly higher levels of sterility than non-pastoral populations. Levels of reported primary sterility fall within the range expected in a human population (Bongaarts and Potter, 1983) and rates of reported secondary sterility vary more by country than by factors relating to production system.

11.9 Discussion

The linking of production system and demographic outcome has a long history. Pastoralism tends to be associated with lower fertility and higher levels of sterility, relative to agricultural or more sedentary populations. With specific reference to sub-Saharan Africa, extant research and SRDS data have been examined in order to identify whether these relationships exist. A survey of the research on pastoralism and fertility does not show any consistent pattern. Even the intensively studied Turkana populations included in the STEP project (Brainard 1991, Campbell *et al* 1999) demonstrate relative and actual variations in fertility by production system.

Methodological considerations have been highlighted, particularly with reference to the utility of comparing different ethnic groups simply on the basis of production system. Of particular importance is the wide range of experiences and lifestyles that might be associated with "pastoralism". Even within one ethnic group an individual can be situated along a continuum of experience. Indeed, dependent upon how an individual is "classified", co-wives married to the same man can be categorised differently in terms of production system. The utility of grouping people according to production system is questioned, especially in a temporally variable situation such as east African savannas. The movement "into" and "out of" pastoralism, together with a straddling of different survival strategies has been documented (Waller, 1999). Indeed, it is just this flexibility

³⁸⁰ "Success" represented by occurrence of secondary sterility (currently married woman aged above 24 years and married for at least 5 years with at least one live birth more than five years ago)

³⁸¹ Logistic regression carried out using SPSS Version 6.1

within the pastoral mode of production that allows for survival in such an inherently changeable environment.

In the same way that "pastoralism" reflects a wide continuum of experiences, so does "agropastoralism". The decision to diversify production system can be forced or voluntary, each with very different implications for the well being of the individuals concerned. The uptake of cultivation can be a short-term response to livestock loss, or a result of permanent livelihood diversification. Does cultivation represent a lasting change or an opportunistic response to changing environmental conditions? When does a household (or for fertility analysis an individual woman) "become" agropastoralist, and how are the categories defined? The methodological difficulties of trying to unravel these factors should not be under-estimated. For example, Brainard's use of recently settled Turkana women to represent the reproductive experience of pastoralist women has drawbacks. However, the approach is understandable given the constraints of conducting demographic work among such a population.

Henin's (1968) research is still perhaps the best "benchmark" study, controlling for both ethnicity and transhumance, with moderate sample sizes. Analysis of the SRDS suggests marginally higher fertility among agropastoralist populations in Tanzania, based on a variety of classification systems. The relationship between production system and fertility is not as clear in Kenya. No evidence was found in the SRDS data for a relationship between production system and sterility, and logistic regression implies that country of residence is the most important determinant of sterility. Of course, fertility and sterility are clearly linked, so it is unsurprising that both demographic outcomes have become associated with one production system³⁸².

It is possible that some of the earlier literature on this subject is rooted strongly in preconceptions about levels of promiscuity and STDs among pastoralist and nomadic populations. Preconceptions that developed over a century ago during colonial rule still persist. In the case of STDs and the Maasai, this is evident both from educated Maasai and non-Maasai alike (Pers. Ob.). Talle highlights this, by commenting that "Healthworkers hold that venereal diseases are rampant in the Maasai communities causing, among other things, a high rate of infertility among the women. They attribute the prevalence of such diseases to the pastoralists' lack of personal hygiene, to "promiscuous" sexual practices by age-mates having access to each other's wives and to poor health facilities in the Maasai localities" (1999:115). Female genital mutilation and wife beating are both elements of Maasai culture, and both practices are associated with a heightened risk of sterility (Kiragu, 1995). It is therefore possible that the widespread perceptions of high levels of infertility among the Maasai are partly rooted in an association with these practices. Talle's excellent description of Maasai "otherness" focuses on how Maasai are perceived as odiferous, dirty, poor, backward and ignorant by non-Maasai populations. Given these widely held views, it is unsurprising that images of Maasai pastoralists as disease-ridden and infertile have persisted for so long. There are, of course, real issues surrounding the provision of health services to mobile populations (Swift *et al*, 1990). There are also issues surrounding the provision of health services to particular ethnic groups. Nestel (1985),

³⁸² The problems of reporting from nulliparous women is highlighted by Campbell *et al* who report that only one out of a total of 358 women was reported as having primary sterility. They note that "in fact it is so low as to invite skepticism. Although outcomes of zero percent sterility are surely at least in part due to sampling error, these low rates might also be the product of selectivity, arising from higher mortality or emigration of nulliparous women" (1999:341)

for example, noted that approximately one third of the Kenyan Maasai in her study would not visit the local dispensary. The main reason for this reluctance was that they did not have confidence in service providers from different ethnic groups. However, many of the perceptions relating pastoralism to high levels of sterility (and hence lower fertility) have more to do with assumptions about behaviour than empirical evidence.

The SRDS data can provide no more than the most rudimentary exploration of a relationship between pastoralism and fertility. What is of interest, however, is the way in which ethnographic reports of demographic outcomes (pathological sterility) for nomadic pastoralists can impact on research. Using the example of the Maasai, the widely held view that pastoralism equates with sexual license and hence pathological sterility, appears to have become incorporated into demographic knowledge with relatively little substantive backup³⁸³. The persistence of such attitudes for contemporary service providers, as highlighted by Talle's work in Namanga (1999), underlines the need to question these stereotypes.

The increasing pressures for economic diversification facing many contemporary pastoralist populations provide a convincing reason for examining the demographic outcomes (in this case fertility) of a production system. Maasai in both Kenya and Tanzania face increasing, although different, pressures to sedentarise and take up cultivation. In Koyaki Group Ranch, for example, the well-established subdivision of land is forcing livelihood diversification and sedentarisation, as shown by the low reported levels of transhumance relative to other SRDS study sites. There is an increasing body of information relating to the impacts of sedentarisation on demographic outcomes (Brainard, 1991; Campbell *et al* 1999, Fratkin *et al*, 1999), but it remains an under-studied topic.

³⁸³ For example, Thebaud suggests that "Within certain nomadic groups, low rates of birth and low fertility can be explained by the relative freedom of women...and the spread of diseases that cause temporary or permanent sterility" (1995:39). It is noted that the terms "pastoralist" and "nomad" are used interchangeably throughout her work.

Chapter Twelve Conclusions

The primary aim of this study was a demography of Maasai in Kenya and Tanzania. Was this objective achieved? The brief answer must be in parts, yes. Robust estimates of fertility and adult male mortality were achieved and population composition, early age mortality and marital structure were reasonably well described. Migration, as the third element of demography, is dealt with subsequently.

12.1 Ethnic-specific demography

This study was ethnic-specific. That is, it collected data from only one ethnic group, the Maasai. Ethnicity or membership of an ethnic group has been described as one of the most difficult concepts to define in the social sciences (Johnston *et al*, 2000). It is a way both of being defined by others, and defining or identifying oneself. Kenya and Tanzania are highly ethnicised nations, despite their very different nation-state ideologies, and the different relationship between the nation states and the attention paid to ethnicity. This study focused on the demography of one ethnic group, the Maasai, for two reasons, one academic and one pragmatic. Firstly, no demography of the Maasai exists. Secondly, the inclusion of only one ethnic group greatly simplified the design and implementation of the data collection. It allowed for context-specific definitions to be constructed and used. Issues of language and definition comparability could be addressed properly. By focussing on one ethnic group the research design and instrument could be tailored to the context, allowing for greater data validity and reliability.

In terms of broader demographic study, what are the practical implications of the incorporation of ethnographic data? In the absence of functioning systems of vital registration, most contemporary demographic data in developing countries come from national sample surveys such as Demographic and Health Surveys. Is it practicable to advocate the integration of ethnographically relevant data into the survey instrument? The need for population-specific but demographically significant studies is demonstrated. Surveys such as the DHS can do no more than provide national level data - which is what they set out to do. The decomposition of DHS surveys into ethnic groups in countries as ethnically diverse as Kenya and Tanzania is not feasible. In Kenya it is not possible to decompose census data by anything further than district level. In Tanzania, ethnicity data are simply unavailable.

The wider context of the demography must be acknowledged - the political economies of Kenya and Tanzania explain the availability of demographic data. Whilst the implications are different from country to country, I suggest that some of the issues highlighted here might allow large-scale sample surveys to better accomplish their task of collecting valid and reliable data, albeit at the expense of time (and hence money) and standardisation. A study such as this can help to contextualise and assess the representativeness of data from a specific sub-group of women. In this way, population-specific studies such as this and nationally representative surveys such as the DHS can be of mutual benefit.

This study has been conducted among a rural population in a context where ethnic diversity and traditions are still maintained to a greater degree. Urban residence does speed social transformation, with indicators of health, literacy and social mobility all being higher in urban areas (UNFPA, 1996). However, most of the current urban population in Kenya and Tanzania retains strong links with the more traditional rural areas. An individual born in an urban area is likely to have at least one parent who was born in a rural area. Urbanites maintain strong links with rural areas, often maintaining

property and/or land ownership rights in rural areas, and ties to the land remain strong. There is no reason to suggest that ethnically associated behaviour is unimportant in urban areas. With increasing urbanisation, and ethnic mixing, ethnic specific approaches might become less important, particularly for long-term urban populations.

Of central importance to this study is its cross-border comparability, representing not only the first demographic study of the Maasai, but also the first study to include both Kenyan and Tanzanian Maasai. Rather than simply review the results of Chapter Three to Nine, the task here is to examine why some elements of the study were achieved well, others reasonably, and still others not at all. In order to do this, both data collection and its context must be examined.

12.2 Data Collection and Analysis

That data collection was difficult, both physically and conceptually, should not be ignored. Physically, the El Niño weather event early in 1998 led to extensive logistical problems and subsequent fieldwork delays. On a day to day basis, the difficulty of data collection in a Maasai context where heavy rain means increased female workloads, cannot be underestimated. The need to walk from *enkang* to *enkang* across very wet and muddy land instead of using a vehicle has obvious implications, both for morale and timetables. In terms of the context of data collection, each subject area had distinct issues, and it is not the intention to list each in detail here; this has been done elsewhere in this study.

The most intractable issue of data collection was that surrounding mortality data. This is most clearly evidenced by the impossibility of collecting information on the survival status of first wives in order to estimate indirectly adult female mortality. The mortality analyses also demonstrated the impact of context on the ability to use otherwise robust methods of indirect estimation. For example, the inability to even ask a question on paternal orphanhood underlines that sometimes it is not simply a case of getting the right person to ask the right question in the right way. Rather, the wider context must be incorporated, which involves understanding that a concept has no relevance in a particular setting. It is sometimes not enough to find a vernacular equivalent for a word. Instead, it has to be accepted that the idea simply does not exist. This concept has long been recognised in demography, for example Awusabo-Aware suggests, "Demographic concepts, as formulations of ideas and experiences, are a product of the socio-economic milieu in which they originate" (1985:475). Issues of data collection notwithstanding, the mortality results and analyses presented in Chapters Five and Six are still more complete than was anticipated at the beginning of the study, especially in the light of the ethnographic evidence.

The future mortality scenarios for Maasai are, to a large extent, dependent on the impact of the HIV/AIDS epidemic on this sub-group. The HIV/AIDS data presented in this study are few and relatively old, and are essentially a representation of the past. Traditional Maasai levels and types of sexual networking, including polygyny, high levels of extra-marital sexual partners, and pre-puberty sexual debut of girls, together with communal circumcision and prolonged supplemented breastfeeding are all risk factors for HIV transmission. Increasing poverty amongst Maasai has been noted by some authors (for example, Talle) to cause some Maasai women to engage in commercial sex work. In addition, the movement of some Maasai men to peri-urban or urban areas for employment has created greater exposure to HIV infection through the use of commercial sex workers. The key point here in terms of the future HIV/AIDS

scenario among rural Maasai is whether or not these "high risk" individuals remain part of more traditional sexual networks and/or marriages.

On the whole, the fertility data are relatively robust, issues of reference period error in Tanzania notwithstanding. Of particular note are the reported parities by age group, which are almost identical in Kenya and Tanzania (Graph 9.2). The high degree of similarity between the reported parities for each country suggests that there is a Maasai fertility regime, characterised by high fertility. The relatively high total fertility rates estimated for both Kenyan and Tanzanian study sites were contrary to expectations, which were based themselves on out-of-date, scanty and inaccurate sources. Closely tied up with these expectations of low fertility are ideas about pathological infertility caused by STDs.

Chapter Eight demonstrated the pervasiveness of the historical record with respect to Maasai pathological sterility, bound up with notions of Maasai identity constructed by non-Maasai involving promiscuity, immorality and dirtiness. On the one hand, Maasai are viewed as riddled with STDs, due to high levels of sexual networking. On the other hand, Maasai are believed to have much lower levels of HIV/AIDS infection than other neighbouring ethnic groups. This is due in part to the idea that Maasai are representative of some untouched rural ideal, often expressed as "from the plains" or "from the bush".

Overall, the estimates of primary sterility for the Maasai are implausibly low, especially in Tanzania (1.4%). Given the pre-menarchal sexual debut of most Maasai girls, the reported low levels of primary sterility must represent misreporting on a large scale. Similarly, levels of secondary sterility for all age groups are relatively low, even allowing for the possible misreporting or outmigration of subfecund women. The role of child fostering, and subsequent reporting of fostered children as "own" is the most likely source of this error.

The current nuptiality regime of Maasai in Kenya and Tanzania showed marriage to be almost universal, with female age at first marriage closely linked to puberty and circumcision and considerably older male age at first marriage. Polygynous marriage is the norm in both Kenya and Tanzania, producing negligible levels of widowhood and high levels of widowhood, although widow remarriage is possible but relatively rare.

Evidence suggests that for some Maasai families, marriage provides a route out of education for their daughters. The role of education and male entry into marriage is more complicated. Traditionally, Maasai men did not marry until they were considered by their father to be economically capable of supporting an independent household, and often not until they had achieved elder status. Essentially, this involved accruing enough livestock to form an independent herd. It is possible that male age at first marriage might be declining, due to a combination of two main influences. These include the increasing substitution of education and employment for livestock as "social capital", and the effect of education reducing the integration of men into moranism. What the implications of increased education for levels of polygyny will be, are unclear.

The detailed individual-level SRDS data have not been widely exploited in this thesis. Data were collected on a wide variety of individual characteristics, including education (and languages spoken), occupation and material wealth indicators. Further, information on couples (both monogamous and polygynous) can be linked in order to perform analyses at the level of the couple. Many of the issues raised in this study were

examined at the broadest level, for example, the role of formal education among Maasai, and potential effects on fertility. Future work will allow some of the hypotheses suggested in this thesis to be studied using rigorous statistical methodologies. For example, it will be possible to study the effect of a husband's education on his wife's/wives' fertility, or the effect of a father's co-residence on his son's propensity to marry polygynously.

The annual rate of population growth in Kenya and Tanzania is now 2.89% and 3.22%, respectively (UN, 1998). Is the rate of growth of the Maasai population comparable? Using the total number of Maasai as reported in the Kenyan 1979 and 1989 censuses, it is possible to calculate an intercensal annual growth rate of 4.46% (Table 3.9)³⁸⁴. This provides a relatively crude account of the rate of Maasai population growth, due to the fact that "being Maasai" on a census sheet might not necessarily represent accurately an individual's ethnicity. Issues of Maasai identity shifting over time were addressed in Chapter Three. Indeed, some authors have noted recent shifts in self-identification in Kenyan censuses (Kituyi, 1990; Spear and Waller, 1993; Campbell, 1999). For example, Campbell suggests that "although in the past they would have identified themselves as Maasai, today many recount that they are of their mother's ethnic groups" (1999:388). However, at the population level, it is unlikely that such reporting errors will affect the rate of growth by more than one or two decimal points. A greater source of unreliability in the census data for such an inquiry is that the census data may not necessarily be accurate (Blacker, Pers. Comm.³⁸⁵).

As this study represents the first demography of the Maasai, it is pertinent to try to bring together the usable information on age structure, mortality and fertility in order to provide some estimate of the rate of population growth. Using all of the available SRDS fertility and mortality data, an intrinsic rate of natural increase of 3.9% *per annum* is estimated for the Maasai population³⁸⁶. This rate of population growth undermines the widely held view that pastoralist populations are typified by relatively low levels of population growth (Chapter Ten). The extremely young age structure of the Maasai population (53.1% aged below 15 years) provides supplementary evidence for a situation of high population growth³⁸⁷.

Three issues are highlighted here. Firstly, rates of Maasai population growth based on ethnic data collected in the Kenyan census are implausibly high (4.46% *per annum*). Either non-Maasai misreported themselves as Maasai, or there was improved coverage of Maasai populations between the 1979 and 1989 censuses. Secondly, based on estimates made using SRDS data, Maasai are increasing at a rate that is considerably higher than the national context, particularly in Kenya. Thirdly, and linked to the last point, the rate of increase estimated here is in direct contradiction to the assumed low (2.2%) rate of Maasai population growth (from Campbell, 1979).

Thus, when Kenyan population growth rates were extremely high (3.82%³⁸⁸), Maasai were considered to have very low levels of population growth. Currently, the reverse situation obtains, with Maasai demonstrating a rate of population growth (3.9%)

³⁸⁴ The comparable national rates of population growth were 3.37% and 3.36% *per annum* for 1979 and 1989, respectively (Kenya 1989 Vol. III Table 1.1).

³⁸⁵ With specific reference to the 1989 Kenyan census

³⁸⁶ See Appendix 7 for calculation details.

³⁸⁷ It is acknowledged that high levels of age-selective outmigration might also result in a very young age structure.

³⁸⁸ For the period 1975-80 (UN, 1998)

considerably in excess of the national level (2.89%)³⁸⁹. Do the current high rates of Maasai population growth represent a recent increase in population growth due to some combination of increased fertility and decreased mortality? Or, were previous estimates of low levels of Maasai population growth inaccurate, and Maasai have had long term high population growth rates? Retrospectively, it is impossible to test which scenario is accurate. Given the extremely similar reported high parity in both Kenya and Tanzania, it is unlikely that fertility increased rapidly enough over the last three decades to explain the difference in overall growth rates. It is possible that mortality (particularly early age) has declined among the Maasai. However, the continued marginalisation of Maasai in both Kenya and Tanzania from health services makes it unlikely that mortality has declined substantially. In my opinion it is likely that Maasai population growth rates have increased over the last few decades, but that they were previously at levels higher than those ascribed to them.

The picture in terms of overall rates of population (specifically Maasai) increase is complicated in Kenya. On the one hand, Maasai-connected politicians and leaders publicly denounce the use of contraceptives, with the explicit intention of increasing the relative numbers of Maasai³⁹⁰. Goliber, for example, notes that "the smaller tribes [in Kenya] are sensitive to their relative strength in the political order, and this is related to numbers" (1985:31). On the other hand, Maasai resident in those areas of Kenya Maasailand close to semi-urban areas (e.g.: Ngong) or areas of high agro-ecological potential where land subdivision is complete, are increasingly aware of the need for some change in the population-land equation. Indeed, the outmigration of Maasai men from the traditional rural economy might be one manifestation of this scenario. It is possible that within the next few years, fertility decline among Kenyan Maasai women will become apparent. Increased access to and participation in formal education, combined with a reduced economic role for children should produce a change in the balance of the costs (direct and indirect) of children. All of the issues are closely bound together. Changing land tenure patterns make a traditional transhumant production system less viable, a system that has relied upon the use of children to herd animals from a relatively young age.

12.3 Migration

Conspicuous by its absence was a chapter devoted to the third element of population change, migration. Given the inherently mobile nature of Maasai society, this omission would appear substantial. In this respect, this study has perpetuated an oversight present in many demographic studies. Indeed, as Anarfi suggests, "For reasons that are not easy to explain, demographers seem to have a greater understanding for the fertility and mortality aspects of population than they have for migration, the third of the components of population change" (1998:198). Migration is widely acknowledged to be the most difficult component of the demographic balancing equation to conceptualise, measure and analyse. A repeat-round migration survey was begun for four months in two of the study sites (Koyaki and Olkirmatian Group Ranches).

³⁸⁹ It is acknowledged that the rates of growth used here are not strictly comparable. The national rate of population growth depends on the population age structure and level of migration, while the rate calculated for the Maasai using the SRDS data is the intrinsic rate of natural increase.

³⁹⁰ It must be noted that it is not just Maasai politicians in Kenya who have made such pronouncements. For example, on April 18 2000, it was reported in the Daily Nation that "MP...urged the Luo to shun birth control and go on to become Kenya's most populous community...the political situation in the country demanded that a community seeking the presidency must have numerical supremacy..." "We can't be fourth [numerically] under any circumstances! The census results were doctored to suit some interests. The fact is that the Luo are the second largest tribe after the Kikuyu...Politics required numbers and we must allow our women to give birth to more voters".

However, it proved to be incompatible with the rest of the SRDS, especially following the timetable delays caused by El Niño.

In this study, migration was reduced to a "supporting role" and not studied in its own right. For example, transhumance was used as a proxy for spousal separation in Chapter Nine. Extensive spousal separation has been shown to be a principal cause of lowering natural fecundability when contraception and induced abortion are negligible (van de Walle, 1975; Millman & Potter, 1984). That pastoralism as practised by most Maasai involves some degree of spousal separation, both seasonal and sporadic in response to climatic vagaries cannot be discounted. However, a study such as this can do no more than hint at the relative impact of spousal separation on fertility. To study such a topic fully would require intensive fieldwork and bio-medical techniques, such as those employed by the Southern Turkana Ecosystem Project (Little & Leslie, 1999).

That migration, its causes and effects are an integral component of demography was perhaps most clearly demonstrated in Chapter Three. The deficit of men aged 20-49 in the population structure of enumerated Maasai was attributed to the semi-permanent outmigration of men, probably to semi-urban and urban areas. The substantive evidence for this migration is limited to supporting evidence such as the sex ratio for Maasai enumerated in Nairobi. There is limited ethnographic evidence of male outmigration. For example Spencer refers to those "who for one reason or another have been squeezed out of the Maasai pastoral economy" (1988:21).

The outmigration of men from the traditional rural Maasai economy is possibly linked to changes in education, aspiration, employment opportunity and land tenure. In order to study fully the nature and implications of such sex-selective migration, extremely detailed migration histories would have to be collected, together with the tracing of migrants to their destination. Whilst undoubtedly a rich avenue of research, such approaches were far beyond the limits of this study. Personal observations combined with discussions with researchers (for example, Meegan³⁹¹) from rapidly urbanising peri-urban areas such as Kiserian, Ongata Rongai and Ngong (all situated close to Nairobi) endorse the view that male Maasai outmigration from rural areas is occurring.

The demographic implications of such age- and sex-selective migration can only be hypothesised, and not substantiated. If men of marriageable age are leaving the more traditional rural areas of Maasailand permanently, and marriages in these rural areas remain predominantly between Maasai, then there is the possibility of a "marriage squeeze" effect. One outcome of this might be continued or even heightened levels of polygyny. Because of the relatively high levels of sexual networking reported for the Maasai, whether or not these migrating men eventually return to the traditional sphere is of interest, not least because of the potential for HIV transmission. Among Maasai men aged 15-40 years in peri-urban settlements, it is estimated that HIV levels exceed 30% (Meegan, Pers. Comm.).

That migration is a major issue, particularly for the Kenyan study sites cannot be denied. Rates of intercensal population increase in Narok and Kajiado districts are extremely high, due mainly to immigration from non-Maasai into the agriculturally high potential areas in each district. This has had far-reaching influences in terms of changes in the population density in some areas. In Narok, for example, population densities are

³⁹¹ Director, ICROSS.

far higher in the north than in the study site areas (Serneels, Pers. Com.)³⁹². In those areas with lower agro-ecological potential, and by definition those areas most suited to extensive agro-pastoralism, population densities remain lower. In the Tanzanian study sites, such pressures are not absent, although they are much lower. In other areas of Tanzanian Maasailand, such as Monduli, conditions more similar to Kenya have begun to develop (Pers. Ob.). A study of the demography of the Maasai undoubtedly would have benefited from a detailed consideration of levels and trends in migration, both temporally and spatially. This study, however, has had to confine itself to a cross-sectional consideration of the demography of Maasai living in traditionally rural "Maasai areas".

The cumulative impact of in-migration by non-Maasai, conversion of land to non-pastoral use and individual land tenure are extremely visible on a daily basis in Kenyan Maasailand. In those areas where these processes are more advanced, the issue of population numbers is a recurring theme in everyday life. Maasai families in those areas where land subdivision has become a reality are increasingly talking about the population-land relationship, and are concerned about the implications for their children and subsequent generations. Is it possible that this situation will create a situation where at least one of Coale's three "preconditions for fertility decline" is met? Namely, that people view fertility limitation as advantageous. That the means to control fertility are increasingly within an individual's calculus of consciousness cannot be denied³⁹³, wider issues of contraceptive service provision notwithstanding.

In Tanzania, such pressing issues are far less obvious, at least for the Maasai included in the SRDS. Whilst there are issues surrounding access to resources within the NCAA, the perception of a "problem" balance between land and people is far less pronounced, at least as evidenced in terms of how much conversation is devoted to the topic. Similarly, not a single Tanzanian Maasai woman asked me questions about family planning during the fieldwork, evidence either of lower levels of knowledge or no reason to ask the question. The far lower levels of access to family planning services in NCAA relative to the Kenyan study sites must also be taken into account. In terms of Coale's preconditions for fertility decline, none appear to have much relevance in the Tanzanian context relative to the Kenyan. This is not to imply some rural idyll for Tanzanian Maasai. Rather, the contemporary issues in Kenyan Maasailand are not present to anything like the same degree in the NCAA. While Kenya has had a highly capitalist approach, oriented towards privatised land and private enterprise, Tanzania's socialist outlook has oriented towards retaining collective land. With the exception of clearly defined land conversion events (e.g.: Ngorongoro Crater), the ability for Maasai in NCAA to practice traditional transhumance persists.

12.4 Ethnography and demography

In their survey of the methods and uses of anthropological demography, Basu and Aaby describe the lack of attention paid by demographers to ethnographies as an "important shortcoming" (1998:8). The utility of ethnography for demography has been a subsidiary but important theme running throughout this study, exploiting as fully as possible that information that is already available. In this sense, the potential use of ethnography developed its own sub-theme. How have demographers used

³⁹² Location-level population totals were available for both the 1979 and 1989 Kenya censuses, but boundary changes made analyses at this geographic level impossible.

³⁹³ As evidenced by the questions addressed to me during the fieldwork.

ethnography? What is best practice of the use of ethnography? How should demographers use ethnography? What are the limitations of ethnography?

Building on the theoretical perspective of Chapter Two, the contribution of ethnography at all stages of the research project has been demonstrated in every subsequent chapter. The framework of critical analysis suggested by Hammersley (1998) was demonstrated to be of practicable value to demographers. This study has refuted the suggestion that it is impossible for a quantitative demographic study to incorporate ethnographic information. Undoubtedly, by ignoring the ethnographic literature that is available, demographers must have occasionally "reinvented the wheel". That demographers have used ethnographies without due diligence is demonstrated. For example, the use of dated ethnographies without any apparent reference to this aspect is one such criticism. There is also evidence, as demonstrated by anthropologists with an interest in demography, of demographers using ethnography as a normative representation of reality. That is, the use by demographers of structural functional norms as a proxy for behaviour, and the assumption that behaviour is consistent with norms. Issues of agency and change are well developed within anthropology, and must be acknowledged by demographers.

While there are few societies in the world for which ethnographies do not exist, few populations are so well endowed with ethnographic literature as the Maasai. Is it simply the volume of ethnographic information available for the Maasai that has allowed the development of this theme? That the volume of Maasai ethnographies originally stimulated the development of these ideas cannot be denied. However, this does not necessarily suggest that the relevance of ethnography for demography is directly proportional to the number of available and relevant ethnographies for that population. Of greater importance in my opinion is that the ethnography, even if there is only one, is examined critically. Of course, the greater the number of relevant ethnographies, then the greater the likelihood, *ceteris paribus*, that the demographer will find information of use.

Ethnographic information can increase the quality of demographic data and analysis. In terms of large-scale demographic surveys such as DHS, would greater use of ethnographic information be at the expense of standardised definitions and concepts, increased pre-collection research notwithstanding? Surely advocating of more population-relevant definitions and concepts will increase the complexity of study design, execution and analysis? The counter argument to this, however, is that the application of standardised definitions and concepts can be at the expense of data validity and reliability. In this situation, the justification for standardisation becomes difficult; what is the use of measuring something that has no meaning or relevance for the population being studied? The Maasai-relevant definition of household (*olmarei*) used in this study is perhaps the clearest example of this in the present study. That the household definition used here was not directly comparable with "benchmark" definitions such as those of the United Nations does not preclude comparability with households in other populations.

Many ethnographies pre-date the beginnings of demographic data collection. In this respect, they provide the only opportunity to glean information of a historical nature. The compilation of demographically relevant historical information on the Maasai involved sources ranging from colonial poll-tax registers in Kenya to estimates of completed fertility by late nineteenth century explorers. The inclusion of such data is more than a colourful adjunct to the main study. Rather, it provides clues about the way

in which a group of people were viewed and/or dealt with by the colonial administration. It can be seen clearly from the ethnographic record that Maasai were ascribed a marginalised status, reinforcing notions of "Maasainess". Knowledge of historical perceptions can be seen to inform contemporary ideas of demographic behaviour

The one area of data collection in this study that did not fully integrate the ethnographic information, with implications for data quality and reliability, was that of age sets. While age set information were used as part of the event calendars for age estimation, it would have perhaps been more useful to simply record the age set for each man who had been circumcised but who did not know his age or year of birth. Age set data could have then been retrospectively converted into age groups in completed years, probably with more accuracy than conversion at the time of the interview. Of course, age set membership refers only to men who have been circumcised, but it is possible that direct recording of his information would have increased data quality for this sub-group at least, albeit in broad age groups.

Of particular interest to this study has been how the written record (including ethnographies, administrative and medical reports, travelogues) has created and maintained images of a population. Closely bound up with the ethnographic image of a population is the image of that population by non-members, based not on ethnography but assumed knowledge. For example, Maasai women tend to be portrayed in relation to Maasai men, who are in turn portrayed as conservative, proud, fierce, traditional and resistant to change. Given the "countless coffee table books" (Spear, 1993:1) devoted to the Maasai, it is acknowledged that the pictorial record has also played some role in developing and maintaining such vivid images (for example, Beckwith, 1980; Amin *et al.*, 1987). This imagery is not simply the product of ethnographies and photographs, it is also the identity ascribed by non-Maasai in both Kenya and Tanzania. In this respect, ethnographies provide important clues regarding the way in which the Maasai interact with non-Maasai and vice versa. For example, the provision of family planning services to rural Kenyan or Tanzanian women is longstanding. However, even in those areas of Maasailand that are physically close to potential service providers, there is relatively little emphasis on family planning services targeted at Maasai women. Although speculative, this probably has much to do with the assumption that traditional/conservative/resistant-to-change Maasai men will not allow their subordinate wives to use such a service, were it to be provided.

12.5 Field demography

The concept of a field demographer, one that is present throughout the data collection, is not a new one. Caldwell's "micro-demography" explicitly includes prolonged residence of the researcher at the site of data collection. It must be reiterated that during this study it was neither the intention nor the outcome that I became a "field anthropologist". What are the benefits of becoming a field demographer? In other words, would this study have been less well conducted if the enumerators had been trained and managed by a competent project manager, and I had simply received the data and analysed it? The answer must be "Yes". This is not simply a case of "having been there, done it and got the T-shirt". Seeing how data are collected, the reaction of respondents (and enumerators), and exposure to the context of the data all contributed to the quality of the data and its analyses.

Without residence throughout the data collection, the analyses contained in Chapters Five to Ten would not have been so complete. For example, it was only through reading local newspapers, listening to conversations, and asking questions, that the issue of land tenure in Kenya as a cause and effect of demographic change could be raised. Beyond the most cursory mention in published literature, it is not a topic that has received much explicit attention. Simply seeing day to day behaviour can contribute to an understanding of the determinants of demographic outcomes; for example, the change in milk containers from sterilised calabashes to soft drinks bottles, and the implications for morbidity. Meeting a dispensary nurse with a reputation for not respecting client confidentiality goes a long way towards an understanding of family planning service provision.

12.6 Triangulation

Triangulation, the use of multiple data and methods, is an approach rarely mentioned in demographic literature. Denzin (1997) suggests four basic types of triangulation: data; investigator; theory; and, methodological. He suggests that most research can be seen to stress one dominant method with combinations of each of these four as additional dimensions to the study. As a one-person study, this research did not involve any investigator triangulation. This involves the use of multiple rather than single observers of the same object; beyond the standard academic practice of discussing results and ideas with colleagues, investigator triangulation was not part of this study.

Data and methodological triangulation were, however, important components of this study. The explicit integration of ethnographic information within this demographic study is an integration of different data and methodology within the research. However, triangulation in this study has also involved the use of data from sources as disparate as personal observation, hospital and institutional records, management plans, historical records, epidemiological studies, and newspaper reports. This approach is nothing new in demography; demographers have always drawn upon a wide range of sources of information to inform and enrich their work. This study serves to reinforce the necessity of such an approach.

12.7 Future research

The increasing sedentarisation of traditionally nomadic and semi-nomadic pastoralist groups throughout sub-Saharan Africa is well-documented (Heald, 1998; Fratkin *et al*, 1999). Government policies often explicitly state sedentarisation as a "development" objective, ostensibly in order that nomadic populations might be better incorporated into a service provision infrastructure. Increasing sedentarisation has been associated with livestock losses (drought and raiding), creation of boundaries on previously extensive grazing rangelands, monetisation of the pastoral economy, and accessibility of service provision. From a demographic perspective, the next task is therefore to understand what the future implications of livelihood change and sedentarisation might be, for the Maasai in particular and pastoralists in general.

- Ahmed, J. (1986). "Polygyny and fertility among the Yoruba of western Nigeria." Journal of Biosocial Science 18: 63-73.
- Akama, J. S. (1999). "Marginalization of the Maasai in Kenya." Annals of Tourism Research 26(3): 716-718.
- Alan Guttmacher Institute (1999) Sharing responsibility: women, society and abortion worldwide Washington
- Amin, M. *et al* (1987) The last of the Maasai Cape Town, Struik
- AMREF (1996). Maasai Programme Annual Report. Nairobi, AMREF.
- AMREF (1997). Annual report for the Maasai programme. Nairobi, AMREF.
- AMREF (1999). An interim narrative report of an EU co-financed project: community based health care for nomads: expansion of the Entasopia project in Kenya. Nairobi, AMREF.
- Anderson, B. A. (1975) "Male age and fertility" Population Index 41(4): 561-566
- Anderson, D. M. & V. Broch-Due (1999) The poor are not us: poverty and pastoralism in eastern Africa James Currey: Oxford
- Arhem, K. (1981). The ecology of pastoral land use in the Ngorongoro Conservation Area. A background paper for a new management plan for the NCAA. Dar Es Salaam, University of Dar Es Salaam.
- Arhem, K., K. Homewood, *et al.* (1981). "A pastoral food system: the Ngorongoro Maasai in Tanzania." BRALUP Research Paper 70.
- Arhem, K. (1985a). The Maasai and the state: the impact of rural development policies on a pastoral people in Tanzania, IWGIA Document.
- Arhem, K. (1985b). Pastoral man in the Garden of Eden: the Maasai of the Ngorongoro Conservation Area, Tanzania. Uppsala, Uppsala Research Reports in Cultural Anthropology.
- Arriaga, E. (1983). "Estimating fertility from data on children ever born by age of mother." International Research Document United States Bureau of the Census 11.
- Asiema, J. K. and F. D. P. Situma (1994). "Indigenous people and the environment: the case of the pastoral Maasai of Kenya." Colorado Journal of International Environmental Law 5(1): 149-171.
- Atkinson, P. (1992) Understanding ethnographic texts Newbury Park, Sage.
- Atkinson, P. and M. Hammersley (1998). Ethnography and participant observation. Strategies of qualitative inquiry. N. L. Denzin and Y. S. Lincoln. Thousand Oaks, CA, SAGE Publications: 110-136.
- Awusabo-Aware, K. (1988) "Interpretations of Demographic Concepts: The Case of Ghana" Population and Development Review, 14(4): 675-687.
- Axinn, W. G. *et al* (1991) "The microdemographic community-study approach" Sociological methods and research 20(2): 187-217
- Basu, A. M. (1992) Culture, the status of women and demographic behaviour Oxford: Clarendon Press
- Basu, A. M. and P. Aaby (1998). The methods and uses of anthropological demography. Oxford, Clarendon Press.
- Basu, A. M. (1999). "Women's education, marriage and fertility in south Asia: Do men really not matter?" in Critical perspectives on schooling and fertility in the developing world. C. H. Bledsoe, J. B. Casterline, J. A. Johnson-Kuhn and J. G. Haaga. Washington, National Academy Press: 267-286.
- Baumann, O. (1894). Durch Maasailand zur Nilquelle. Berlin, Dietrich Reiner.
- Bean, L. L. and G. P. Mineau (1986). "The polygyny-fertility hypothesis: a re-evaluation." Population Studies 40(1): 67-82.
- Becker, S., K. Feyisetan, *et al.* (1995). "The effect of the sex of interviewers on the quality of data in a Nigerian family planning questionnaire." Studies in Family Planning 26(4): 233-240.
- Beckwith, C. (1980) Maasai (With Ole Saitoti) Elm Tree Books, London
- Behnke, R. H. and I. Scoones (1993) Rethinking range ecology: overview of paper presentations and discussions at the Commonwealth Technical Secretariat technical meeting on savanna development and pasture production 19-21 November, 1990 Woburn, UK.
- Bekure, S., P. N. de Leeuw, *et al.* (1991). Maasai herding: an analysis of the livestock production system of Maasai pastoralists in eastern Kajiado District, Kenya. Addis Ababa, International Livestock Centre for Africa.
- Bentley, G. R., T. Goldberg, *et al.* (1993). "The fertility of agricultural and non-agricultural

- traditional societies." Population Studies 47: 269-281.
- Bergsjö, P. (1993). "African intermezzo: Home birth, Masai style." Acta Obstet. Gynecol. Scand. 72: 597-598.
- Berntsen, J. (1976). "The Maasai and their neighbours." Africa 2: 1-11.
- Berntsen, J. L. (1979). "Economic variations among Maa-speaking people." Hadith: Ecology and history in east Africa 7.
- Bertrand, J. T. *et al* (1989). "Attitudes towards voluntary surgical sterilisation in four districts of Kenya." Studies in Family Planning 20(5): 281-288.
- Bicego, G. and O. B. Ahmad (1996). Infant and child mortality. Calverton, MD, Macro International.
- Blacker, J. G. C. (1965). "Use of sample surveys to obtain data on age structure of the population where respondents in a regular census enumeration cannot give accurate data: some Kenya experiments." World Population Conference 3: 126-130.
- Blacker, J. G. C. (1977) "The estimation of adult mortality in Africa from data on orphanhood" Population Studies 31: 107-128
- Blacker, J. G. C. (1994). "Some thoughts on the evidence of fertility decline in Eastern and Southern Africa." Population and Development Review: 200-205.
- Bledsoe, C. and G. Pison, Eds. (1994). Nuptiality in sub-Saharan Africa: contemporary anthropological and demographic perspectives. Oxford, Clarendon Press.
- Bledsoe, C. *et al* (1994). "Constructing natural fertility: The use of western contraceptive technologies in rural Gambia." Population and Development Review 20(1): 81-113.
- Bledsoe, C. H., J. B. Casterline, *et al.*, Eds. (1999). Critical perspectives on schooling and fertility in the developing world. Washington, National Academy Press.
- Bleek, W. (1987). "Lying informants: a fieldwork experience from Ghana." Population and Development Review 13(2): 314-322.
- Bongaarts, J. and R. G. Potter (1983). Fertility, biology and behaviour: an analysis of the proximate determinants. San Diego, Academic Press.
- Bongaarts, J., O. Frank, *et al.* (1984). "The proximate determinants of fertility in sub-Saharan Africa." Population and Development Review 10(3): 511-546.
- Bonini, N. (1995). "Tanzanian schooling patterns: the example of Maasai herders." : 577-594.
- Borgerhoff-Mulder, M. (1989). "Marital status and reproductive performance in Kipsigis women: re-evaluating the polygyny-fertility hypothesis." Population Studies 43(2): 285-304.
- Borgerhoff-Mulder, M. (1992). "Demography of pastoralists: preliminary data on the Datoga of Tanzania." Human Ecology 20(4): 383-405.
- Brainard, J. M. (1991). Health and development in a rural Kenyan community. New York, Peter Lang.
- Brantley, C. (1997). "Kikuyu-Maasai nutrition and colonial science: the Orr and Gilks study in late 1920s Kenya revisited." The International Journal of African Historical Studies 30(1): 49-86.
- Brass, W. (1964). Uses of census or survey data for the estimation of vital rates. African Seminar on Vital Statistics, Addis Ababa.
- Brass, W., Ed. (1968). The demography of tropical Africa. Princeton, Princeton University Press.
- Brass, W. and K. Hill (1973) "Estimating adult mortality from orphanhood" Proceedings of the International Population Conference, Liege Liege: IUSSP Vol. 3
- Brass, W. and C. L. Jolly, Eds. (1993). Population Dynamics of Kenya. Washington, National Academy Press.
- Brockerhoff, M. (1993) "Child survival in big cities: Are the poor disadvantaged?" Population Council Working Paper #58
- Brockerhoff, M. and P. Hewett (1998) Ethnicity and child mortality in sub-Saharan Africa New York: The Population Council
- Budd, J. W. & Guinnane, T. (1991) "Intentional Age-Misreporting, Age-Heaping, and the 1908 Old Age Pensions Act in Ireland" Population Studies, 45(3): 497-518.
- Cachia, C. (1960). "Mobile health units among the Masai." East African Medical Journal 37(3): 224-231.
- Cain, M. (1985). "On the relationship between landholding and fertility." Population Studies 39(1): 5-16.

- Cain, M. (1986). "Landholding and fertility: a rejoinder." Population Studies 49(2): 313-317.
- Cain, M. (1986). "Risk and fertility: reply to Robinson." Population Studies 40(2): 299-304.
- Caldwell, J. C. & P. Caldwell (1977) "The Role of Marital Sexual Abstinence in Determining Fertility: A Study of the Yoruba in Nigeria" Population Studies 31(2): 193-217.
- Caldwell, J. C. (1982). Theory of fertility decline. New York, Academic Press.
- Caldwell, J. and P. Caldwell (1988). "An overview of the potential and actual contribution of the anthropological approach to the understanding of factors affecting demographic variables." African Population Conference: IUSSP 3.
- J. C. Caldwell *et al* (1988) Micro-approaches to demographic research KPI
- Caldwell, J. C. and Hill, A. G. (1988) "Recent developments using micro-approaches to demographic research" in J. C. Caldwell *et al* Micro-approaches to demographic research KPI
- Caldwell, J. C. *et al* (1988) "Investigating the nature of population change in south India: experimenting with a micro-approach" in J. C. Caldwell *et al* (Eds) Micro-approaches to demographic research KPI
- Caldwell, J. C. *et al* (1992) "The Family and Sexual Networking in Sub-Saharan Africa: Historical Regional Differences and Present-Day Implications" Population Studies 46(3):385-410.
- Caldwell, J. C. (1998). "Review of "Anthropological Demography: towards a new synthesis"." Population and Development Review 24(1): 158-161.
- Campbell, B. C. *et al* (1999) "Settled Turkana" in Little, M. A., P. W Leslie Turkana herders of the dry savanna: ecology and behavioural response of nomads to an uncertain environment Oxford: OUP
- Campbell, D. J. (1979). "Development or decline: resources, land use and population growth in Kajiado District." Institute for Development Studies Working Paper 352: 23.
- Campbell, D. J. (1985). A regional approach to population-resource imbalance in rural Africa: a case study of Kajiado District, Kenya. Papers and Proceedings of applied geography conferences. W. J. Frazier . New York, SUNY. 8: 320-332.
- Campbell, D. J. (1999). "Response to drought among farmers and herders in southern Kajiado District, Kenya: a comparison of 1972-76 and 1994-95." Human Ecology 27(3): 377-416.
- Campbell, K. L. and J. W. Wood (1986). Fertility in traditional societies. Natural human fertility: Proceedings of the 23rd annual symposium of the Eugenics Society. P. Diggory, M. Potts and S. Teper. London, Macmillan Press.
- Cantrelle, P. and P. Livenais (1980). "Fecondite, allaitement et mortalite infantile: Differences inter-ethniques dans une meme region : Saloum (Senegal)." Population 3: 623-648.
- Chidambaram, V. C and T. W. Pullum (1981) "Estimating fertility trends from retrospective birth histories: sensitivity to imputation of missing dates" Population Studies 35(2): 307-320
- Clark, S. *et al* (1995). "Ten thousand Tonga: A longitudinal anthropological study from southern Zambia, 1956-1991." Population Studies 49(1): 91-110.
- Clay, D. C. and N. E. Johnson (1992). "Size of farm or size of family: which comes first?" Population Studies 46: 491-505.
- Cleland, J. (1996) "Demographic data collection in less developed countries" Population Studies 50(3): 433-450
- Cleland, J. and G. Kaufmann (1998). Education, fertility and child survival: unravelling the links. The methods and uses of anthropological demography. A. M. Basu and P. Aaby. Oxford, Clarendon Press: 128-152.
- Clignet, R. (1970). Many wives, many powers . Evanston
- Conrad, C. *et al* (1996) "East German Fertility After Unification: Crisis or Adaptation?" Population and Development Review, Vol. 22, No. 2. pp. 331-358.
- Conroy, R. M., M. E. Meegan, *et al.* (1999). "Solar disinfection of water reduces diarrhoeal disease: an update." Archives of disease in childhood 81: 337-338.
- Dahl, G. and A. Hjort (1976). Having herds: pastoral herd growth and household economy. Stockholm, University of Stockholm.
- Dawson, M. H. (1987). "The many minds of Sir Halford J. Mackinder: dilemmas of historical editing." History in Africa 14: 27-42.
- Denzin, N. K. (1997). Interpretive ethnography: Ethnographic practices for the 21st century. Thousand Oaks, California, SAGE Publications.
- Desai, S. and Jain, D. (1994) "Maternal employment and changes in family dynamics: the social

- context of women's work in rural South India" Population and Development Review 20(1): 115-136
- DeVany, A. and N. Sanchez (1977). "Property rights, uncertainty and fertility: an analysis of the effect of land reform on fertility in rural Mexico." Weltwirtschaftliches Archiv 113: 741-764.
- Devereux, G. (1976). A study of abortion in primitive societies: a typological, distributional and dynamic analysis of the prevention of birth in 400 preindustrial societies. New York, International Universities Press.
- DeVries, M. W. (1984). "Temperament and infant mortality." American Journal of Psychiatry 141: 1189-1194.
- DHS (1989). Kenya Demographic and Health Survey, 1989. Calverton, MD, Macro International.
- DHS (1992). Tanzania Demographic and Health Survey, 1991/2 Calverton, MD, Macro International.
- DHS (1993). Kenya Demographic and Health Survey, 1993. Calverton, MD, Macro International.
- DHS (1996). Tanzania Demographic and Health Survey, 1996 Calverton, MD, Macro International.
- DHS (1998). Kenya Demographic and Health Survey, 1998 Calverton, MD, Macro International.
- Diamond, I. *et al* (1999) "Female education and fertility: examining the links" in Bledsoe, C. H., J. B. Casterline, *et al.*, (Eds). Critical perspectives on schooling and fertility in the developing world. Washington, National Academy Press.
- Dirschl, H. J. (1966). Management and Development Plan for the Ngorongoro Conservation Area. Dar-Es-Salaam, Tanzanian Ministry of Agriculture, Forest and Wildlife.
- Dorjahn, V. R. (1959). The factor of polygyny in African demography. Continuity and change in African cultures. W. R. Bascom and M. J. Herskovitz. Chicago, Chicago University Press: 87-112.
- Duncan, G. J. and S. D Hoffmann (1990) "Welfare benefits, economic opportunities and out-of-wedlock births among black teenage girls" Demography 27(4): 519-535
- Dyson, T. and M. Murphy (1985). "The onset of fertility transition." Population and Development Review 11(3): 399-440.
- Ecosystems Ltd (1980) The status and utilisation of wildlife in Arusha Region, Tanzania Consultancy report to the Tanzanian Government Ecosystems Ltd, Nairobi
- Eggebeen, D. J. *et al* (1990) "Patterns of Adult Male Coresidence Among Young Children of Adolescent Mothers" Family Planning Perspectives 22(5): 219-223.
- Eliot, C. (1905). The East Africa Protectorate. London, Edward Arnold.
- Enghoff, M. (1990). "Wildlife conservation, ecological strategies and pastoral communities: a contribution to the understanding of parks and peoples in east Africa" Nomadic Peoples 25-27:93-107
- Entwistle, B. and W. M. Mason (1985). "Multilevel effects of socio-economic development and family planning programmes on children ever born." American Journal of Sociology 91: 616-649.
- Eriksen, T. H. (1993) Ethnicity and nationalism anthropological perspectives Boulder: WestView Press
- Evangelou, P. (1984) Livestock development in Kenya's Maasailand: pastoralists' transition to a market economy Boulder, WestView Press
- Fein, D. J. (1990) "Racial and ethnic differences in U.S. Census omission rates" Demography 27(2): 285-302
- Fischer, G. A. (1884). "Dr Fischer's journey in the Masai." Proceedings of the Royal Geographical Society vi: 76-83.
- Foran, W. (1936). A cuckoo in Kenya: The reminiscences of a pioneer police officer in British East Africa. London, Hutchinson.
- Fosbrooke, H. A. (1948). "An administrative survey of the Masai social system." Tanganyika notes and Records 26: 1-50.
- Fox, D. S. (1930) "Further notes on the Masai of Kenya Colony" Journal of the Royal Anthropological Institute 60: 447-465
- Frank, O. and G. McNicoll (1987). "An interpretation of fertility and population policy in

- Kenya." Population and Development Review 13(2): 209-243.
- Frank, O. (1983). "Infertility in sub-Saharan Africa: estimates and implications." Population and Development Review 9(1): 137-144.
- Fratkin, E. (1994). Problems of pastoral land tenure in Kenya: Demographic, economic and political processes among Maasai, Samburu, Boran, and Rendille, 1950-1990. Boston, African Studies Center: Boston University.
- Fratkin, E., et al (1999) "Health consequences of pastoral sedentarization among Rendille of northern Kenya" in D. M. Anderson & V. Broch-Due The poor are not us: poverty and pastoralism in eastern Africa James Currey: Oxford
- Fricke, T. E., S. H. Siyed, *et al.* (1986). "Rural Punjabi social organisation and marriage timing strategies in Pakistan." Demography 23(4): 489-508.
- Fricke, T. (1997). "The uses of culture in demographic research: a continuing place for community studies." Population and Development Review 23(4): 825-832.
- Fulton, D., S. C. Randall (1988) "Households, women's roles and prestige as factors determining nuptiality and fertility differentials in Mali" in J. C. Caldwell *et al* Micro-approaches to demographic research London: KPI
- Gaisie, S. (1990). Culture and health in sub-Saharan Africa. What we know about health transition: The cultural, social and behavioural determinants of health: The proceedings of an international workshop, Canberra, May 1989. J. C. Caldwell *et al.* Canberra, Australian National University. 2: 609-627.
- Galaty, J. G. (1981). "Land and livestock and Kenyan Maasai." Journal of Asian and African Studies 16(68-88).
- Galaty, J. G. (1983). "Ceremony and Society: the Poetics of Maasai Ritual." Man 18(2): 361-82.
- Galaty, J. G. (1992). "The land is yours: social and economic factors in the privatisation, sub-division and sale of Maasai ranches." Nomadic Peoples 30: 26-40.
- Galaty, J. G. and P. Bonte (1992). Herders, warriors and traders: Pastoralism in Africa, Westview Press.
- Ganon, M. F. (1975). The nomads of Niger. Population growth and socio-economic change in west Africa. J. C. Caldwell, N. O. Addo and S. K. Gaisie. Columbia, Columbia University Press: 694-701.
- Garenne, M. and E. van de Walle (1989). "Polygyny and fertility among the Serer of Senegal." Population Studies 43(2): 267-284.
- Garenne, M. (1994). "Do women forget their births? A study of maternity histories in a rural area of Senegal (Niakhar)." United Nations Population Bulletin 36: 43-54.
- Geertz, C. (1973) The interpretation of cultures: selected essays. New York: Basic Books
- Geertz, C. (1988) Works and lives: the anthropologist as author. Cambridge: Polity Press
- Geronimus, A. T. (1987) "On Teenage Childbearing and Neonatal Mortality in the United States" Population and Development Review 13(2): 245-279.
- Gorham, A. B. (1978). "The provision of education in pastoral areas." Pastoral Network Paper 6b.
- Gorham, A. B. (1980). "Education and social change in a pastoral society: Government initiatives and local responses to primary school provision in Kenyan Maasailand." Studies in comparative and international education 3.
- Graham, W., W. Brass, *et al.* (1989). "Estimating maternal mortality: the Sisterhood Method." Studies in Family Planning 20(3): 125-135.
- Grandin, B. E. (1983). The importance of wealth effects on pastoral production: a rapid method for wealth ranking. ILCA Pastoral Systems Research in sub-Saharan Africa: Proceedings of the workshop held at Addis Ababa, Ethiopia 21-24 March 1983. ILCA. Addis Ababa, ILCA: 237-254.
- Grandin, B. (1986) "Land tenure, sub-division and residential change on a Maasai Group Ranch" Bulletin of the Institute for Development Anthropology 4(2): 9-13
- Grandin, B (1991) in Bekure, S., P. N. de Leeuw, *et al.* (Eds.). Maasai herding: an analysis of the livestock production system of Maasai pastoralists in eastern Kajiado District, Kenya. Addis Ababa, International Livestock Centre for Africa.
- Grant, H. S. J. (1954). Reference letter from member for local government No.50851/1/II/II7 Dated (25/1/54).
- Greenhalgh, S. (1982). "Income units: the ethnographic alternative to standardisation."

- Population and Development Review 8 (Supplement): 70-91.
- Greenhalgh, S. (1990) "Toward a Political Economy of Fertility: Anthropological Contributions" Population and Development Review 16(1): 85-106.
- Greenhalgh, S. (1995) Situating fertility: anthropology and demographic inquiry Cambridge University Press
- Grogger, J. & S. Bronars (1993) "The Socioeconomic Consequences of Teenage Childbearing: Findings from a Natural Experiment" Family Planning Perspectives 25(4): 156-161+174.
- Gulliver, C. (1979). "Land alienation and sedentarisation in Kenya Maasailand." Discussion Paper Series: Dept. of Geography, Syracuse University 55: 1-56.
- Hajnal, J. (1953) "Age at Marriage and Proportions Marrying" Population Studies, 7(2): 111-136.
- Hammel E. (1990). "A theory of culture for demography." Population and Development Review 16(3): 455-485.
- Hammersley, M. and P. Atkinson (1983). Ethnography: Principles in practice. Cambridge, Cambridge University Press.
- Hammersley, M. (1998). Reading ethnographic research. London, Longman.
- Hammerslough, C. R. (1991). "Proximity to contraceptive services and fertility transition in rural Kenya." Demographic and Health Surveys World Conference Proceedings II: 1287-1304.
- Hampshire, K. (1998). Fulani mobility: causes, constraints and consequences of population movement in Northern Burkina Faso. University of London: 352. PhD.
- Handelman, D. (1977) "The organization of ethnicity" Ethnic Groups 1:187-200
- Haynes, W. S. (1944). Annual Report, Narok. Nairobi, Medical Department Report.
- Heald, S. (1998). Agricultural intensification and the decline of pastoralism: a case study from Kenya. African Studies Association (UK), SOAS.
- Hedlund, H. (1980). "Contradictions in the peripheralisation of a pastoral society: the Maasai." Review of African Political Economy 16: 15-34.
- Helmut, R. (1995). "Nachochoch - an example of the change of the living sphere of the Maasai of Northern Tanzania." GeoJournal 36(1): 49-55.
- Henfrey, W. J. (1937). Masai Reserve Venereal Safari. Nairobi, Medical Department Report.
- Henin, R. A. (1968). "Fertility differentials in the Sudan (with reference to the nomadic and settled populations)." Population Studies 22: 147-164.
- Henin, R. A. (1969). "The patterns and causes of fertility differentials in the Sudan." Population Studies 23: 171-198.
- Henin, R. A., A. Korten, *et al.* (1982). "Evaluation of birth histories: a case study of Kenya." WFS Scientific Report 36: 1-31.
- Henry, L. (1961). "Some data on natural fertility." Eugenics quarterly 8: 81-91.
- Hill, K. (1977) "Estimating adult mortality level from information on widowhood" Population Studies 31: 75-84
- Hill, K. and J. Trussell (1977). "Further developments in indirect mortality estimation." Population Studies 31(2): 313-334.
- Hill, A. G. and S. C. Randall (1984). "Differences géographiques et sociales dans la mortalité infantile et juvénile au Mali." Population 39(6): 921-946.
- Hill, A. G., Ed. (1985). Population, health and nutrition in the Sahel: Issues in the welfare of selected West African communities. London, KPI.
- Hill, A. G. and S. Randall (1985). Issues in the study of Sahelian pastoralists and agro-pastoralists. In A. G. Hill (Ed.) Population, health and nutrition in the Sahel: Issues in the welfare of selected west African communities. London, KPI.
- Hill, A. G. & S. Thiam (1988) "The structure of households amongst the Malian Fulani: linking form and process" in J. C. Caldwell *et al.* (1988) Micro-approaches to demographic research KPI
- Hill, K. (1977) "Estimating Adult Mortality Levels from Information on Widowhood" Population Studies, 31(1): 75-84.
- Hill, K. & J. Trussell (1977) "Further Developments in Indirect Mortality Estimation" Population Studies 31(2): 313-334.
- Hill, K. (1991). "Approaches to the measurement of childhood mortality: a comparative review." Population Index 57(3): 368-382.
- Hinde, A. and A. J. Mturi (2000) "Recent trends in Tanzanian fertility" Population Studies 54(2): 177-192

- Hinde, S. L. (1901) The last of the Masai London: Heinemann
- Hobcraft, J. N., N. Goldman, *et al.* (1982). "Advances in the p/f ratio methods for the analysis of birth histories." Population Studies 36(4): 291-317.
- Hodgson, D. L. (1999a). "Pastoralism, patriarchy and history: Changing gender relations among Maasai in Tanganyika, 1890-1940." Journal of African History 40: 41-65.
- Hodgson, D. L. (1999b). "'Once intrepid warriors': modernity and the production of Maasai masculinities." Ethnology 38(2): 121-150.
- Hogan, D. P. *et al* (1985) "Social and environmental factors influencing contraceptive use among black adolescents" Family Planning Perspectives 17(4): 165-169
- Holland, K. (1987). "Land, livestock and people: new demographic considerations for Kajiado Maasai." East African Pastoral Systems Project Discussion Paper 5: 1-40.
- Holland, K. (1998). The Maasai on the horns of a dilemma: development and education. Nairobi, Gideon S. Were Press.
- Hollis, A. C. (1905). The Maasai. Oxford, Clarendon Press.
- Hollis, A. C. (1910). "A note on the Masai system of relationship and other matters connected therewith." Journal of the Royal Anthropological Institute 25(1): 473-482.
- Hollos, M. and U. Larsen (1997). "From lineage to conjugality: the social context of fertility decisions among the Pare of northern Tanzania." Social Science and Medicine 45(3): 361-372.
- Homewood, K. and W. A. Rodgers (1984). "Pastoralism and conservation." Human Ecology 12: 431-441.
- Homewood, K. and A. W. Rodgers (1991). Maasailand Ecology. Cambridge, Cambridge University Press.
- Homewood, K. (1992). Pastoralists, environment and development in east African rangelands. Environment and Population Change. B. Zaba and J. Clarke. Liege, IUSSP.
- Homewood, K. (1995). "Development, demarcation and ecological outcomes in Maasailand." Africa 65(3): 331-350.
- Huntingford, G.W.B. (1953) The southern Nilo-Hamites International African Institute: London
- Hurskainen, A. (1984) Cattle and culture: the structure of a pastoral Parakuyo society Studia Orientalia: Finish Oriental Society
- Hutchinson, J. and A. D. Smith (1996). Ethnicity. Oxford, Oxford University Press.
- Ibrahim, B. and F. Ibrahim (1995). "Pastoralists in transition - a case study from Lengijape, Maasai Steppe." GeoJournal 36(1): 27-48.
- IPPF (1999) Reproductive Rights Wallchart
- Isaac, B. L. and Feinberg, W. E. (1982). "Female fertility and marital form among the Mende of rural upper Bambara chiefdom, Sierra Leone." Human Biology 54: 627-634.
- Jacobs, A. H. (1965a). The traditional political organisation of the pastoral Maasai. University of London.
- Jacobs, A. H. (1965b). "Bibliography of the Masai." African Studies Bulletin 8(3): 40-60.
- Jacobs, A. (1967). "A chronology of the pastoral Maasai." Hadith 1: 10-31.
- Jacobs, A. H. (1970). "Maasai marriage and bridewealth." Mila 1(1).
- Jacobs, A. H. (1973) in Molnos, A., Ed. Cultural source materials for population planning in East Africa (4 Vols.). Nairobi, East African Publishing House.
- Jacobs, A. H. (1979). "Maasai inter-tribal relations: belligerent herdsmen or peaceable pastoralists?" Senri Ethnological Studies 3: 33-49.
- Jacobs, A. H. (1984) An overview of population dynamics in Kenya's rangelands 1969-79 Report submitted to the Director of Research, Ministry of Agriculture and Livestock Development, Government of Kenya. Nairobi
- Jacobson, D. (1991) Reading ethnography Albany: SUNY Press
- Jejeebhoy, S. J. (1995) Women's education, autonomy, and reproductive behaviour: experience from developing countries. Oxford: Clarendon Press
- Jessor, R. *et al* (Eds.) 1996 Ethnography and human development: context and meaning in social inquiry Uni. Of Chicago Press
- Kenya, Republic of (1979). Kenya Population Census 1979. Nairobi, Government Printer.
- Kenya, Republic of (1989). Kenya 1989 Population Census. Nairobi, Government Printer.
- Kenya, Republic of (1993). Narok District Development Plan, 1994-1996. Nairobi, Government Printer.
- Kenya, Republic of (1994a). Narok District Development Plan, 1994-1996. Nairobi,

- Government Printer.
- Kenya, Republic of (1994b). Kajiado District Development Plan, 1994-1996. Nairobi, Government Printer.
- Kenya, Republic of (1996). Kenya 1989 Population Census Analytical Reports: Vol III "Population Dynamics of Kenya"; Vol. V: Mortality; Vol. VI: Migration and urbanisation; Vol. IV: Fertility and Nuptiality. Nairobi, Government Printer.
- Kenya, Republic of (1997). Kajiado District Development Plan, 1997-2001. Nairobi, Government Printer.
- Kenya, Republic of (1998). Narok District Development Plan, 1989-1993. Nairobi, Government Printer.
- Kertzner, D. I. (1997). The proper role of culture in demographic explanation. The continuing demographic transition. G. W. Jones *et al.* Oxford, Clarendon Press: 137-157.
- Kertzner, D. I. and T. Fricke, Eds. (1997). Anthropological demography: towards a new synthesis. Chicago, University of Chicago Press.
- Kijazi, A. *et al* (1997) "Human and livestock population trends" in Thompson, D. M., (Ed.). Multiple Land-use: The experience of the Ngorongoro Conservation Area Tanzania. Gland, Switzerland, IUCN.
- King, K. (1972). "Development and education in the Narok District of Kenya." African Affairs 71(285): 385-407.
- KIPOC (1993). Nutrition and needs of Loliondo and Salei Divisions, NGO District, Tanzania.
- Kipuri, N. (1978). "Engagement and marriage among the Maasai." Kenya Past and Present 9: 38-42.
- Kipuri, N. (1983). Oral literature of the Maasai. Nairobi, Heinemann Educational Books.
- Kipuri, N. (1989). Maasai women in transition: class and gender in the transformation of a pastoral society. Temple University. PhD
- Kipuri, N. (1998). Wildlife tourism and its impact on indigenous women in east Africa. Indigenous women: the right to a voice. D. Vinding. Copenhagen, International Work Group for Indigenous Affairs. 88: 171-182.
- Kiragu, K. (1995). "Female Genital Mutilation: A reproductive health concern." Population Reports J41 (XXIII(3)).
- Kituyi, M. (1990) Becoming Kenyans: socio-economic transformation of pastoral Maasai Nairobi: Acts Press
- Klumpp, D. and Kratz, C. (1993) "Aesthetics, expertise and ethnicity: Okiek and Maasai perspectives on personal ornament" in Spear, T. and R. Waller, Eds. Being Maasai: ethnicity and identity in east Africa. London, James Currey.
- Knodel, J (1998) "Using qualitative data for understanding old-age security and fertility" The methods and uses of anthropological demography A. M. Basu and P. Aaby 57-80 pp. Clarendon Press: Oxford
- Koenig, O. (1965) The Masai story
- Kokole, O. H. (1994). "The politics of fertility in Africa." PDR 20 (Supplement): 73-88.
- Konings, E., R. M. Anderson, *et al.* (1989). "Rates of sexual partner change among two pastoralist southern Nilotic groups in east Africa." AIDS 3(4): 245-247.
- Kramer, J. M. (1980). Production and reproduction at various levels of participation in the modern world system: an analysis of the effects of urbanisation on fertility for 12 communities in Kenya. The University of North Carolina at Chapel Hill: 371. PhD
- Kreager, P. (1982). "Demography *in situ*." Population and Development Review 8(1): 237-266.
- Kuczynski, R. R. (1948) Demographic Survey of the British Empire 1948-53 OUP
- Kuria (1989) Unpublished Master's Dissertation, Queen's University, Canada.
- Kurji, F. (1981). Human population trends within and around the Ngorongoro Conservation Area. Dar Es Salaam, University of Dar Es Salaam.
- Kuczynski, R. R. (1948) Demographic survey of the British Empire Oxford, OUP
- Larsen, U. (1994). "Sterility in sub-Saharan Africa." Population Studies 48: 459-474.
- Larsen, U. (1995) "Differentials in Infertility in Cameroon and Nigeria" Population Studies 49(2): 329-346.
- Leakey, L. S. B. (1930). "Some notes on the Masai of Kenya Colony." Royal Anthropological Institute of Great Britain and Ireland 60: 185-209.
- Lembikas, W., N. Sivini, *et al.* (1996). A study of primary education sector in Ngorongoro

- District, Tanzania. Ololosukwan, Tanzania, Pastoral Resource Management Centre.
- Leslie, P. W., P. H. Fry, *et al.* (1988). Biological, behavioural and ecological influences on fertility in Turkana pastoralists. Arid Lands. E. E. Whitehead. Westview, NY, Belhaven.
- Leslie, P. and P. Fry (1989). "Extreme seasonality of births among nomadic Turkana pastoralists." American Journal of Physical Anthropology 79: 100-115.
- Leslie, P., K. Campbell, *et al.* (1993). "Pregnancy loss in nomadic and settled women in Turkana, Kenya: a prospective study." Human Biology 65(2): 237-254
- Leslie, P. W. *et al.* (1999) "Fecundity and fertility" in Little, M. A., P. W. Leslie Turkana herders of the dry savanna: ecology and behavioural response of nomads to an uncertain environment Oxford: OUP.
- Lesthaeghe, R. (1977) The decline of Belgian fertility, 1800-1970 Princeton : Princeton U. P.
- Lesthaeghe, R. and J. Surkyn (1988). "Cultural dynamics and economic theories of fertility change." Population and Development Review 14(1): 1-45.
- Lesthaeghe, R., Ed. (1989a). Reproduction and social organisation in sub-Saharan Africa. Berkeley, University of California Press.
- Lesthaeghe, R., G. Kaufmann, *et al.* (1989b). The nuptiality regimes in sub-Saharan Africa. Reproduction and social organisation in sub-Saharan Africa. R. Lesthaeghe. Los Angeles, University of California Press: 238-337.
- Lesthaeghe, R., G. Verleye, *et al.* (1992). "Female education and factors affecting fertility in sub-Saharan Africa." Interuniversity Programme in Demography Working Paper 2.
- Lesthaeghe, R. and C. Jolly (1995). "The start of the sub-Saharan fertility transition: some answers and many questions." Journal of International development 7(1): 25-45.
- LeVine, R. A. and S. C. M. Scrimshaw (1983). Effects of culture on fertility: anthropological contributions. Determinants of fertility in developing countries: Fertility relation and institutional influences. R. A. Bulatao *et al.* New York, Academic Press. 2: 666-695.
- Little, M. A., P. W. Leslie (1999) Turkana herders of the dry savanna: ecology and behavioural response of nomads to an uncertain environment Oxford: OUP
- Llewelyn-Davies, M. (1974). Maasai women, Granada Television: Video.
- Llewelyn-Davies, M. (1978). Two contexts of solidarity among pastoral Maasai women. Women united, women divided: Cross-cultural perspectives on female solidarity. J. Caplan and J. M. Bujra. London, Tavistock: 206-338.
- Llewelyn-Davies, M. (1981). Women, warriors and patriarchs. Sexual meanings - the cultural construction of gender and sexuality. S. B. Ortner. Cambridge, Cambridge University Press: 330-358.
- Llewelyn-Davies, M. (1984). The women's olamal. London, BBC: Video.
- Llewelyn-Davies, M. (1993). Memories and dreams. London, BBC: Video.
- Lockwood, M. (1995). "Structure and behaviour in the social demography of Africa." Population and Development Review 21(1): 1-32.
- Locoh T. (1984) Fertility and family in West Africa: contemporary Southern Togo. Fecondite et famille en Afrique de l'Ouest. le Togo meridional contemporain.] Paris: Presses Universitaires de France
- Lopez-Corral, J. *et al.* (1992). "The absence of infection with the human immunodeficiency viruses type 1 and 2 in an African Masai population." Medicina Clinica 98(6): 237.
- Lorimer, F. (1954) Culture and human fertility UNESCO
- Mace, R. and R. Sear (1996) "Maternal mortality in a Kenyan pastoralist population" International Journal of Gynecology and Obstetrics 54(2) 137-141
- Madrigal, L. (1998). Statistics for anthropology. Cambridge, Cambridge university Press.
- Magnani, R. J. *et al.* (1995) "Men, marriage and fatherhood in Kinshasa, Zaire" International Family Planning Perspectives 21(1): 19-25+47
- Makacha, S. and G. W. Frame (1986). Population trends and ecology of Maasai pastoralists and livestock in Ngorongoro Conservation Area, Tanzania. Gland, Switzerland, IUCN.
- Malhotra, A. (1991) "Gender and changing generational relations: spouse choice in Indonesia" Demography 28(4): 549-570
- Malinowski, B. (1922) Argonauts of the western Pacific London: Routledge, Kegan and Paul
- Mammo, A. and S. P. Morgan (1986). "Childlessness in rural Ethiopia." Population and Development Review 12(3): 533-546.
- Mann, J. M., D. Tarantola (1996) AIDS in the world II : global dimensions, social roots, and

responses

- Matampash, K. (1993). The Maasai of Kenya. Indigenous views of land and the environment. S. H. Davis . Washington, The World Bank. 188.
- Mawani, F. N. (1996). Cultural Factors. MSc Queens University, Ontario: 130.
- McCabe, T. *et al* (1989). "Food security and nutritional status." Ngorongoro Conservation Development Plan 10.
- McCarthy, J. (1982). "Differentials in age at first marriage." World Fertility Comparative Surveys 19.
- McDonald, P. (1985). Social organisation and nuptiality in developing countries. Reproductive change in developing countries. J. Cleland and J. Hobcraft . Oxford, OUP.
- McKay, D. H. (1950). "Venereal disease in Masai. A field survey - June and July 1950." The East African Medical Journal: 451-457.
- McNicoll, G. (1980). "Institutional determinants of fertility change." Population and Development Review 6(3).
- Meegan, M., D. C. Morley, *et al.* (1994). "Child weighing by the unschooled: a report of a controlled study of growth monitoring over 12 months of Maasai children using direct recording scales." Transactions of the Royal Society of Tropical Medicine and Hygiene 88(6): 635-637.
- Meegan, M., D. Morley, *et al.* (1997). The Lancet 349: 886.
- Meekers, D. (1991) "The effect of imputation procedures on first birth intervals: evidence from five African fertility surveys" Demography 28(2): 249-260
- Meekers, D. (1992). "The process of marriage in Africa societies: a multiple indicator approach." Population and Development Review 18(1): 61-78.
- Meir, A. (1987). "Comparative vital statistics along the pastoral nomadism-sedentarism continuum." Human Ecology 15(1): 91-107.
- Merker, M. (1910). Die Masai: Ethnographische Monographie eines ostafrikanischen Semitenvolkes. Catholic Mission, Ngong, Kenya.
- Millman, S. R., R. G. Potter (1984) "The Fertility Impact of Spousal Separation" Studies in Family Planning, 15(3):121-126.
- Mineau, G. P., Trussell, J. (1982) "A specification of marital fertility by parents' age, age at marriage and marital duration" Demography 19(3): 335-349
- Mitzlaff, U. von (1994). Maasai women: life in a patriarchal society: Field research among the Parakuyo, Tanzania. Munich, Trickster Verlag.
- Moll, F. (1996). Maasai Language and Culture: Dictionary. Lemek, Maasai Centre.
- Molnos, A., Ed. (1973). Cultural source materials for population planning in East Africa (4 Vols.). Nairobi, East African Publishing House.
- Morgan, S. P. & R. R. Rindfuss (1984) "Household Structure and the Tempo of Family Formation in Comparative Perspective" Population Studies 38 (1): 129-139.
- Morley, D. (1991) "Kenya: Maasai warriors and their sexual partners" The Lancet 337: 667-8
- Mosley, W. H., L. C. Chen (1984) "An Analytical Framework for the Study of Child Survival in Developing Countries (in Introduction and Conceptual Framework)" Population and Development Review, Vol. 10, Supplement: Child Survival: Strategies for Research. 25-45.
- Mpoke, S. and K. E. Johnson (1993). "Baseline survey of pregnancy practices among Kenyan Maasai." Western Journal of Nursing Research 15(3): 298-313.
- Mturi, A., J. & A. Hinde (1994) "Fertility decline in Tanzania" Journal of Biosocial Science 26(4): 529-538
- Mueller, E. and K. Short (1983). Income and wealth as they affect the demand for children in developing countries. Determinants of fertility in developing countries. R. A. *et al* Bulatao. New York, Academic Press: 474-517.
- Muhsam, H. V. (1965). "The fertility of polygamous marriages." Population Studies 10: 3-16.
- Muhuri, P. K., A. K. Blanc, *et al.* (1994). "Socio-economic differentials in fertility." Demographic and Health Surveys Comparative Studies 13.
- Murdock, G. P. (1976). "Ethnographic atlas: a summary." Ethnology 6: 109-234.
- Murray, M. J., A. B. Murray, *et al.* (1992). "Does chronic undernutrition in adult Masai influence morbidity and survival?" Proceedings of the Nutrition Society 52(1): 107A.
- Nag, M. (1980). "How modernisation can also increase fertility." Current Anthropology 21(5): 571-587.
- Nangawe, E., E. Rowberg, *et al.* (1984). Project description: Maasai health services, Tanzania.

New York, Center for Population and Family Health.

Nangawe, E., E. Rowberg, *et al* (1985) "Community participation in health programs: experiences from the Maasai health services project, Tanzania" Columbia University Center for Population and Family Health Working Paper 18

Narman, A. (1990). "Pastoral peoples and the provision of educational facilities: a case study from Kenya." Nomadic Peoples 25-27: 108-121.

Nathan M. A. *et al* (1996) "Sedentism and child health among Rendille pastoralists of northern Kenya." Soc Sci Med. 43(4):503-15.

Natural People's World (1994) Project Proposal Document Phase I of the Economic Development Programme for NCA Pastoralists. NPW. Copenhagen.

NCAA (1993). Results of 1993 human and livestock population census. Ngorongoro, NCAA.

NCAA (1999). 1998 aerial boma count, 1999 people and livestock census, and human population trend between 1954 and 1999 in the NCAA. Ngorongoro, Tanzania, NCAA.

Ndagala, D. K. (1982). "Operation Imparnati: the sedentarisation of the pastoral Maasai in Tanzania." Nomadic Peoples 10: 28-39.

Nestel, P. (1986). Nutrition of Maasai women and children in relation to subsistence food production. University of London.

Nestel, P. and C. Geissler (1986). "Potential deficiencies of a pastoral diet: a case study of the Maasai." Ecology of food and nutrition 19: 1-10.

Njoka, T. J. (1979) Ecological and socio-cultural trends of Kaputiei Group Ranch in Kenya PhD Berkeley pp.318

Nkinyangi, J. A. (1981). Education for nomadic pastoralists: development planning by trial and error. The future of pastoral people: Proceedings of a conference held in Nairobi, Kenya, 4-8 August, 1980. J. G. Galaty *et al.* Ottawa, International Development Research Centre: 183-196.

Oddie, C. (1994). Enkop ai: My life with the Maasai. East Roseville, NSW, Simon and Schuster.

Olusanya, P. O. (1971). "The problem of multiple causation in population analysis, with particular reference to the polygamy-fertility hypothesis." Sociological review 19: 165-178.

Orubuloye, I. O. & J. C. Caldwell (1975) "The Impact of Public Health Services on Mortality: A Study of Mortality Differentials in a Rural Area of Nigeria" Population Studies, 29(2) 259-272.

Orr, J. B. and J. L. Gilks (1931). Studies of nutrition: the physique and health of two African tribes. London, HMSO.

Page, H. J. and R. Lesthaeghe, Eds. (1981). Child spacing in tropical Africa: traditions and change. London, Academic Press.

Parkin, D., D. Nyamwaya (1987) Transformations of African marriage Manchester: Manchester University Press.

Pebley, A. R., Mbugua, W. (1989) "Polygyny and fertility in sub-Saharan Africa" in R. Lesthaeghe (Ed.) Reproduction and social organisation in sub-Saharan Africa Berkeley, University of California Press

Perkin, S. (1987) Wet season ground census 1987 Preliminary Report. Ngorongoro Conservation and Development Project. IUCN. Nairobi

Pison, G. (1986). "La demographie de la polygamie." Population 41: 93-122.

Pitshandenge, I. and A. Ngondo (1982). "De la nuptialite et fecondite des polygames: le case des Yaka de Popokababa (Zaire)." Annales du Musee Royale de l'Afrique Centrale 109.

Pollak, R. A. & S. C. Watkins (1993) "Cultural and Economic Approaches to Fertility: Proper Marriage or Mesalliance?" Population and Development Review, 19(3): 467-496.

Podlewski, A. (1975). "Cameroon" in. Population growth and socio-economic change in west Africa. J. C. Caldwell. New York.

Pool, D. I. (1968). "Conjugal patterns in Ghana." Canadian Review of Sociology and Anthropology 5: 241-253.

Potkanski, T. (1993). Pastoral economy, property rights and traditional mutual assistance mechanisms among the Ngorongoro and Salei Maasai of Tanzania. London, IIED.

Poukouta, P. (1994) "The fertility of the Herero of Ngamiland: is there evidence of recent decline?" Pennsylvania State University, Population Research Institute: Population Research Institute Working Paper 94-19

- Prentice, A. & Prentice, A. (1988) "Reproduction against the odds" New Scientist 118 (1608): 42-49
- Powell, B. A. and L. Pritzker (1965). "Effects of variation in field personnel on census results." Demography 2: 8-32.
- Randall, S. C. (1984a). Use of ethnological knowledge in the collection of demographic data. African Population Conference, Dakar, IUSSP.
- Randall, S. C. (1984b) A comparative demographic study of three Sahelian populations: marriage and childcare as intermediate determinants of fertility and mortality PhD Thesis
- Randall, S. C. (1994). Are pastoralists demographically different from sedentary agriculturalists? Environment and population change. B. Zaba and J. Clarke. Liege, IUSSP: 491.
- Reher, D. (1995) "Wasted Investments: Some Economic Implications of Childhood Mortality Patterns" Population Studies 49(3): 519-536.
- Renne, E .P. (1995) "Houses, Fertility, and the Nigerian Land Use Act Population and Development Review 21(1):113-126.
- Reynar, S. P. and C. Bouquet (1975). Chad. Population growth and socio-economic change in west Africa. J. C. Caldwell. New York.
- Rigby, P. (1976) Cattle, capitalism and class: IIParakuyo Maasai transformations Philadelphia: Temple University Press
- Rindfuss, R. R. & S. P. Morgan (1983) "Marriage, Sex, and the First Birth Interval: The Quiet Revolution in Asia" Population and Development Review, 9(2): 259-278.
- Romaniuc, A. (1980). "Increase in natural fertility during the early stages of modernization: evidence from an African case study, Zaire." Population Studies 34(2): 293-310.
- Romaniuc, A. (1988). La polygamie et la parente en Afrique tropicale: le point de vue d'un demographie. African Population Conference, Dakar, IUSSP.
- Ross, J. *et al* (1999) Profiles for family planning and reproductive health programmes in 116 countries Glastonbury: The Futures Group International
- Roth, E. A. (1986a). "The demographic study of pastoral peoples." Nomadic Peoples 20: 63-76.
- Roth, E. A. (1986b). Demography of Toposa Agro-Pastoralists of Southern Sudan. Sudan, UNICEF.
- Roth, E. A. (1991). "Education, tradition, and household labour among Rendille pastoralists of Northern Kenya." Human Organisation 50(2): 136-141.
- Roth, E. A. (1994). Demographic systems: two east African examples.
- Rugene, N. and B. Newbery (1998). "No more sleeping with the enemy." New Statesman Dec: 67-68.
- Rumford, J. and S. Greene (1979). "A study of the correlation bias of unrecorded events by two independent enumeration systems." Population Studies 33(1): 181-188.
- Rutten, M. M. E. M. (1991). Selling wealth to buy poverty: the process of the individualisation of land ownership among the Maasai pastoralists of Kajiado District, Kenya, 1890-1990. Breitenbach, Nimegien.
- Rutten, M. M. E. M. (1998). Land tenure frontiers and food security among Maasai pastoralists in Kenya. The Arid Frontier. H. J. Bruins and H. Lithwick. Netherlands, Kluwer Academic Publishers: 185-208.
- Saitoti, T. Ole (1986) The worlds of a Maasai warrior: an autobiography University of California Press
- Saitoti, T. Ole (1991) Maasai London: Elm Tree Books
- Sandford, G. R. (1919). An administrative and political history of the Masai Reserve. London, Waterlow and Sons.
- Sankan, S. S. Ole. (1976) The Maasai Nairobi: East African Literature Bureau
- Sankan, S. S. Ole. (1979) Intepen e Maasai Nairobi: Kenya Literature Bureau
- Schermerhorn, R. A. (1978) Comparative ethnic relations: a framework for theory and research Chicago: University of Chicago Press
- Schujter, W. A. and C. S. Stokes (1982). "Agricultural policies and human fertility: some emerging connections." Population Research and Policy Review 1(3): 225-244.
- Scott, S. and S. Singh (1981). "Problems of data collection in the World Fertility Survey." World Fertility Survey Conference 1980: Record of Proceedings III: 13-76.
- Shaikh, K., M. A. Aziz, *et al.* (1987). "Differentials of fertility between polygynous and monogamous marriages in rural Bangladesh." Journal of Biosocial Science 19: 49-56.

- Sheldon, M. F. (1892) Sultan to sultan: adventures among the Masai and other tribes of east Africa
- Shelford, F. (1910) "Notes on the Masai" Journal of the African Society 9: 267-269
- Shryock, H. S., J. S. Siegel (1976) The methods and materials of demography London: Academic Press
- Sicard, G. M. (1998) A tale of a Maasai girl Lewes: Book Guild
- Sindiga, I. (1984). "Land and population problems in Kajiado and Narok, Kenya." African Studies Review 27(1): 23-39.
- Sindiga, I. (1986). Population and development in Maasailand. Syracuse University. PhD
- Sindiga, I. (1987). "Fertility control and population growth among the Maasai." Human Ecology 15(1): 53-66.
- Sindiga, I. (1992a). "The future of Maasai pastoralists." Professional Geographer 44(1): 101-102.
- Sindiga, I. (1992b) "Ethnomedicine and health care in Kenya" Final technical report to the International Development Research Centre for Project 3-P-87-0231 Eldoret: Moi University
- Smith, J. K. (1989) The nature of social and educational enquiry: empiricism versus interpretation Norwood: Ablex.
- Smith, J. E. and P. R. Kunz (1976). "Polygyny and fertility in nineteenth century America." Population Studies 30: 465-480.
- Southgate, C. and D. Hulme (2000). Uncommon property: the scramble for wetland in southern Kenya. African enclosures? Social dynamics of land and water.
- Spear, T. (1993a) "Introduction" in Spear, T. and R. Waller, Eds. (1993). Being Maasai: ethnicity and identity in east Africa. London, James Currey.
- Spear, T. (1993b) "Being "Maasai", but not "People of Cattle": Arusha agricultural Maasai in the Nineteenth Century" in Spear, T. and R. Waller, Eds. (1993). Being Maasai: ethnicity and identity in east Africa. London, James Currey.
- Spear, T. and R. Waller, Eds. (1993). Being Maasai: ethnicity and identity in east Africa. London, James Currey.
- Spencer, P. (1973). Nomads in alliance: symbiosis and growth among the Rendille and Samburu of Kenya. London, OUP.
- Spencer, P. (1988) The Maasai of Matapato: a study of rituals of rebellion Manchester: Manchester University Press.
- Spencer, P. (1990). Time and the boundaries of the economy in Maasai. Property, poverty and people: changing rights in property and problems of pastoral development. P. T. W. Baxter and R. Hogg. Manchester, Manchester University Press: 121-127.
- Spencer, P. (1993) "Becoming Maasai, being in time" in Spear, T. and R. Waller, Eds. Being Maasai: ethnicity and identity in east Africa. London, James Currey.
- Spencer, P., T. Ole Chiene (1993) The world of Telelia: Reflections of a Maasai woman in Matapato" in Spear, T. and R. Waller, Eds. Being Maasai: ethnicity and identity in east Africa. London, James Currey.
- Spencer, P. (1998). The pastoral continuum: the marginalization of tradition in East Africa. Oxford, Clarendon Press.
- Spradley, J.P. (1980) Participant Observation Fort Worth: Harcourt, Brace, Jovanovich
- Stambach, A. (1996). "'Seeded" in the market economy: schooling and social transformations on Mount Kilimanjaro." Anthropology and Education Quarterly 28(4): 545-567.
- Stenning, D. J. (1959). Savannah nomads: a study of the Wodaabe pastoral Fulani of Western Bornu Province, Northern Region, Nigeria. London, OUP.
- Stiles, D. N. (1983). "Desertification and pastoral development in northern Kenya." Nomadic Peoples 13: 1-14.
- Stokes, C. S. and W. A. Schujter (1984). Access to land and fertility in developing countries. Rural development and human fertility. W. A. Schujter and C. S. Stokes. New York.
- Stokes, C. S., W. A. Schujter, *et al.* (1986). "Is the relationship between landholding and fertility spurious? A response to Cain." Population Studies 49(2): 305-312.
- Suchindran, C. M. *et al* (1985) "The Effects of Post-marital Childbearing on Divorce and Remarriage: An Application of Hazards Models with Time-dependent Covariates" Population Studies 39(3): 471-486.
- Swift, J. (1977). "Sahelian pastoralists: underdevelopment, desertification, and famine." Annual

Review of Anthropology 6: 457-478.

Swift, J. (1981). Labour and subsistence in a pastoral economy. Seasonal dimensions to rural poverty. (Eds.) Longhurst *et al* London, Frances Pinter

Swift, J. (1986). "The economics of production and exchange." in Adamu, M, Kirk-Greene, A (Eds.) Pastoralists of the West African savanna.

Swift, J. (1990). Providing services for nomadic peoples. New York, UNICEF

Szabo, R. & R. V. Short (2000) "How does male circumcision protect against HIV infection?" British Medical Journal 320: 1592-1594

Tabutin, D. and E. Akoto (1992). Socio-economic and cultural differentials in the mortality of sub-Saharan Africa. Mortality and society in sub-Saharan Africa. E. van de Walle, G. Pison and M. Sala-Diakanda. Oxford, Clarendon Press: 32-64.

Talbot, L. M. (1964). Ecology of western Maasailand, East Africa. University of California, Berkeley. (PhD Thesis)

Talbot, L. M. (1986). "Demographic factors n resource depletion and environmental degradation in East African rangelands." Population and Development Review 12: 441-451.

Talle, A. (1987). "Women as heads of houses: the organisation of production and the role of women among pastoral Maasai." Ethnos 1-2: 50-80.

Talle, A. (1988) Women at a loss: changes in Maasai pastoralism and their effects on gender relations Dept. of Social Anthropology, University of Stockholm.

Talle, A. (1994). "The making of female fertility: anthropological perspectives on a bodily issue." Acta Obstet Gynecol Scand 73: 280-283.

Talle, A. (1995) in Klepp, K. I., P. M. Biswalo, *et al.*, Eds. Young people at risk: fighting AIDS in Northern Tanzania. Oslo, Scandinavian University Press.

Talle, A. (1999) "Pastoralists at the border: Maasai poverty and the development discourse in Tanzania" in D. M. Anderson & V. Broch-Due The poor are not us: poverty and pastoralism in eastern Africa James Currey: Oxford

Tanganyika Territory (1931) Census of the native population Dar Es Salaam

Tanzania, United Republic of. (1971). 1967 Population Census: Economic Statistics. Dar Es Salaam, Bureau of Statistics.

Tanzania, United Republic of. (1988). 1988 Population Census: National profile, Report of regional seminars, observations and recommendations. Dar Es Salaam, Bureau of Statistics.

Thebaud, B. (1995) "Human demography and animal demography in pastoral societies of the Sahel: towards a better understanding of the pastoral economy" In: Economic and demographic change in Africa, edited by Archie Mafeje, Samir Radwan. Oxford: Oxford University Press: 36-46.

Thomas, N. (1991). "Land, fertility and population establishment." Population Studies 45(3): 379-398.

Thompson, D. M., Ed. (1997). Multiple Land-use: The experience of the Ngorongoro Conservation Area Tanzania. Gland, Switzerland, IUCN.

Thomson, J. (1885). Through Masailand. London, Sampson, Low, Marston, Searle and Rivington.

Tignor, R. L (1976) The colonial transformation of Kenya : the Kamba, Kikuyu and Maasai from 1900 to 1939 Princeton ; Guildford : Princeton University Press

Timaeus, I. (1991a). "Measurement of adult mortality in less developed countries: a comparative review." Population Index 57(552-68).

Timaeus, I. (1991b). "Estimation of mortality from orphanhood in adulthood." Demography 27(213-27).

Timaeus, I. (1991c). "Estimation of adult mortality from orphanhood before and since marriage." Population Studies 45(455-72).

Timaeus, I. and A. Reynar (1998). "Polygynists and their wives in sub-Saharan Africa: an analysis of five Demographic and Health Surveys." Population Studies 52(2): 145-162.

Todaro, M. (1999). Economic Development. Reading, MA, Addison Wesley Longman.

Tonkin, E. *et al* (1989) History and ethnicity London: Routledge

Trussell, J. T. (1975). "A re-estimation of the multiplying factors for the Brass technique for determining childhood survivorship rates." Population Studies XXIX(1): 97-108.

Tucker, G. M. (1986) "Barriers to modern contraceptive use in rural Peru" Studies in Family

Planning 17(6): 308-316

Turke, P.W. (1989) "Evolution and the demand for children" Population and Development Review 15(1): 61-90

Turke, P. W. (1991) "Theory and wealth flows and old-age security: a reply to Fricke" Population and Development Review 17(4): 687-702

Ukaegbu, A. O. (1977). "Fertility of women in polygynous unions in rural Eastern Nigeria." Journal of marriage and the family 39: 397-404.

UNAIDS (1999) www.unaids.org

United Nations. (1980). Principles and recommendations for population and housing censuses. New York, Department of International Social and Economic Affairs.

United, Nations. (1983). Manual X: Indirect techniques for demographic estimation. New York, United Nations.

United Nations. (1988a). MortPak Lite: The United Nations software package for mortality measurement. New York, United Nations.

United Nations. (1988b). First marriage: patterns and determinants. New York, United Nations.

United Nations. (1990). Step-by-step guide to the estimation of child mortality. New York, United Nations.

United Nations (1999) Human Development Report UNDP

Valadez, J. J., P. M. Loolpapit, *et al.* (1999). "HIV and syphilis serostatus of antenatals in traditional Maasai pastoralist communities in Kajiado District, Kenya: 1989-1992." Tropical Doctor 29: 94-98.

Vogel, L. C., A. S. Muller, *et al.* (1974). Health and disease in Kenya. Nairobi, Kenya Literature Bureau.

Walle, E. van de. (1965). "The relation of marriage to fertility in African demographic inquiries." Demography 2: 302-308.

Walle, E. van de. (1968). Marriage in African censuses and inquiries. The demography of tropical Africa. W. Brass. Princeton, NJ, Princeton University Press: 183-238.

Walle, E. van de. (1985). Community-level variables and institutional factors in the study of African nuptiality. The collection and analysis of community data. J. B. Casterline . Voorburg, International Statistical Institute.

Walle, E. van de, G. Pison, *et al.*, Eds. (1992). Mortality and society in sub-Saharan Africa. Oxford, Clarendon Press.

Walle, E. van de. (1993). Recent trends in marriage ages. Demographic change in sub-Saharan Africa. K. A. Foote, K. H. Hill and L. G. Martin. Washington, National Academy Press.

Walle, E. van de. and D. Meekers (1994). Marriage drinks and kola nuts. Nuptiality in sub-Saharan Africa: contemporary anthropological and demographic perspectives. C. Bledsoe and G. Pison. Oxford, Clarendon Press. 57-73.

Walle, F. van de (1975) "Migration and fertility in Ticino" Population Studies 29: 447-462

Waller, R. (1979). The Lords of Africa: the Maasai in the mid nineteenth century. Cambridge, CUP.

Waller, R. (1988). Emutai: crisis and response in Maasailand, 1883-1902. The ecology of survival. D. Johnson and D. Anderson.

Waller, R. (1993) "Conclusions" in Spear, T. and R. Waller, Eds. Being Maasai: ethnicity and identity in east Africa. London, James Currey.

Waller, R. (1999) "Pastoral poverty in historical perspective" in D. M. Anderson & V. Broch-Due The poor are not us: poverty and pastoralism in eastern Africa James Currey: Oxford

Ware, H. (1977). "Language problems in demographic fieldwork in Africa: the case of the Cameroon Fertility Survey." WFS Scientific Reports 2.

Weinberger, M. B. (1987). "The relationship between women's education and fertility: selected findings from the World Fertility Surveys." International Family Planning Perspectives 31(2): 35-46.

Western, D. (1982). "The environment and ecology of pastoralists in arid areas." Development and change 13: 183-211.

Westoff, C. F., A. K. Blanc, *et al.* (1994). "Marriage and entry into parenthood." Demographic and Health Surveys Comparative Studies 10.

White, L. (1990). The comforts of home: prostitution in colonial Nairobi. Chicago, University of Chicago Press.

- Whitehouse, L. E. (1933) "Masai social customs" Journal of the East African and Uganda Natural History Society 47-8:146-153
- WHO (1991). Infertility: a tabulation of available data on prevalence of primary and secondary infertility. Geneva, World Health Organisation.
- WHO (1996). Revised 1990 estimates of maternal mortality: a new approach by WHO and UNICEF. Geneva, World Health Organisation.
- Wilson, C. (Ed.) (1985) The Dictionary of demography Basil Blackwell: Oxford
- Wood, J. W. (1990). "Fertility in anthropological populations." Annual Review of Anthropology 19: 211-242.
- Woodburn, F. (2000). Social, cultural and demographic factors of HIV transmission dynamics among the Maasai of Loliondo Game Controlled Area Northern Tanzania. MSc Thesis SOAS.

