



Durham E-Theses

The socio-economic status of women in central Sudan

Bowyer, A J

How to cite:

Bowyer, A J (1985) *The socio-economic status of women in central Sudan*, Durham theses, Durham University. Available at Durham E-Theses Online: <http://etheses.dur.ac.uk/7141/>

Use policy

The full-text may be used and/or reproduced, and given to third parties in any format or medium, without prior permission or charge, for personal research or study, educational, or not-for-profit purposes provided that:

- a full bibliographic reference is made to the original source
- a [link](#) is made to the metadata record in Durham E-Theses
- the full-text is not changed in any way

The full-text must not be sold in any format or medium without the formal permission of the copyright holders.

Please consult the [full Durham E-Theses policy](#) for further details.

THE SOCIO-ECONOMIC STATUS OF WOMEN IN CENTRAL SUDAN

A.J. Bowyer B.A.

1985

University of Durham
Department of Geography

The copyright of this thesis rests with the author.
No quotation from it should be published without
his prior written consent and information derived
from it should be acknowledged.

A dissertation submitted in fulfilment of the requirements for the
degree of Master of Arts in Geography.



16. JUL. 1985

To my Parents

PREFACE

This dissertation is the outcome of a two year period of part-time research in the Central region of Sudan, which was conducted under the auspices of the Population Studies Centre of the Faculty of Economics and Rural Development in the University of Gezira, Wad Medani, Sudan.

Work began in October 1982 with a literature survey of relevant material held in Sudan, particularly in the various government ministries and in the university departments in Khartoum.

The main aim of the research project was to provide a general description and explanation of the socioeconomic status of women in Central Sudan, since the available data and literature concerning women's lives was found to be basic and minimal. Particular attention was paid to how Sudan's largest development project, the Gezira Irrigation Scheme has affected women in the region since a secondary aim of this project was to contribute to the understanding of the nature, level and effects of the integration or non-integration of women in development planning. The research approach used was a questionnaire-based social survey, in which heads of sample households and the female members of these households were interviewed to obtain information about the households' general standard of living and the economic, social, educational and demographic background and day-to-day lives of women.

The author would particularly like to thank Professor L.R. Mills of the University of Gezira and Professor J.I. Clarke of the Department of Geography, University of Durham, England for their invaluable advice and assistance.

ABSTRACT

Sexual inequality is rooted in many early histories and cultures and has often been compounded by a modernisation process imposed from the West which has progressively lowered the status of women since benefits have accrued mainly to the male sector of society. In the developing world where general living conditions are poor and the impact of development programmes most profound, the male/female differential of opportunity and expectation is consequently widening and the conditions of women's lives becoming increasingly restrictive.

In Central Sudan the level of socio-economic development is low by global standards. The particular sociocultural and socioeconomic characteristics of the population must be taken into account when attempting to describe and explain the status of women in the region. In Central Sudan, Islam is of fundamental significance because of its influence on the male/female differential in general and because the religious orientation of the population influenced the effects of development planning in this region on the lives and status of women.

Central Sudan is the home of Sudan's largest development project - the Gezira Irrigation Scheme. The influence of the Scheme is investigated here using a questionnaire-based research approach and seven sample villages. These villages are situated in areas which have been involved in the Scheme for differing lengths of time - sixty, thirty and ten years. This provided a crude representation of the temporal changes in socio-economic conditions which are attributable to the influence of the Scheme.

The Gezira Scheme has intervened in the process of change over an extensive geographical and social area involving the inhabitants of the area and migrant peoples from outside. Most indigenous households received tenancies but many Western Sudanese and non-nationals, particularly Nigerians, were attracted to the Scheme as wage-labourers.

These latter groups experience much poorer general standards of living. Racial origin, then, has become a significant determinant of status in this region.

The economic rather than the social impact of the Scheme, however, has received over-riding attention from planners and academics alike. This study aims to compensate a little for the deficiency in social awareness by examining the lives and status of the women of Central Sudan in the context of a theoretical and methodological framework within which women's role in development can be studied. Demographic and development theories are particularly significant.

Without a clearer theoretical and methodological orientation than exists at present in studies of women's status, research results will not enter mainstream academic thought nor mainstream policy formulation. The interpretation and discussion of research results in this project, therefore, acknowledge this basic fact.

CONTENTS

	<u>Page</u>
Preface	i
Abstract	ii
Contents	iv
Figures	vi
Tables	vii
 <u>CHAPTER ONE : INTRODUCTION AND THEORETICAL FRAMEWORK</u>	
I <u>INTRODUCTION</u>	1
(i) Women and development	1
(ii) Defining status and seeking an appropriate methodology	2
(iii) Key issues.....	4
(iv) Women's status in Central Sudan	6
II <u>THEORETICAL FRAMEWORK</u>	8
(v) Social stratification of the sexes	8
(vi) Developmentalism and demographic theory	8
(vii) Conclusion : objectives	15
 <u>CHAPTER TWO : DATA OVERVIEW AND GEOGRAPHICAL CONTEXT</u>	
I <u>DATA OVERVIEW</u>	18
(i) The research process : conceptualisation, observation, description and explanation	18
(ii) Data deficiencies in the developing world	19
(iii) Sudan : demographic data	20
(iv) Implications for research	24
(v) Background research projects	24
II <u>GEOGRAPHICAL CONTEXT</u>	
(vi) Socio-economic conditions in the Sudan	25
(vii) Central Sudan and the Gezira Scheme	31

<u>CHAPTER THREE</u> : <u>RESEARCH DESIGN AND METHODOLOGY</u>	<u>Page</u>
(i) Objectives	41
(ii) Data base	42
(iii) Survey design	43
(iv) Survey problems	46
(v) Survey results	47
<u>CHAPTER FOUR</u> : <u>RESEARCH FINDINGS</u>	
(i) Introduction	49
(ii) Six village environments	49
(iii) Population characteristics	52
(iv) Socio-economic characteristics	60
(v) Marriage and fertility	65
<u>CHAPTER FIVE</u> : <u>DISCUSSION AND INTERPRETATION</u>	
(i) Clarification	74
(ii) Women's status and the macro-environment	75
(iii) The determinants of status in Central Sudan	76
(iv) The consequences of status in Central Sudan	82
(v) Demographic theory	86
(vi) Development theory	89
(vii) Summary	94
<u>CHAPTER SIX</u> : <u>CONCLUSION</u>	97
APPENDIX I	100
APPENDIX II	104
APPENDIX III	113
BIBLIOGRAPHY	160

Figures

1. Map 1 : The Sudan : political division
2. Map 2 : Main irrigated areas, main towns and main lines of communication
3. Map 3 : The Gezira Irrigation Scheme and extensions
4. Age and Sex structure : the population pyramid showing the age/sex distribution of the sample population from six Gezira villages
5. The correlation between age group and number of years married for the sample population from the Rahad extension

Tables

- I : The sample villages : total population and average household size
- II : Illiteracy rates in the Gezira, Managil and Rahad villages
- III : Illiteracy & Khalwa-education-only rates in Gezira, Managil and
Rahad villages
- IV : House construction types : a regional comparison
- V : Access to amenities : a regional comparison
- VI : Regional wealth indices
- VII : Regional 'persons per room' levels
- VIII : Marital status (by region)
- IX : Relationship to head of household (by region)
- X : Employment status (by region)
- XI : Female employment characteristics (by region)
- XII : Reasons for not working (by region)
- XIII : Occupation of father (by region)
- XIV : Time allocation (by region)
- XV : Age at first marriage (by region)
- XVI : Age differences between spouses (by region)
- XVII : Total children born to total women (by region)
- XVIII : Sex ratio of total children born (by region)
- XIX : The relationship between number of siblings and number of
children
- XX : Child mortality (by region)
- XXI : Cause of child mortality (totals)
- XXI : Attendance at delivery of a child (by region)
- XXII : Reasons for not using contraceptives (by region)
- XXIV : Socio-economic characteristics (by region)
- XXV : Infant mortality (by province)
- XXVI : Employment status (by region)

CHAPTER ONE

INTRODUCTION AND THEORETICAL FRAMEWORK

I. Introduction

(i) Women and development

Since International Women's Year in 1975 and the United Nations Decade for Women which began in the same year, a growing literature and research effort has concentrated on the theme of 'women and development.' There is now evidence of the subordinate and secondary position of women in many societies. Sexual inequality is rooted in many early histories and cultures and has often been compounded by a modernisation process which has progressively lowered the status of women, since benefits have accrued mainly to the male sector of society. Research findings show that social, economic and political changes associated with national development in many countries, have and are continuing to have a differential impact on men and women. Despite this new consciousness, there has been little incorporation of equalising policies in national and regional socioeconomic planning. In the developing world where general living conditions are poor and the impact of development programmes most profound, the male/female differential of opportunity and expectation is consequently widening and the conditions of women's lives are becoming increasingly restrictive.

There is as yet no established theoretical or methodological framework within which women's role in development can be studied, either from a thematic (general) or regional (geographical/location) point of view. The scientific competence and fundamental principles required to carry out broadly-based policy-orientated research do not exist. The search for theoretical and methodological orientation remains a current and unresolved problem and may offer some explanation for the



inability of research results to enter the mainstream of policy formulation. Only recently has our fundamental lack of knowledge of the reality of women's lives been recognised. Explaining this reality in a coherent way and redirecting the trends of social evolution are the next, more demanding stages. Generally, women and the role of women in development are still regarded as marginal issues.

(ii) Defining status and seeking an appropriate methodology

Women's 'status' has become a focus of concern, since this implies an interest in the male/female differential, which is the basis of the concept of sexual inequality. This concept is largely the product of feminist thought in the West which, when carried over to the developing world, can introduce a harmful misinterpretation of fact. Nevertheless, the examination of status is of interest because it implies the generality and theoretical orientation which is necessary in the field of studies on women.

To establish status as a manageable concept, we face the definitional issue of what constitutes high or low status. In sociology, status is understood as a designated position in the social structure and describes a social evaluation or the prestige of a person.^a Each person according to his or her status in society has a role defining the expectations of conduct assigned to that status, the distinctions of this conduct being differences in life-style. Status is therefore a dimension of social stratification which exists when a certain segregated group is marked by distinct criteria from other groups in society. Clearly, status viewed in this way, is generated from within the society in question and must be understood using the society's criteria for evaluation. This evaluation may conflict markedly with that of 'outsiders' who judge status using different criteria. In this context the transposition of feminist thought from the West becomes dangerous. We must be aware of

a Bullock, A. & Stallybrass, O. 'The Fontana Dictionary of Modern Thought' 1977, p599.

this potential conflict in interpretation as it complicates further, the problems of deciding which empirical dimensions will measure status.

The search for empirical indicators of status in a society implies an examination of the role and life-style of women as described above; concepts which are less ambiguous than status and so more open to enquiry.

Role_{a0} connotes the formal and predictable attributes associated with a particular social position as distinct from the characteristics of the individual. A person's role is determined by intuitively felt guidelines to the 'correct' behaviour. Since role is a very evolutionary concept, one must be aware of the history and traditions of a society in order to fully understand the concept of role.

Life-style_{a1} however is far more amenable to direct empirical observation and our basic source of fact. Life-style connotes all the observable characteristics of a person (such as manner of dress, domestic habits and daily routine) which seem to indicate a person's value system and attitudes to herself and others. The concept requires descriptive assessment and contributes to the interpretation of role. Life-style is descriptive rather than explanatory, significant in the determination of role since the characteristics of life-style serve as a social signal to others who react with respect or dislike, depending on their interpretation of the appropriateness of the life-style. Life-style is the manifestation of role, which in turn defines the expectations of conduct assigned to status. This is the beginning of a methodology for the study of women and the understanding of women's status.

To summarise : in analysing the status of women we are investigating social stratification at its broadest level and we have two main objectives. Firstly we must understand how high or low status is determined by the society in question. To investigate this we require a working methodology

and must search for empirically measurable dimensions of status. We therefore examine the life-style and role of women. Secondly we must understand status in terms of the social stratification itself and by this we mean the male/female differential. We are concerned with the process by which individual inequalities, in this case sex, have become systematised, the basis of a positive/negative evaluation pattern recognised by most members of society and incorporated into the prevailing ideology or introduced into the modernisation or development pattern.

(iii) Key issues

Women's status is a relative rather than an absolute concept. While we are concerned with the variation in status between women and the reasons for this variation, we are also concerned with the male/female differential. To exclude from an examination of the status of women, information about the status of men is to disregard what is most significant. We are concerned with comparative data and our search must be for disparities in opportunity and expectation which exist at the male/female boundary. The eradication of exploitative relationships, if they exist, requires an awareness of the status of both men and women and a re-interpretation of this status by relative comparison.

The variation in situations between societies set geographically apart presents the problem of how to generate general theories and methodology in studies on women and status analyses, when the particular sociocultural, economic and political contexts vary globally to such an enormous extent. However, the search for globally applicable theory and methodology is encouraged by several factors. Social stratification based on sex is unambiguously recognisable irrespective of time and place. This stratification does not have the dubious qualities of other social classifications such as 'class'-based divisions which may lose or

change meaning when transferred from one society to another. However, because social situations vary enormously, any rigidity in the significance assigned to socioeconomic characteristics will be misleading if the significance varies. The interpretation of status must be flexible enough to incorporate the intricacies of contextual variation. If we interpret status in abstract, measuring status characteristics by comparison to some 'ideal', we may imagine that standard status characteristics can be measured in some standard way. However, at the very best, the comparison to a standard model will not measure women's status but the society's overall level of development, probably as suggested by the Western ideal, which is not the objective. Status is a relative concept and as such is largely dependent on and to be understood within the context of the society in question. From a 'neutral' stance we can list socioeconomic characteristics which may be important, such as economic power, education, control of demographic behaviour and health, but we cannot judge in which way these characteristics will be important. Women in a particular society may behave in a way apparently inappropriate to status-enhancement as judged by the outsider but within the context of the society such behaviour may contribute highly to their status.

The potential for change lies in understanding the mechanisms of perpetuation (by which we mean the interpretation of status by the society in question) as well as the mechanisms of increased differentiation which favour men (by which we mean the interpretation of external development influences) in order to introduce appropriate policy.

We must be aware of the dangers of Western biases. In the West the feminist movement advocates the rights and equality of women in social, political and economic spheres and is committed to the fundamental alteration of women's role in society. It is questionable that this is

an acceptable ideology in all societies and that it is fair to transpose or impose foreign standards where there may be no inherent concern, for what we consider to be society's self-perpetuating mechanisms of inequality which operate to inhibit 'progress'. Who should or can judge the women of the Third World? The women themselves may be ignorant of the possibilities of a new way of life, while an outsider will make comparison to his or her own society and often views the 'alien' society with biased eyes. The problem of inappropriate ideology is important in the discussion of 'development theory' as applied to the study of the status of women and is discussed in the next chapter.

(iv) Women's status in Central Sudan

"Under the Sudanese constitution, women and men have equal rights. In practice most women do not know their rights and are dominated by their fathers and brothers and on marriage by their husbands" (1)

The central region in Sudan is known locally as 'El Gezira', an Arabic word meaning peninsula or island. The Gezira is a semi-arid, flat and monotonous plain where cultivation without irrigation is difficult. The area however has been transformed by Sudan's most important irrigation project - the Gezira Scheme, which extends between the Blue and White Niles covering an area of nearly two million feddans (1 feddan = approx. 1.038 acres or 0.42 hectares). The population of semi-nomads have become sedentarised as tenants and wage-labourers, their lives totally dominated by the Scheme. Although their ancestors belong to a wide range of riverain tribes, the present day inhabitants all refer to themselves as Arab. Among them live immigrants from other parts of the Sudan, particularly from the West and from outside Sudan, particularly Nigeria. Although important to the economic well-being of the area, these immigrants generally live apart socially, in communities of their own. Many are only

temporarily settled, en route to Mecca; others settle permanently or return seasonally.

Despite the dramatic changes in economic life which have occurred as a result of the Gezira Development Scheme, the population remain highly conservative of traditions, especially those associated with Islam, the population being overwhelmingly Muslim. Life is characterised by the division of society according to sex. Men exist in the outer public world - they actively structure the environment, operating in the market, as merchants or as tenants or community leaders, while women, in the vast majority remain in the world of children, cooking, birth, circumcision, marriage and social visiting. Women's lives as a result are intensely personal, yet privacy hardly exists at all. Men act as the link between the two worlds in their role as husband or father ... as provider. The influence of Islam must be considered an important factor in the lives of women in this region and is discussed more fully later.

In Central Sudan, we can perceive the difference between status as judged by society and status as judged by an outsider, particularly the Westerner, and the consequent clash of ideologies. The barrier between women and public activity seems to the outsider a restriction and negation of their lives yet there is a significant degree of satisfaction with their domestic routine as it is, especially among rural women. This does not help women to reach personal and social standards which are generally thought to be more appropriate to a developed way of life, such as the eradication of illiteracy. This contradiction must be considered in our analysis of the social mechanisms by which the majority of Arab women are confined to the traditional status-based mode of social relationships.

In examining the life-style, role and status of women in Central Sudan and the male-female differential in status, three major influences emerge as important, two of which - namely the role of Islam and the

cross-cultural dimension of race-are the basis of society's evaluation of status, while thirdly, the role of the Gezira Development Scheme is a 'foreign' influence which may have affected the male/female differential of opportunity and expectation. Clearly women's status now and in the future will be determined by a very highly complex and inter-related set of historical, cultural, social and economic variables.

II. Theoretical Framework

(v) Social stratification of the sexes

Studies on women suffer from a basic lack of well-defined theoretical and methodological principles and orientation, and have often been further compromised by the introduction of a Western ideology where such an ideology is not necessarily applicable.

Literature concerned with the status of women has mostly originated in the West where there is a growing belief that sexism in the past and present has structured and maintained oppression in society by psychological means. Sexism connotes a deep-rooted often unconscious system of beliefs, attitudes and institutions in which distinctions between people's intrinsic worth are made on the grounds of their sex and sexual roles. It is a concept based on and analogous to racism. Whether consciously or not, the sexist sees one sex as inferior and behaves accordingly. The image of inferiority is not necessarily directed from one sex to another. Women in an 'inferior' social position are often active participants in their own subjugation. This has been a major stumbling block in attempts to instigate development from within a society and is the basis of the male/female differential referred to earlier.

(vi) Developmentalism and demographic theory

Two theoretical fields of interest are of major importance to studies on women - developmentalism and demographic theory. These are outlined here and discussed later in terms of Central Sudan.

Developmentalist thought^a in women's studies is based on the perceived differential effect of modernisation on men and women particularly in economic terms. Three main premises are emphasised by developmentalists. Firstly, society is not to be seen as a single organic unit whereby benefits accruing to one sector will lead to beneficial spin-offs elsewhere (hence men may benefit while women do not). Secondly, contradictions in social change are recognised when improvements in one sphere cause exploitation elsewhere (for example when mechanised agriculture is placed in the hands of men and not women). Thirdly, external forces and national leaders are seen to play a key role in producing social change. (The introduction of a foreign ideology and inappropriate development planning can lead to successful economic development at the expense of the exploitation of women).

Particularly during the Colonial period, the introduction in many countries of a foreign economic ideology which favoured men led to the subordination of women in an economic, social and psychological way. The image of inferiority may therefore be an imported one rather than indigenous to the society in question or, where the subordination of women already existed, their situation may have been considerably worsened. Many male-oriented development schemes have excluded women from equal integration into the economies and decision making processes of their countries. As a result, during the process of 'development' the gap between men and women has been widening. In many countries 'woman' has become almost synonymous with 'dependant'.

Development planners from the West have exported a 'middle-class' definition of women's lives and their work in the home and continue to do so. In some non-Western societies where women were very much involved in agricultural life, the traditional role of women was undermined by the initiation of the development process. Improved technologies and training directed towards men, placed women at an increasing disadvantage and far more open to exploitation.

^a Rogers, B. 'The Domestication of Women.' Tavistock Publications. 1980.

In 1979, the F.A.O. made the following statement "available data suggests that socioeconomic transformation either through national or international economic policies or internal developments in society has contributed to the diminution of women's social standing and constricted their capacity to produce food and provision their families ".^a

More recently some effort has been made to create special projects to assist women but these confine women to the margins and remain a token expression of a commitment to the integration of women in development. A stereotype confines women to low productivity and low value operations. In the less developed world, the exploitation of women has a psychological as well as an economic effect. "There are indications that as families become involved in development, the men are showing contempt for women and a more directly hostile and oppressive attitude."⁽²⁾

Even national data present women in a subordinate economic role in traditional LDC societies due to a bias in Western methodology which may have far-reaching repercussions in terms of planning. Measurement techniques for labour force participation have been based on contemporary Western experience and are inadequate in application. Self-employment, wage-earning, seasonal employment, underemployment and the sporadic nature of diverse economic activities require a different interpretation in the Third World. The boundary between domestic production for household consumption and economic activity for exchange or sale is less clearly drawn especially in rural areas. Two mythical assumptions have confused the issue of defining work - that work is performed for money and that work is located in the modern sector. Since women are often the last to perform in either of these markets, they lose as development proceeds and become increasingly 'invisible' in the labour market. Statistics on female participation commonly do not attempt calculations of subsistence and domestic labour activities, generally the work of women. Women who are not paid for their work are classified as unproductive. Also conventionally

^a FAO. 'Women in Food Production, Food Handling and Nutrition' Paper 8. 1979.

in statistical analysis a woman has been counted as two-thirds of a man-unit; not only does this presuppose a smaller return on investment but in the calculation of man-units in the labour force, women become invisible. Women's traditional role in farming, handicrafts and marketing has largely been ignored. Inadequate definition has had practical and observable effects on women's lives.

During the Colonial period in Central Sudan as in many other countries a cash economy, material wealth, landholding and private property were introduced and channelled through men; this having a profound effect on the status of women. In many countries where the wage-labour system excluded women, their economic status was reduced while their workload was increased as men sought work outside the family unit. An inherent prejudice prevailed. Women were without access to money and being far less mobile than men, were unable to compete. Even within the confines of subsistence agriculture where women as food producers seem to have well-defined socioeconomic rights and obligations, women increasingly constrained by socioeconomic and political strategy suffered a devaluation of status. The powerful interaction between men and cash crops and women and subsistence maintained the momentum of inequality. So extreme is the new relative difference in opportunity between men and women in many countries that it is hardly surprising that women should be discouraged from participating in agriculture and abandon it whenever the increase in their husband's income makes it possible. This is often the case in Central Sudan. Thus, women begin to conform to their new designated role-image as dependants. Where development agencies have introduced new technologies and learning institutions for men only, the image of women as incapable of managing new technologies has become a reality since, burdened by much higher rates of illiteracy than men (and the disparity is increasing) men and women do have increasingly differentiated ability. Sex discrimination in development planning has limited women's options, impeded efficient functioning and led to economic and social differentiation of capability. Some explanation

is provided by the fact that colonialism was the product of industrialised and capitalised societies where most productive functions had been removed from the family and community. Economy and home in the West were separate entities but not so in the less developed world, a fact which unfortunately was not acknowledged.

In the light of developmentalist theory, we can examine the Gezira Scheme in Central Sudan to discover if there is an orientation in favour of men because of the introduction of a foreign ideology during the time of Anglo-Egyptian influence; whether this orientation continues during present day independence and how traditional life, including the influence of Islam and racial background, reinforces or contradicts the trends and patterns.

The status of women in all developing countries is changing if only relatively since men are progressing. Those people involved in development efforts must become concerned to develop consciousness among women and the motivation to change their own lives in order to counter present trends.

A second theoretical area, important for its potential contribution to a sound orientation in studies of women, is 'demographic theory'.^A

In the field of demography, an increasing and more widespread recognition of the global problem of over-population has encouraged the dissemination of information about the lives of women which, in turn, has led to the exposure of female powerlessness in various societies. A concern for human rights in terms of access to work, education, health and independence and the recognition of the interdependence of the status of women and population dynamics has stimulated global interest further.

The reduction in world mortality is responsible for present day high rates of population growth since fertility rates have not fallen at a corresponding rate. Hence the surge in population growth.

For the purpose of data collection, women as the childbearers of

society have the fertility level assigned to them. Most rates are calculated as a rate per woman or as a percentage of women aged 15-44 years, the childbearing age-groups. Policies to reduce fertility have most often been directed towards women rather than men. Thus we have assumed that women have the power to change fertility rates. Men in their roles as husbands and fathers do not receive the same amount of attention as regards responsibility, despite the fact that, particularly in a patriarchal society, and whenever men have received the benefits of a more thorough education, it is likely that they, given the necessary encouragement are most likely to respond to the introduction of birth control. Women may have contraceptive technology designed for them but they often lack basic information about availability and use, are unaware of the health hazards of excessive childbirth and the alternatives provided by a greater role in economic and social life. In a male-dominated society, there will be little point in attempting to encourage women to adopt contraceptive techniques. Both men and women must be made aware of the dangers of a high birth rate, the benefits of planned child-spacing and the alternatives to early marriage and childbirth, such as continued education and economic activity. While high birth rates persist, women suffer most. High fertility levels increase female mortality and reduce female mobility because of the orientation to home and family life, limitations which are compounded by weaker educational and economic positions.

In demographic studies, a woman's degree of responsibility for the growth rate of the population must be judged in terms of how much control she has over her own life and the socio-psychological bias against her.^A In this way we must investigate female demographic power in Central Sudan, as an indication of status.

In Central Sudan, as in much of the Arab world, poverty and lack of

A Fatima Mercussi, 'Women excluded from development' in Tinker, I. and Bramsen, M.

education have kept millions of Muslim women in disadvantageous conditions especially in rural communities where there is no perception of the importance of education. Education seems unfit for women with traditional roles in the home and subsistence economy. Where development has provided education for men, the difference between male and female literacy makes women reliant for the most simple transactions on men. This difference also translates into increasingly lower levels of communication between husband and wife. Early marriage and pregnancy for women exacerbates educational inequalities. Marriage merely shifts a woman's primary expectation for support from her father to her husband. A low level of education is most likely to lead most women to accept this life-sentence of dependence with resignation and without question. An increase in employment opportunities, skills, personal income, social contacts and decision making are all tied up with the necessary increase in educational standards. Also, at present women can only dimly appreciate if at all, their potential contribution to the control of demographic forces.

Consideration must be given to educational and economic equalisation by creating a commitment to change from men as well as women. However, in the Muslim world any institutional norm tends to have religious implications and Islam is heavily male-orientated. As a result, changes in the seclusion of women have been very slow or non-existent. The Muslim family is archaic and patriarchal - sexual inequality may not be legalised but it is certainly institutionalised. The 'development' process and policy has continued to reinforce the male bias - "Neither national independence, the evolution of the modern state nor the emergence and growing prosperity of a middle class in the context of the Muslim developing economy can successfully challenge the patriarchal status quo in societies where sexual inequality has been considered legitimate for centuries". (3) Sexual equality must be a

priority element in planning programmes where development can be truly interpreted as a means towards the optimal use of the (human) resources of a country. "Unless there are changes in the situation of women, political, economic, social and cultural targets of developing countries will not be met".⁽⁴⁾

In the context of Central Sudan, we must discover if women do have the option of behaving in a demographically 'responsible' way. Women in Islamic societies may not be expected nor allowed to contribute to society at the same level or with the same degree of responsibility as men. "Men are in charge of women because God made one of them to excel the other and because they spend of their property (for the support of women)".⁽⁵⁾ Natural authority because it resides with the person who earns the money will remain in the hands of men and entitle them to be called head of the family. With few exceptions, rural women are not engaged in what is officially defined as 'economic activity'. Early marriage, excessive childbearing, a lack of education and seclusion in the domestic world create in women an extreme social, economic and psychological dependence. Deference to male authority, personal powerlessness and a narrow world view engendered by a severely constricted social-existence are typical attributes of women in such societies, particularly in rural areas.

(vii) Conclusion : Objectives

In examining the status of women in Central Sudan two major influences assume importance - the Gezira Scheme which can be investigated in terms of development theory, and secondly, the influence of Islam which can be interpreted in terms of its role in the determination of demographic behaviour. By examining the lifestyle and role of women which are expressions of status, we can identify the empirical dimensions

that will measure status and understand the concept and effect of status within the context of Central Sudan. The status of women is a construct which cannot be measured by the level of a single characteristic, but the multiple characteristics each gain significance when compared with levels attained by men. By examining this male-female differential, we obtain the outsider's view of status and acknowledge that this difference is crucial to our understanding of sexual discrimination.

Chapter One : References

- (1) UNFPA : 'Sudan Profile 1978 : Draft' 1978, UNFPA.
- (2) Rogers, B. 'The domestication of women - discrimination and development' Tavistock Publications Ltd, 1981.
- (3) Tinker, I and Bramsen, M. 'Women and world development' Part IV : Mercussi, F. 'The Moslem World : Women excluded from development." ODC(AAAS) 1974.
- (4) Helva Sipilia Assistant Secretary General of the U.N., Texas, 1977.
- (5) 'Symposium on the changing status of women' Ahfad University College for women. 75th Anniversary 1979 Paper No.49.

CHAPTER TWO

DATA OVERVIEW AND GEOGRAPHICAL CONTEXT

I. Data Overview

(i) The research process : conceptualisation, observation, description and explanation

There are four interrelated stages in every research process. Firstly, conceptualisation, which is derived from a theoretical base. Secondly, observation, which requires a sound methodology and finally, description and explanation which will be most meaningful, if the result of valid theory and appropriate methodology. The first two stages should enable us to know which data to collect and how to make sense of them. The latter stages will be limited by any inadequacies in the former. The more accurate the data collected, the more capable we will be of identifying preliminary linkages between variables within a given cultural context. Clear descriptive statements will facilitate meaningful explanatory analysis. During the research process explanation can be reintroduced into the initial conceptual stage to improve the thinking behind new research design. The conceptual stage then is of fundamental importance for all later stages including feedback to new conceptual stages. This highlights the importance of good theoretical orientation in every research project but this orientation will presuppose at least some basic knowledge of the society in question. Where the data base is weak, theory is likely to be poorly formed as a consequence.

Theory in women's studies is little developed largely because of the youthfulness of the subject itself, our basic knowledge being poor. As a result, theory is not particularly suggestive of methodology or data requirements. However, with no methodological framework on which to base research, inappropriate and insignificant data may be collected. If

this is unavoidable, the data collected should be analysed bearing in mind the essential need to discover significant relationships from which to derive hypotheses and theory. Undoubtedly this theoretical and methodological confusion makes women's studies difficult to quantify or synthesise. Some data are easily quantifiable, others are more qualitative in nature.

Combining data which differ in kind is problematic but will be necessary in order to understand women's status (which is not an unidimensional concept). We require multiple, scalable indices and demonstrated independent variation since change in one aspect of status does not necessarily involve changes in others, especially cross-culturally. A sound methodology would tell us which and how data should be collected at the micro level while sound theory would tell us how to relate this to macro-level systems. Status components vary considerably between cultures and it is difficult to establish a methodology which can function effectively in contrasting cultural contexts. However, for cross-cultural comparisons, it is important to maintain a standard methodology. Theory and methodology will remain underdeveloped while our data base remains weak. The accumulation of basic knowledge is a necessary first measure.

(ii) Data deficiencies in the developing world

In the developing world, national statistics which one might expect to be available as a data-base and initial guide for theory construction and hypotheses formulation are often hopelessly inadequate for these purposes. Many developing countries are primarily concerned with economic development: demographic data are at best a second priority. Census information is often incomplete or incorrect, while vital registration systems may not yet have been established and certainly not outside the towns. Research efforts may have been minimal or executed by non-nationals who lack the very basic knowledge of the society which would radically reduce the risk of bias.

Imperfect though they may be, statistical data can provide a useful measurement of a range of population characteristics. It is true that even where data collection systems are highly advanced, we are aware of distorting statistical short-comings but these shrink almost to insignificance in comparison with the distorting defects and deficiencies of population data and estimates of many underdeveloped countries. Without the necessary knowledge of women's lives, we cannot hope to initiate demographic change and development nor to design and execute relevant policies and programmes which will enhance these changes. The lack of data can be to some extent (but not entirely) rectified by increasing the scale and intensity of research. Much research however is concerned with 'development' issues which must by definition incorporate a time element to assess change. Enormous difficulties arise in collecting data about the past since recall questions are notoriously problematic. Deciding which questions to ask, which indices are significant and how to obtain unambiguous and relevant knowledge is a major problem where basic information is lacking.

Despite all these difficulties, data must be collected in a systematic way and analysed in the light of particular hypotheses relevant to our understanding of a range of issues relating to women. We are in the long term searching for theory, hypotheses and methods which will help us to understand women's status in developing countries.

(iii) Sudan : demographic data

Development is not synonymous with economic growth alone. Development must, without neglect of the economic growth issues, concern itself with the need for structural and institutional change to ensure that the benefits accruing from the process become equitably distributed. "Development should involve a fundamental improvement in the quality of life for every individual and that of the population as a whole." (1) National planning must focus attention on the population question as a basic

factor in development. This requires integrated planning using an accurate data-base.

In Sudan, a weak data-base, both in terms of overall coverage and accuracy, severely impedes the progress of policy and planning. The data available are generally incomparable, discontinuous and based upon an inconsistent methodology. This paucity of data particularly impedes demographic planners who require data from periods rather than points in time since they are concerned with dynamic phenomena. The collection, analysis and circulation of data in Sudan must become a major priority since even among decision makers, there is no basic awareness of the statistical dimensions of population characteristics, trends and implications.

Prior to 1955, virtually no data were available to provide insight into Sudan's demographic, economic or social situation but several major field enquiries have been undertaken since that time. Alarming discrepancies between the resultant data makes the reliability of the results questionable.

The two most important sources of demographic information are the population census and sample surveys. No reliable vital statistics registration system has been established. In 1973, the year of the second census, only 17.1% of total estimated births were reported in this way.

The first complete census was executed in 1955/56 over a 14 month period. Data were collected on a de jure basis (i.e. each head of household was asked to give information on persons normally resident in the household). The extent of under and over-enumeration is unknown. Despite the dubious nature of the data, the results are the only basis for the calculation of growth rates and projections which are essential for planning purposes. In a country where there is, as yet, no population policy, it is perhaps

not so surprising that the necessity of accurate census figures is not widely appreciated. In 1955/56, simultaneity of data collection was impossible. The 14-month collection period offered enormous opportunity for over- and under-counting and misreporting. The *de jure* system operating on a society where family ties are very strong, made overestimation very likely. Equally difficult to estimate is the degree of underenumeration involved; certainly large numbers of migrant people were never enumerated. There is no generally accepted corrective multiplier to make up for the postulated error. A further major weakness was that census takers renounced any attempt to obtain a detailed classification of people by age. This was a misguided decision, since data on marriage, number of children etc. are of limited use outside the context of age. Also absent, were data on infant and child mortality.

The 1973 census conducted on a *de facto* (the head of household gives information on those people actually present in the house on the night of the census) and sample basis provided additional and updated information. Questions on fertility, mortality and migration, supplemented questions on sex, place of birth etc: The methodology and implementation of the 1973 census, however, have been heavily criticised.^A

Financial measures to ensure a more accurate 1983 census have been taken by the United Nations to help meet the otherwise prohibitive costs. This aid was the result of a recommendation by the U.N.F.P.A's 'Mission for Needs Assessment for Population Assistance' which conducted a survey in Sudan in 1979.⁽²⁾ The results of the 1983 census will not be available even in preliminary form until 1985 or 86 and, despite the external assistance, it would be premature to suggest that the data will be of high quality.

Most other field enquiries in Sudan have focused on the urban population. This is probably because of a greater ease of enumeration. The most important surveys were the 'Population and Housing Survey' of 1964 and the 'Household Budget Survey' in 1967/68, both confined to the

^A University of Durham Dept. Economics. International Migration Project, (Birks and Sinclair)
⁽²⁾ 'Country Case Study: Sudan'

Northern region. Also of major significance and far more reliable are the results of the 1978/79 World Fertility Survey, again confined to the northern region. While this particular survey was more reliable, in most other cases, a weak sampling frame has meant that results must be interpreted with caution. A standard methodology would have facilitated greater cross-comparison between these various surveys.

The lack of data concerning women in Sudan has only recently been acknowledged and now only by an enlightened minority. During the Second National Population Conference held in Khartoum (26-28 April 1982) attention was drawn to a recommendation of the first National Population Conference of 1974:

"Special consideration should be made to raise the status of women to enable them to play a more effective role in the economic and social development of the country."

Without a knowledge of women's lives, we cannot and will not be able to account for the economic and social structure of Sudanese society in order that the potentialities and capabilities of the Sudanese people may develop. Data are required on a wide range of topics - education, literacy, health, nutrition, marketing, the effect of development efforts, the role of Islam (which is at present a major political issue) to name a few. While we are aware that deterrents to advancement do exist, we have insufficient knowledge of how reactionary traditions are maintained. Most particularly, a greater knowledge of the relationship between reproductive and productive activities could provide directives for planning purposes. In Sudan, estimates of female economic activity vary to an uncomfortable extent because of different interpretations of the labour force concept. With inadequate data and dubious projections, social planning for women is in danger of becoming little more than an abstract exercise.

Sample surveys based on a sound methodology could produce probability statements for the formulation of hypotheses. A more concise methodology outlining methods of collection and analysis would reduce the risk of indiscriminate fact gathering and arbitrary hypotheses formulation, but it is the collection of information about women in Sudan which must be the priority concern and initial step.

(iv) Implications for research

Two points should be emphasised; in Sudan the data-base is weak and unreliable, and in the study of women we should give due attention to the appropriateness of the method we use to collect data and our reasons for choosing which data to collect.

Any study is subject to the limitations of available statistics. This calls for discriminate use of the data available and cautious interpretation of results. In attempting to assess socio-economic characteristics and status we must also be aware that there is no generally agreed definition of either. In studying women in Central Sudan, there is a special need to develop a definitional statement of socio-economic status in order that we may establish which indicators are significant.

(v) Background research projects

Despite the periodical occurrence of research projects based in the Central region of Sudan, the dearth of basic data for rural areas is a serious research problem.

However, in 1980, a research project was initiated which aimed to investigate the demographic, occupational and health conditions in villages situated in the Central region and involved in the Gezira Scheme (Ali Tosun Aricanli : Gezira Scheme Village Census of Demographic, Occupational and Health Status, University of Gezira and the Population Council, New York, M.E Awards). Some villages were selected from the Gezira proper and others from the extensions to the Gezira Scheme - the

Managil and Rahad areas. The data provided by this census could act as a basis for subsequent research projects of a more specific nature. The complete lists of occupants of villages are particularly useful and have provided the sample source for this project.

The Gezira, Managil and Rahad areas were not included in the Scheme at the same time. There is, as a result, an opportunity to examine temporal variations in spatial patterns, especially those which represent the effects of the development scheme on women's lives. The significance of this temporal interpretation is of course limited since the socio-economic conditions and histories of the three regions varied considerably prior to the scheme's influence. However, while temporal influences may be only part of the explanation of present differences between regions, this is an opportunity to study 'development' incorporating the essential time element without the need to ask questions now, about conditions in the past. This descriptive assessment of the three areas in a temporal framework must, however, be interpreted with extreme caution.

II. Geographical Context

(vi) Socio-economic conditions in the Sudan

Sudan is a country of diverse and in many ways contradictory characteristics; hence any generalisation is likely to be misleading. The largest country in Africa and an independent republic since the end of British and Egyptian Condominium rule in 1956, Sudan has a population of about 18.5 millions living in an area of 2,505,813 square kilometres, nearly one tenth of Africa's total area. Population density varies considerably. (The results of a 1975 survey (Ministry of Planning) showed a variation from a high of 457 persons per 1000 ha. in Khartoum province to a low of 21 persons per 1000 ha. in Northern Province). Sudan borders eight countries and the Red Sea and is very much a transitional country between Africa's 'Arab' north and 'Black' South, a quality which both

describes Sudan's diversity and is a fundamental cause of many of the country's social (and economic) problems.

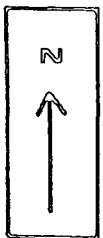
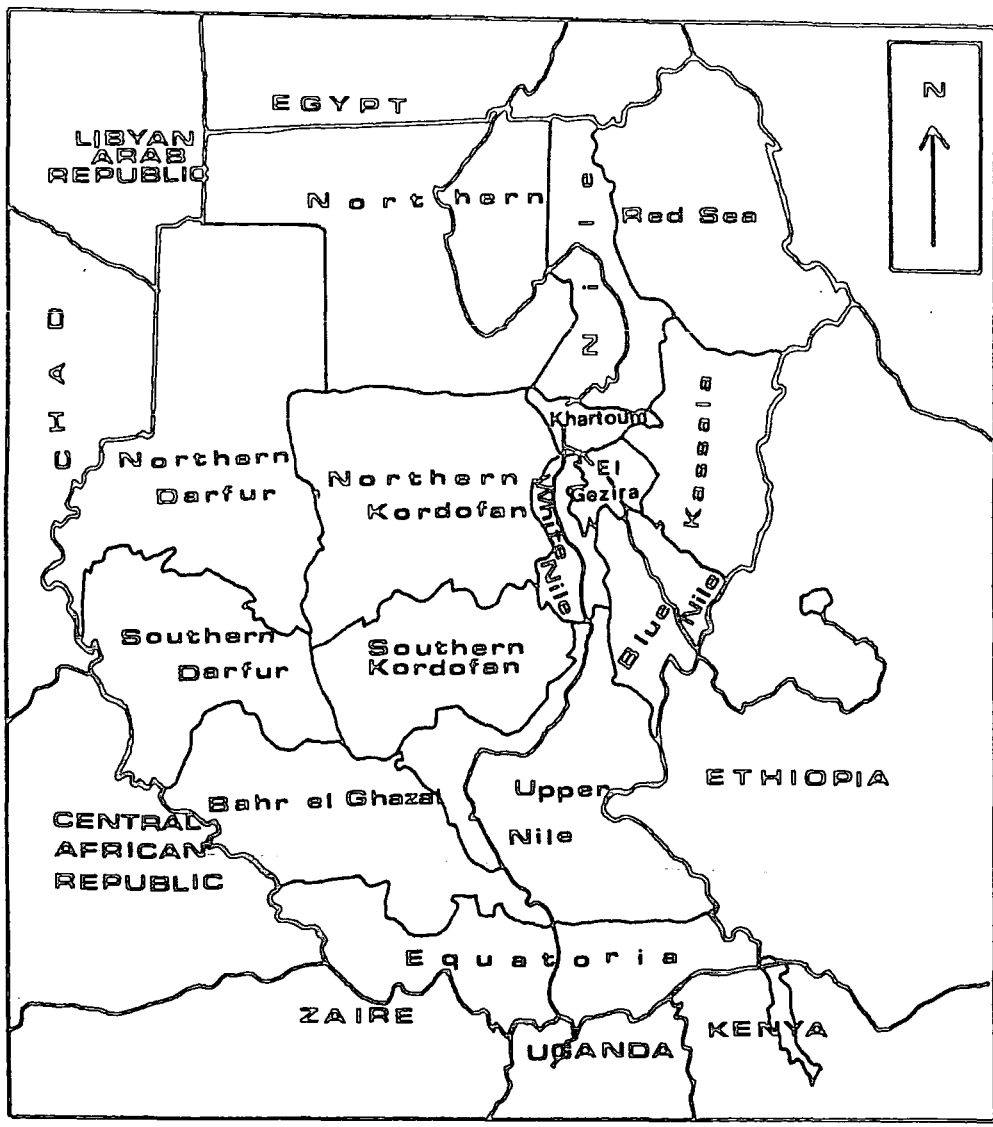
There is a significant divide in Sudan between the north and south, approximating to latitude 9°N. In Northern Sudan, rainfall decreases and the length of the dry season increases northwards with an accompanying change in vegetation from savannah woodland to almost complete desert conditions, north of the capital, Khartoum. About 15% of Sudan's total area is uninhabited semi-desert. The most densely settled areas border the Nile. Khartoum has a mean annual rainfall of c.160 mm, mean daily summer maximum temperature is 40°C and in winter, 24°C. The people of the North are predominantly Arab Muslims and control most of the economic and political affairs of the country. This dominating Arab influence has been the cause of considerable tension between North and South (However, the 1955/56 census estimated that only 38.8% of the population belonged to Arab tribes).

In Southern Sudan, the people are negroid Christians or pagans. The environment is predominantly tropical rainforest. Humidity and temperatures are high. Rain falls during almost every month giving an annual total of 1440 mm.

Economic wealth and development is highly concentrated in Sudan-Khartoum, Gezira and Kassala provinces, all in the North, account for virtually all exports, receive a large majority of government investments and have much the best developed infrastructure (Fig.1). Economic patterns in Sudan differ from those of other Arab-dominated states. Some 68.5% of the labour force is found in the agricultural sector, which contributes 37.2% to GDP.⁽³⁾ Agriculture provides 95% of exports (60% of which is cotton) and 50% of government revenues.⁽⁴⁾

Regional disparities make Sudan a dubious demographic unit. The following figures⁽⁵⁾ should be interpreted with due caution.

MAP 1 : THE SUDAN : Political divisions



<p>SCALE</p> <p>0 200 400 kilometres</p>	<p>KEY</p> <p>—— national boundary</p> <p>—— provinco boundary</p>
---	---

46% of Sudan's population are less than 15 years old, the growth rate stands at 2.8%, producing a doubling time of 23 years. The Total Fertility Rate (TFR) is high, estimated to be 6.8. Infant mortality is also high, about 125 per 1000; diarrhoeal disease is the most significant cause of death and ill-health. Maternal mortality is high. Malnutrition is prevalent especially among women and children. Life expectancy is low, about 47 years. Inter-province migration is high. The 1973 census estimated 1,200,000 migrants for that year. In-migration of refugees in large numbers, particularly from Uganda and Ethiopia is becoming a major problem.

Sudan's economic and educational systems are underdeveloped and badly co-ordinated. The educational system is academic in orientation with little attention to training skills. Women are seriously disadvantaged. 85% of the adult population are illiterate. Many of the educated minority are leaving Sudan for better jobs elsewhere. Their remittances contribute significantly to the income of their extended families but the nature of the investment of this money is unknown. Poverty is widespread in Sudan. GNP per capita is estimated to be \$US 389.⁽⁶⁾ Natural resources remain largely unexploited. Great expectations rest with the oil resources in the south but political instability in the south is inhibiting the search for oil and for now the national economy remains extremely weak. Public foreign debt 1982 (disbursed) stood at \$7.8 billion while the Balance of Payments current account 1981 showed a \$636 million deficit.

The health system is also poorly developed. One physician per 10,300 people compares with the WHO recommended minimum of 1 per 1000 population. Most services are confined to the towns and larger villages. The preventative and curative tasks throughout Sudan are immense since the country suffers major endemic and environmental health problems.

Water is poorly supplied, sewage disposal systems are inadequate and housing is generally very poor. Transport - communication is difficult because of the limited number of surfaced and all-weather roads and the vast distances involved. During the rainy season, communication completely breaks down.

Sudan has great potential but numerous constraints in terms of development. Many factors militate against development planning - the size of the country, poor communications, political instability, fluctuating world cotton markets and very limited industrial development. Inadequate domestic production to meet domestic demands has resulted in consumption being heavily dependent on imports. The development strategy is as a result essentially export-led growth supported by import-substitution; because of Sudan's enormous economic problems, planning has generally been economically rather than socially orientated.

Sudan's Five Year Economic and Social Development Plan 1970/1-1974/5 made no mention of population growth or any other demographic data. The plan contained mostly fiscal budgets with little information on policy. The lack of sufficient and sufficiently trained manpower in Central and Sectoral ministries seriously weakens the planning effort. Sudan is facing a problem of rapid population growth and a very youthful population. There is tremendous pressure on food production systems and investment for transport, schools and health services. The rapid population growth constantly magnifies these requirements and the efforts needed to maintain present standards of consumption. The country cannot afford the rise in numbers resulting from its high fertility rate. Policy-makers require a better understanding of population questions and related policy issues.

However, the Six Year Plan 1977/78-1982/3 did incorporate demographic objectives such as the eradication of illiteracy, better

health services, housing and education. The plan also acknowledged the detrimental effects of the rush to urban centres and the need to reduce the economic disparity between agricultural and other types of employment by adjustment of the investment pattern. A large proportion of government revenue is spent on public services and security expenditures largely in the urban centres which exacerbates the urban bias.

Despite this new concern for population issues, there is still a heavy concentration on economic progress in the drive towards national development and social welfare remains a peripheral issue.

Population issues have been more seriously expounded during the National Population Conferences. The first held in Khartoum in 1974 recommended:-

"that special stress should be directed to develop population policy which should be the basis of any future economic planning."

However, there still seems to be no agreement between Sudanese development planners and economists on the relationship between population growth and overall economic development. Slowing down present population growth by socially acceptable means (family planning is not generally accepted) is a problem and present policy could be inferred as somewhat pronatalist.

During the Second National Conference held in 1982, the significance of the population issue was again emphasised:-

"this factor must be taken seriously if a definite population policy that takes into account the economic and social structure of Sudanese society and that aims at developing the potentialities and capabilities of the Sudanese citizen who is the most valuable resource of the Sudan is to be formulated."

Both conferences also emphasised the need to rectify the disparities between the sexes - women do not enter many employment sectors. The

Six Year Plan gives female labour force participation (i.e. % economically active) as 18.4% in comparison to 75.9% for men.

No single problem in Sudan can be isolated for examination and solution since the problems are clearly numerous and complexly inter-related. There can be no dramatic improvement for the people of Sudan, only a gradual and steady amelioration of conditions in social, economic and political spheres. In the long term, this is the road to Sudan's development. The Central region of Sudan at least has made some progress along these lines.

(vii) Central Sudan and the Gezira Scheme^a

In response to the semi-arid environment of Northern Sudan the population evolved a semi-nomadic way of life, only settling along the Nile Valley or where irrigation waters were available such as in the Gezira region of North-Central Sudan.

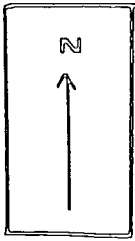
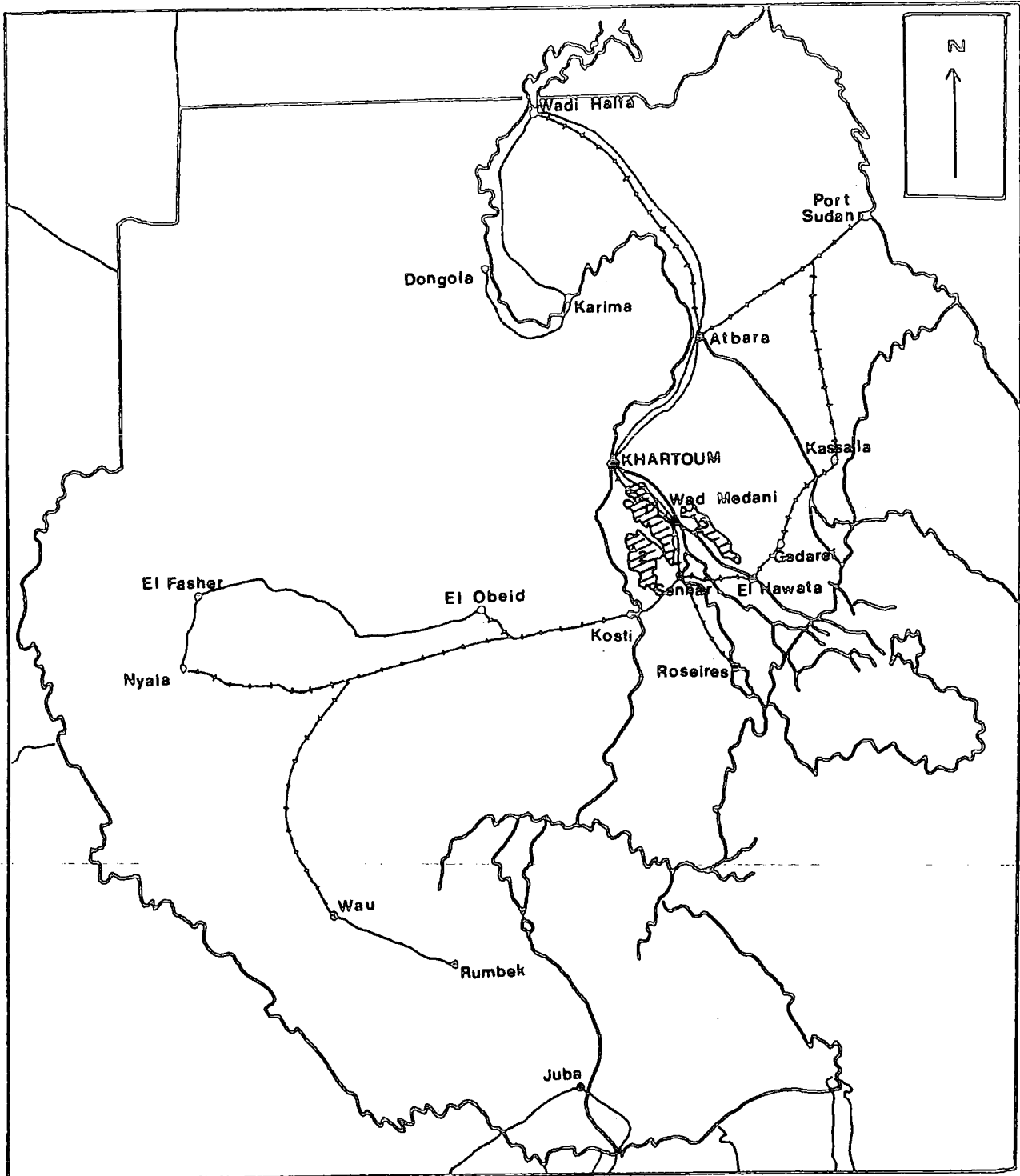
Although most of Sudan lies below 1000 m and a considerable part below 550 m, the flatness and monotony of this central region is striking. The irrigation scheme here makes a major contribution to the Sudanese economy and places Sudan in a unique place among developing nations as a major producer of cotton.

Gezira Province is densely populated. The total population in 1973 was given as 1,865,499; 88.2% being rural and settled.

The modernisation of agriculture began in this province and injected a highly dynamic, if geographically imbalanced, element of growth. 90% of the irrigated land was concentrated here and its main product, cotton, dominated Sudan's exports.

The Gezira Scheme originally covered the triangular area of land formed by the confluence of the two Niles and the railway which joins Sennar and Kosti (Fig.2). The Rahad extension, however, extends beyond


Map 2 : Main irrigated areas, main towns and main lines of communication.







Scale



Key

-  Irrigated Area
- 1 Gezira main
- 2 Managil extension
- 3 Rahad extension

-  Town
-  Railway
-  Road (all season)
-  River

these limits along the east bank of the Rahad river. The conception of the Scheme dates back as far as 1904 to a report by Sir William Garston, then British engineer in the employ of the Egyptian Ministry of Public Works.

The Scheme was a unique achievement in economic partnership between a colonial government, a commercial company and a poor semi-nomadic population and marked the beginning of Sudan's emergence from a subsistence economy.

A number of natural advantages played a large part in the technical success of the scheme - the irrigation site, sloping to the river allowed gravity irrigation, the relation of the river to the soil prevented water-logging so that expensive drainage was avoided and the high clay content and very deep soil reduced the uptake of salts. Canals were impervious to seepage and required no limate; no clearance of land was necessary; potential tenants were already there in an established society with an attachment to the region; furthermore, not many parts of the world are as climatically suited to fine long-staple cotton as this region.

A notice in March 1920 stated that the government intended to irrigate 30,000 feddans from a dam at Sennar and that this land would subsequently be hired for rent, the state claiming 60% of the cash crop to repay its investment and augment its revenues. The Scheme introduced modern agriculture, loans at low interest, machinery, selected seed, fertiliser, joint purchasing, grading, processing and marketing. The individual compromised his loss of freedom with a gain in profit, receiving planned assistance over his cash crop and water for his food-crop; the profits from which he kept.

The dam at Sennar was completed in July 1925, nearly 2 miles

across and 128 feet high. In the first season of gravity flow, Sudan's area of cotton increased from 21,600 feddans to 80,000. (By 1970 the figure was 1,141,139 feddans). Most of the adult male population received tenancies. The need for casual seasonal labour which the scheme introduced led to the in-migration of complete families into the region.

Cotton soon overshadowed all other exports, its value in 1928 being about 70% of all exports. The spending capacity of the country increased and the new diversity of imports and consumption reflected the increase in wealth. The Scheme however was extremely vulnerable because it depended on the success of a single crop. Economic problems have always assumed priority over social ones and cutbacks during difficult years were inevitably in social services. For example, the Great Depression (1930-34) ruled out any question of social experiment in the fight to keep the Scheme alive and protect the tenants who were hopelessly in debt and enmeshed in a dependence on the Scheme.

However, in 1942, G.R.F. Brodin (Governor of the Blue Nile Province, 1941-48) stated that the unique economic advantages of the Scheme were failing to be translated into social progress; the standard of living remained static, Gezira villages were dirty and hygiene primitive. The attitude to sanitation and health was passive - dysentery malaria and bilharzia were endemic. Most people were illiterate and elementary schools few and far between. There were problems of debt in the villages and extortionate conditions for loans from money lenders made the concept of economic democracy invalid.

Changes in life-style however had been dramatic. Before the Scheme, local society had been single and isolated. Transport was by donkey and camel. Education consisted of learning the Qur'an by heart. For health services, the people turned to local religious teachers. Most necessities

were satisfied by local products and conditioned by customs which were the outcome of years of harsh experience.

After the Scheme, villages were no longer isolated. Cars and lorries were numerous and people paid regular visits to local market towns. Trade increased and new concepts of a tolerable standard of living developed. Education demands increased, especially for boys in order that they should obtain well-paid influential jobs. The indigenous population were not naturally attracted to a steady routine and one of the first uses to which they put additional money was to hire others to do the work. As a result migration into the region also increased dramatically.

In 1950, there was a dramatic change, the Scheme was nationalised and the Sudan Gezira Board (SGB) was established. In a report issued in 1946⁽⁷⁾ it was stated that "a basis must be found to cater for the welfare of the country as a whole and in particular of that community which lives within the boundaries of the Scheme." However, even after 1950, no definite plans to wed social and economic policy emerged.

In a memorandum from James Robertson (Civil Secretary, Sudan 1945-53) to Sir Edington Miller (Financial Secretary, Sudan 1947), Robertson stated that "the Gezira Scheme is not just a machine for the production of cotton and money. It might be the scene of a real experiment in mass education, in social improvements, in co-operative enterprise, in democratic control of local administration as well as being an agricultural scheme of great importance in the Sudan." Miller's attitude, however, was that the State had to consider the claims of others in the country and so no plans for these 'experiments' were made. However, some proposals for various social improvements were eventually formulated. Women were to be taught sewing and cooking, health visitors were to teach child welfare, a midwives training school and clinic were to be financed and adult education and mass literacy campaigns were planned. Unfortunately

the SGB found the population basically uninterested in proposals, supporting only those items which affected their own finances. The use of personal income was later to become a major issue for during periods of affluence, tenants chose to spend their profits on food, clothing and social occasions and in this way, very large amounts of money passed unproductively through the Scheme.

The Scheme also affected, indeed introduced class differentiation between tenants and labourers. The heads of most prominent families were prosperous tenants and shopkeepers while migrants from the west of Sudan and from outside the country (generally referred to as 'fellata' and treated as second class citizens by the indigenous population), racially darker peoples, became casual labourers and herdsmen. Statistics are unreliable since these migrant people are suspicious and wary of the outsider particularly those seeking information. It is clear however that their life-style is very different from that of the tenants. Most of the fellata children (and many of the women) are involved in economic production from an early age particularly agricultural activities (which conflict with school attendance.) Their education is still confined today to the traditional 'Khalwa' education, reading and reciting the Qur'an. Many use Hausa as a language rather than Arabic and this must be considered a major barrier to children's participation in the educational system. The Western Sudanese and fellata villages have emerged in most cases on separate or adjacent sites as semi-permanent homes for these migrant wage-labourers. Their villages and houses are generally very poor, there are no shops or mosques and almost all houses are a poor thatch rather than clay or brick.

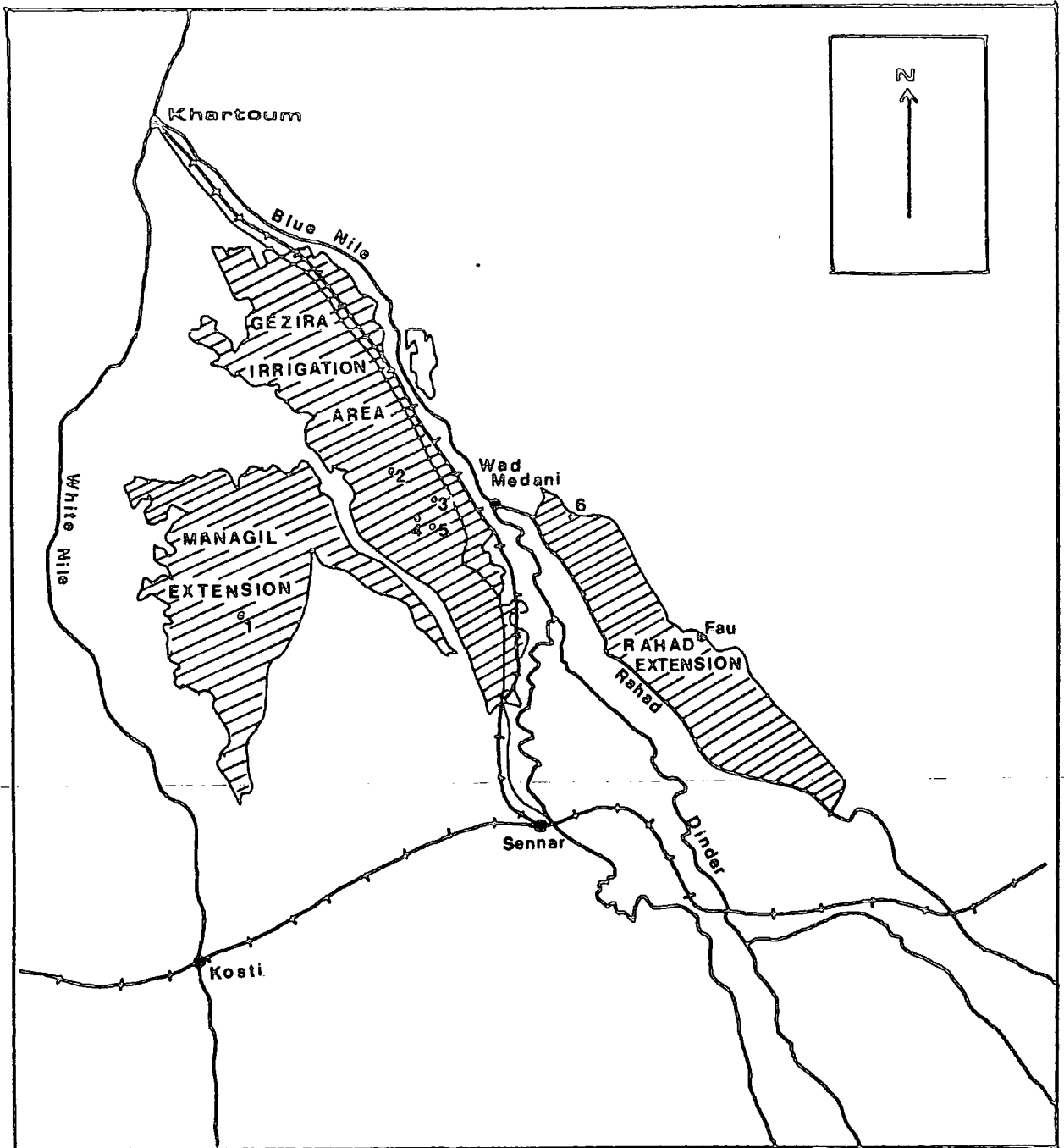
There are today about 96,000 tenant farmers with an average tenancy size of 26 feddans. Labour supply is still a problem especially because families are disinclined to use their family labour to the full. In




1973/74 a total of 542,000 people were engaged in the cotton-picking season. According to the SGB data only 139,000 were tenant and family labourers, the rest imported labourers. This figure of resident cotton-pickers shows an average family contribution of 1.5 members in the high season. This is well below the potential since average family size is 6 to 8 members. The reason can largely be sought in the association of such work with slavery and the desire that women should not be subject to such degrading activity.

Despite the various economic and social problems, the Scheme has continued to expand. The first stage of the Managil extension began in 1957 after the building of a new dam at Roseires on the Blue Nile adding another 800,000 feddans to the Gezira which fans out from the south-central Gezira in a W-SW direction (Fig.3). According to the Ministry of Social Affairs, "the planning of the extension differs from the planning of the Gezira in its increased consideration for human welfare. The Gezira was primarily a commercial enterprise. Social services were not introduced by law into the Scheme until the formation of the SGB in 1950 whereas social services will be introduced into the extension from the start." Villages were "scientifically" planned with schools, village clubs, medical services, vegetable gardens and wells. Over 135 villages were constructed and displaced thousands of people. Women were entitled to the same rights to tenancies as men.

The Five Year Plan 1971/2-1975/6 named Sudan's main new agricultural development as the Rahad project, an 820,000 feddan extension to the Gezira Scheme. The Rahad extension, the most recent addition to the Scheme, is now a 130km x 5-30 km stretch of land along the east bank of the Rahad river (Fig.3) Prior to the Rahad Scheme, the indigenous population had been pastoral semi-nomads, an economically marginal population. Again this extension was conceived of as a community project providing

Map 3 : The Gezira Irrigation Scheme and extensions.



<p>Scale</p> <p>0 ————— 50 kilometres</p>	<p>Key</p> <p> Irrigated area</p> <p> Railway</p> <p> Road</p>	<p>1 Wad Adam</p> <p>2 Wad Krei</p> <p>3 Wad Suleiman</p> <p>4 Kambo Tanta</p> <p>5 El Tayemab</p> <p>6 Village 42</p>
--	--	--

a full range of services to its 120,000 inhabitants in 46 planned villages but severe limitations on available local currency meant that social and marketing services could not be provided on an equitable basis nor at a satisfactory level. There is a deficit of schools and health services at all levels, transport shortages have led to isolation and few job opportunities. This extension differed from other areas in that it was 100% mechanised, which further increased the initial cost and lowered the profit margin. In some years mechanisation costs escalated expenses beyond crop revenue. The breakdowns and fuel shortages which followed could not be dealt with by replacement with wage labour despite a high proportion of working children; a sufficient number of people simply did not exist in this economically marginal region.

The three regions involved in the Irrigation Scheme - the Gezira, Managil and Rahad have differing histories, had different objectives and have been involved in the Scheme for different lengths of time. The outcome in terms of present day conditions for women is a basic interest here and is discussed in later chapters.

Chapter Two

References

- (1) Ridker. R.G. (ed) 'Population and Development : the search for selective intervention' John Hopkins University Press, 1980 (2nd ed).
- (2) UNFPA 'Sudan : Report of Mission on Needs Assessment for Population Assistance' Report No.9, UNFPA, February 1979.
- (3) 1981/2 Ministry of Finance and Economic Planning 'Prospects, programs and policies for economic development.' October 1982.
- (4) UNFPA 'Sudan : Report of Mission on Needs Assessment for Population Assistance' Report No.9 UNFPA, February 1979.
- (5) UNICEF Data sheets, Khartoum 1982.
- (6) Economist Intelligence Unit Ltd. 1980.
- (7) Report of the Special Committee of the Advisory Council of the North Sudan on the future of the Gezira after 1950.

CHAPTER THREE

RESEARCH DESIGN AND METHODOLOGY

(i) Objectives

The broad aim of this investigation to describe and explain the socioeconomic status of women in Central Sudan will be achieved by studying their life-style and role which are products of society's code of behaviour and which in this region are strongly influenced by religious and ethnic factors. We are also interested in external influences, particularly the Gezira Irrigation Scheme. While society's definition of high and low status may be better understood by using some of the ideas suggested by demographic theory, the influence of external inputs may be clarified by the ideas of development theory. These theories have been more thoroughly discussed in earlier chapters.

Development theory should help us examine how structural inequalities set limits to the benefits received by subordinated groups from increased knowledge and productivity. We are also hoping to identify structural changes in women's socioeconomic position brought about by external influences. An examination of the male/female differential should highlight the degree to which women's status is or is not controlled by the status of their husbands/fathers.

Demographic theory may highlight the constraints that society places or will place upon efforts at local and national levels to improve the conditions of women's lives.

Status is a composite quality, best understood by examining linkages between simpler variables which by themselves are informative without being fully explanatory. By accepting women as a distinct social group but in the context of the family, we can investigate the implications that one set of

descriptions has for another and avoid indiscriminate fact gathering, so producing a means by which we can understand status.

(ii) Data base

Data were obtained from two main sources : field work and documentation. The literature used pertained to women's studies and to the Sudan. The latter is not well-documented as far as contemporary conditions are concerned and as a consequence, original field work was desirable.

One of the few useful and recent research projects was carried out in 1981 in the Central Region. This was a social survey of selected villages in the area and was conducted in census-fashion.⁽¹⁾ The census covered six villages, four in the main Gezira area, one in Managil extension and one in Rahad extension. The entire population of each village was enumerated using the household as the basic unit and each head of household as the basic data source and reference point for the household. Data were collected on demographic, occupational, health and household conditions. Some preliminary data are already available but the majority are still under analysis (some preliminary results of the Tosun survey are listed in Appendix I). It is difficult to judge the accuracy of the data so far presented since there are few reliable comparisons. Noticeably the government's 1982 estimates for the populations of these villages differ markedly from the Tosun estimates.

The six villages included in the survey are listed in Table I and it is from these villages that sample households were selected for the purposes of this research project. (see also Fig.3).

(1) Ali Tosun Aricanli . 'Gezira Scheme Village Census of Demographic Occupation and Health Status.' University of Gezira, Sudan . 1981 .

TABLE I

THE SAMPLE VILLAGES : TOTAL POPULATION AND AVERAGE HOUSEHOLD SIZE.

<u>Region</u>	<u>Village</u>	<u>Population (total)</u>	<u>No. of households</u>	<u>Average size of household</u>
Gezira	Wad Suleiman	748	136	5.5
	Kambo Tanta	168	40	4.2
	El Tayemab	711	183	3.9
	Wad Krei	1664	306	5.4
Managil	Wad Adam	5515	390	14.1
Rahad	Village 42	1681	354	4.7

NB Village 42 was originally two villages:-

Ruqwa Babikir	1249	262	4.8
Ruqwa Ahmed	432	92	4.7

These two villages became one after the initiation of the Rahad extension development scheme.

(iii) Survey design

In any research project involving field work, technical and organisation decisions are of crucial importance. These decisions include the definitions of the 'population', the choice of information required and the method of collection, processing and interpretation of results. The field work stage is a careful combination of the practically feasible and the theoretically desirable.

The 'population' here, refers to the inhabitants of the Central Region villages which were included in the Tosun survey and which are themselves a sample of the entire region's villages. From this population, a sample was selected which was small enough in number to be manageable yet large enough to be meaningful; that is, to allow analytical flexibility

and meaningful statistical interpretation of data, the sample was kept as large as possible within the limits of resources (finance, time, personnel). As large a sample as possible is desirable in order that respondents' answers can be segmented into categories and enough occupy each category to allow for statistically meaningful interpretation of data.

The sample represented about 10% of the total population and was selected on a systematic unrestricted basis from the complete lists produced in the Tosun survey (which were organised according to name of the head of household in alphabetical order). A systematic selection results in the same percentage of households being interviewed in each village and was therefore preferred to a random selection. The lack of regularities in the background population ensures the representativeness of the sample and allows important conclusions about the entire population to be inferred from analysis of the sample. The unrestricted factor allows replacement of a selected household if this is necessary (e.g. if the household has moved away). Using this method of selection, lists of heads and members of households were drawn up (with reserves) and became the selected sample.

The second stage of the procedure was the choice of survey instrument. For the purpose of this particular research project, formal interview was chosen as a method by which the respondent could be asked a set of questions, and answers could be recorded in a standard form. This formal approach achieves uniformity, which is important when comparability between interviews is necessary and when the interest lies with the aggregate rather than the individual.

Of all research designs, survey research most clearly requires active, wilfull, mutual, involvement of a researcher and a respondent in the data collection process. In order that enumerators should fully understand their responsibilities, each was issued with instructions, which appear in Appendix II as 'Notes for interviewers'. These instructions outline the

objectives of the research project and give guidance for conducting a good interview, covering a range of important issues from politeness to careful recording and coding.

The questionnaire schedule was constructed in the most concise and least complicated fashion possible. Questions were asked in a logical order and wherever possible were pre-coded. Where this was not possible, questions were left 'open' and coded later. After each question and depending on the respondents answer, interviewers were provided with written instructions about whether to continue or 'skip over' some questions. To conduct a successful interview, competent layout, printing, instructions and wording of the questions are of vital importance.

A community information schedule sought general information about the village. The community questionnaire was an indispensable source of background information about the macro-environment, providing a necessary contextual perspective. Each schedule was administered to a knowledgeable person such as a village school-master.

The main survey was composed of three schedules named respectively Section I, Section II and Section III. This division allowed the minimum number of questions to be asked to the minimum number of people.

Section I sought data about the household as a unit. These questions covering family structure, amenities and resources were directed to the head of household or some responsible adult member. These questions are factual rather than opinion based. For each household, only one section I schedule was completed (definitions of 'household' and 'household head' were provided in the instructions).

Section II applied to all women in the household aged 12 years or more and each woman answered a separate Section II schedule. Topics covered included family background, economic characteristics and education.

Section III applied to all ever-married women in the household, each woman in this category completing a separate Section III schedule. Topics related to demographic behaviour, marriage and children.

Interviewers were provided with notes on how to interpret the questions and record the answers.

Before the main survey, a pilot survey was carried out to assess the adequacy of the research instrument and to detect errors. The pilot survey was administered to a small independent sample from a Gezira Village not included in the final survey. Enumerators aimed to identify questions where:-

- a. a large number of respondents did not know
- b. respondents had to qualify the question
- c. respondents refused to answer
- d. respondents all answered in the same way.

The pilot survey led to some rewording of questions, some recoding of answers and the exclusion of some irrelevant questions. In this way the main survey could proceed on a sounder footing.

At the end of the main survey, 590 questionnaires had been completed, 275 women interviewed and 21,500 questions asked.

(iv) Survey problems

The field procedure, although not dictated, was certainly influenced by the practical and administrative problems which existed.

A major problem was the lack of preliminary background information available, particularly time series data, unfortunate when we are dealing with the dynamic issues of development and demographic change. There was little scope, then, to plan for comparisons between research results and any available data on general conditions or trends. Even the minimal amount of data which are available, are dubious. Existing estimates are

likely to be erroneous, since in order to make approximations, the population of Sudan has largely been assumed to be homogenous. The large internal variations which do exist, invalidate many generalisations but there are few opportunities for checks on consistency in these data. Given these limitations it was felt that the questionnaires here should be broad in scope.

On a more practical level, the competence of enumerators greatly influences the success of a project and so demands considerable attention before the survey begins. Suspicion among the target population can be a problem. The lack of adequate mapping of the area and travelling and fuel problems may also be considerable. The population of Central Sudan were found to respond well to interview in most cases and were pleased to assist although some men objected to their wives and daughters being interviewed as this conflicted with the dictates of their Islamic faith. The more recently 'settled' tenants and wage labourers in Rahad presented a problem since they still exhibited migratory tendencies and were often difficult to locate (many of the Rahad respondents were living temporarily or permanently in village 32) as were those who were picking cotton. Lack of maps, good roads, fuel, and water in the villages were major difficulties.

(v) Survey results

Most questions in the survey were pre-coded, that is enumerators indicated which answer the respondents had given by circling the corresponding code. Codes varied from broad groups (1 and 0) to more complex class intervals. Other questions were 'open' and were coded later, since coding in these cases depended upon the range of answers and frequency distribution, which were unknown factors before the survey. Pre-coding was favoured wherever possible because while this may entail a risk of ambiguity, it does maintain the objectivity which is often lost in 'post-coding'.

Enumerators were asked to edit their completed schedules as soon as possible to detect errors, omissions or clarify the information they had entered on the schedules.

Finally, the data contained in the 590 questionnaires were analysed by a process of 'exploratory data analysis'^a. This involves the cross-tabulation of results and can reveal a great deal about the population in terms of the relationships between population characteristics. In designing the tables, the interest in the male-female differential, in racial differences and in between-village differences was acknowledged and the tabulations designed accordingly.

^a Tukey, J.W. 'Exploratory Data Analysis.' Addison-Wesley Publishing Co. 1977

CHAPTER FOUR
RESEARCH FINDINGS

(i) Introduction

Data collected using the questionnaire schedules are presented in cross-tabulated form in Appendix III. The tables represent a regional comparison as well as a section by section analysis of the questionnaires, hence we have data for Gezira region, for Managil region and for Rahad region. The inter-regional comparison is one, but not the main objective of the overall study. The tabulations are designed to provide a general impression of the socioeconomic status of women, paying particular attention to the male-female differential and also to reveal some of the differences between ethnic groups. The tabulations represent these objectives rather than a presentation of all data collected. The relationships between variables are not self-explanatory. Any interpretation given here may be a misinterpretation. More rigorous data collection and hypotheses testing is required to settle the arguments these data may provoke. These preliminary results should, however, encourage further discussion and investigation.

Community questionnaires provided information about the macro-environment and were completed by interview with a knowledgeable member of each village community, usually a school teacher (or teachers). The information thus obtained provided an essential 'background' to the interviews with individuals which followed.

(ii) Six village environments

The six villages are located in Figure 3 : 'The Gezira Irrigation Scheme and extensions'.

Wad Suleiman in Gezira proper was found to be an old and fairly wealthy Arab village with an adjacent 'fellata' settlement, the residents

of which are considered as part of Wad Suleiman for the purpose of this research. There are marked socioeconomic differences, however, between the main village and the extension. The 'fellata' community have no electricity nor any sanitation system, whereas most households in the main village have both electricity and their own latrines. House construction in the main village (mud-brick) and the extension (straw/grass) differ considerably. All households, however, have access to treated water. Many of the main village households possess tenancies and these families reserve the right to inherit tenancies whereas the members of 'fellata' household share-crop or wage-labour. Women and children in this latter group of household-'type', pick cotton seasonally and are also involved in other agricultural work, this often preventing children of school-age, attending school. In contrast, in the main village, women are reluctant to work on tenancies and the younger male generation are migrating in large numbers to jobs, or in search of jobs, in the towns. Boys attend school with this aim often already in mind. Labourers are generally hired to work the household tenancy and often to tend the animals as well. This contrast between the old village and the more recent extension is the most striking characteristic of Wad Suleiman.

Kambo Tanta is an expanding settlement of Western Sudanese and very different from Wad Suleiman in lay-out, houses here being much more closely spaced. The population has mostly arrived from Darfur where general living conditions are far worse than in Gezira. The village has no amenities - no electricity, no sanitation system, no treated water, no health services (although some medicines were brought into the village by UNICEF two years ago) and no schools (there are two Khalwa [schools in which the Qur'an is learnt by heart]). Some children walk to a village school which is about an hour away but most children are needed to labour in the fields. There are no shops, the sheikh sells meat, but all other

commodities must be brought from other villages, and no transport facilities. Canal water, which is undoubtedly infected (particularly with the bilharzia (or schistosoma) parasite), is used for drinking, cooking and washing clothes. Housing is of a very poor standard - mostly grass huts although there is a little mud-brick work. All the men work in the fields, some, share-cropping. There are no tenancies. Women work in the fields alongside men and those confined to the home produce handicrafts.

El Tayemab is a longer established village of Western Sudanese wage-labourers (men and women) which is experiencing some out-migration as villagers seek other employment in Khartoum or Wad Medani, the local market town. Out-migration in this case marks much greater socio-economic mobility among this population than was seen in Kambo Tanta. El Tayemab has no electricity or sanitation system (villagers use the fields). There is no water tower but there is a well. Houses are mud brick, built very closely together which exaggerates the typical dark house-interiors, which are characteristic of the Western settlements. The village has no school and has no regular transport, although lorries do pass through occasionally. There are seven shops but fresh food has to be brought from nearby villages.

Wad Krei is similar to Wad Suleiman in that the village is an old Arab settlement with a 'fellata' extension. There is no electricity. The houses in the older Arab section have latrines whereas the people in the extension use the fields. These people also use the canal water for all purposes since they are too far from the water tower in the main village to make fetching treated water a feasible option. The village is on a transport route, has several shops and a small primary school. Most of the fellata boys and all the girls do not attend school because of agricultural work duties and traditions. One socially progressive factor is the existence of a committee of representatives from the village who meet to discuss such matters as education, food supplies and more recently

the need for electricity. There are two women on this committee who present the wishes of the women of Wad Krei and pass on instructions to the women on subjects such as the cleaning of the village which is the duty of the women. There are, however, no 'fellata' representatives.

In all Gezira villages, adult education classes have been discontinued because of reduced finances.

Wad Adam in the Managil extension is a large village but with few amenities. There is no water-tower and the well-water is salty or dry, depending on the time of year, hence residents use canal water at all times. There is no electricity. However, the houses are well-built, the village has four schools (for which there is a small generator), a health centre, about 20 shops and a small souk (market) where meat and a few vegetables are available.

Village 42 in the Rahad extension was originally two villages before the Scheme authorities combined them. The houses are poor quality fired or mud brick and grass huts. The population are all 'Arab' although Westerners migrate to this village seasonally and live on the farms as wage labourers. The village has no electricity but some houses have a latrine and all use water from the water towers. Food is brought into the village by local women. There are a few shops, one school and a daily bus to nearby villages. Health services are minimal, restricted to one fakhi (local traditional healer).

(iii) POPULATION CHARACTERISTICS

The questionnaire : Section I was designed to provide information about the age, sex and ethnic structure of the population as a whole as well as other general socioeconomic characteristics such as educational standards and the general 'standard of living' in the villages in terms of access to amenities and living conditions.

The overall sex ratio for the seven villages studied was 1.1, indicating a predominance of males. This predominance, however, was evident only in Managil and Rahad and outweighed the excess of females over males which exists in all Gezira villages studied. The reason for this imbalance may be the out-migration from the well-established Gezira villages to jobs in Khartoum and Wad Medani or may be due to the in-migration of more men than women in response to farming opportunities in Managil and Rahad or may be a combination of the two.

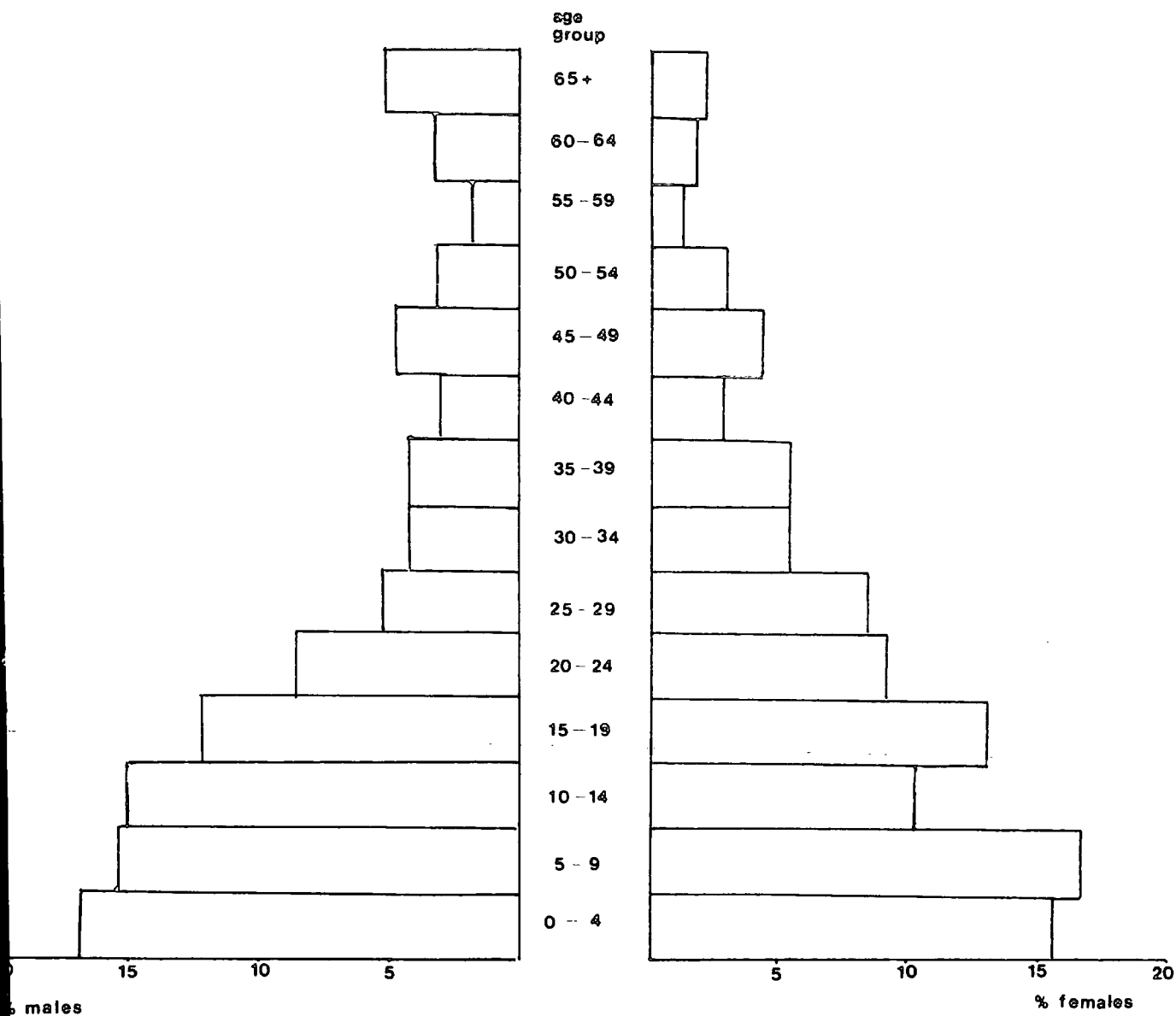
The population is strikingly youthful, as revealed by the age/sex pyramid (Fig.4) 46.8% of the total population of the six villages are less than 15 years old.

Fertility is still high but mortality appears to be declining slightly. There is a marked absence of middle aged men (40-60 years); possibly they have migrated to jobs elsewhere. The population growth rate and total fertility rate are undoubtedly high, although lower in the Gezira region than in Managil and Rahad, where, in both cases, the proportion of the population less than 15 years old is much higher than in Gezira.

The extended family is the basis of social grouping in Northern Sudan. Inter-marrying within this structure, for example, between cousins is very common and strengthens family unity. Households are generally large as a result of the extended family system and the high TFR. There are also very often, close family ties between households in the same village. Households were defined as 'all those people who live together in the same compound and eat from the same pot' and were found to be composed of on average 7.1 members, although this mean was based on data ranging from 1 to 20.

Education data revealed a marked imbalance between the sexes. 32.1% of the total male population of all six villages were found to be

Fig 4 Age and Sex Structure : the population pyramid showing the age/sex distribution of the sample population.



Total population 933

Male population 470

Female population 463

illiterate, this comparing to 66.7% of the total female population. Both these figures, however, are lower than those generally accepted for the Sudan as a whole, which indicates that there may have been comparative improvement in this central region. Regional data are provided in Table II and reveal that illiteracy is lower in Gezira region than in Managil or Rahad. For the male population, standards of literacy are lowest in Managil region while for the female population, standards are lowest in Rahad. One explanation might be that greater efforts have been made to reduce illiteracy by the socially conscious Rahad planners but that this effort has mostly benefitted men. However, when 'Khalwa' only education is added to the count, the picture changes (Table III). A Khalwa education is confined to learning and reciting the Qur'an by heart.

Table II : Illiteracy rates in the Gezira, Managil and Rahad villages

	Gezira	Managil	Rahad
% illiterate Male	14.3	49.3	32.7
Female	50.5	68.4	80.8
Total	32.4	58.9	56.8

Table III : Illiteracy + Khalwa education-only rates in the Gezira, Managil and Rahad villages

	Gezira	Managil	Rahad
% illiterate Male or Khalwa only	36.3	50.7	32.7
Female	51.8	68.4	80.8
Total	44.1	59.6	56.8

The greatest change in the data is in Gezira region, where 22% of all men had received a Khalwa education only. These were the older men in the village, who were involved in the Scheme in the early years, before Managil or Rahad existed. There has been no Khalwa education for the Rahad population.

The ethnic grouping is interesting because of the socio-economic differences revealed between the groups. The overall percentage of the total population for each group found were 80.5% 'Arab', 16.7% 'Westerner' and 2.8% 'Fellata'. Only in Gezira were all three groups represented, which may be evidence of the longer time available for in-migration and the greater ability in economic terms for this region to support such an influx. The supposition is supported by the fact that in the most recently established and less wealthy Rahad region, the population were 100% Arab. There is no way of knowing how representative the sample villages and the relative size of ethnic groups in the whole sample and in each region are, without having a population sample based on the entire region's population rather than a sample based on particular villages. However, the author believes that the villages are representative sample villages and that the resultant ratio of Arab : Westerner : Fellata in the final sample is roughly equivalent to the actual ratio and of central interest because of the barriers and socioeconomic differences between the three main ethnic groups.

We should also be aware that whereas everyone in Central Sudan understands and can identify the demarcation between Arab, Westerner and Fellata, it is an unwelcome demarcation in that the social stigma associated with 'Fellata' is very unfavourable. Fellata families are generally considered to be second class citizens. Although Westerners have also migrated to the region in search of work, are generally poorer than the

indigenous population and possess a life-style quite different to the 'Arab' population, (for example, Westerner women often work in the fields) they are generally considered to be Sudanese, (i.e. not 'outsiders') and are treated with far greater respect.

Living conditions varied considerably between regions and between races. Generally, in Central Sudan, house construction type is a strong indicator of household wealth. The definitions (y1-y6) used in Table IV approximate to a gradual deterioration in wealth.

Table IV : House construction types : a regional comparison

	Gezira	% Managil	Rahad
y1 Fired brick	37.3	19.4	57.1
y2 Mud brick	11.8	29.0	2.9
y3 Mud jalous (animal skins)	40.8	45.2	8.6
y4 Mud grass top	10.2	0.0	17.1
y5 Grass	0.0	6.5	14.3
y6 Other	0.0	0.0	0.0
Total number of house- holds	<u>59</u>	<u>34</u>	<u>35</u>

The more recently constructed villages and houses in Rahad are built of fired bricks and are another manifestation of direct social planning on the part of the Rahad authorities. Living conditions are far poorer in Managil. In Gezira, the brick houses occupied by the Arab population are far superior to those in Rahad but the overall percentage figures are affected by the poorer standards in Western villages and Fellata extensions (40.9% of the Gezira household population belong to category y3).

More evidence of variations in standard of living is presented by data concerning access to amenities (see Table V).

Table V : Access to amenities : a regional comparison

	<u>Region</u>		
	Gezira	Managil	Rahad
<u>% households</u>			
with no electricity	88.1	100	100
with no latrine	40.7	80.6	62.9
with no water pipe or well	10.2	90.3	8.6
who cook with charcoal or wood	96.6	67.7	100
who have no paid domestic help	96.6	100	100

In almost all categories, the longer-established Gezira region displays better living conditions. If the 'Fellata' extension and poor Westerner labour camps were excluded, the Gezira region would fare even better. The established population here, has a higher standard of living than the population settled or settling in the other regions but because of the influx of migrants to this comparatively rich area, the overall standard of living is reduced. Data based on averages are likely to be misleading.

The data provided in Appendix III reveal a greater diversity of transport facilities in Gezira and a greater use of health services, both of which are to be expected in a longer-established society. Examine the calculation of wealth index and persons per room in Appendix III and Tables VI and VII and note that there are fewer households in the lower category of wealth index in Gezira and more overcrowding in Managil and Rahad.

Table VI : Regional wealth indices

<u>Region</u>	<u>Category %</u>		
	x1	x2	x3
Gezira	72.9	20.3	5.1
Managil	81.8	6.1	6.1
Rahad	77.1	5.7	2.9

Table VII : Regional 'persons per room' levels

<u>Region</u>	<u>Category %</u>			
	y1-y3	y4-y6	y7-y9	>y9
Gezira	18.7	60.9	17.0	3.4
Managil	12.1	48.5	24.2	15.2
Rahad	17.1	31.5	28.5	22.9

Data suggest that conditions are better in Gezira than in Managil and Rahad, despite the influx of migrant labour. In Managil, socio-economic conditions appear to be poor by all measures, whereas in Rahad, there have been noticeable efforts in some areas of potential improvements, particularly water supply. However, there is little evidence to support any suggestion that the region is 'taking-off' in terms of social improvement. Indeed, the fact that so many families are migrating to other villages requires further investigation since it implies economic instability. Many families had moved since the time of the Tosun census and were difficult to locate for the purposes of this survey. The reason probably lies with the fact that plans for the Rahad extension were originally based on full-mechanisation of agriculture which is now largely impossible because of maintenance difficulties and fuel shortages. Tenants are, therefore, having to work for much longer periods on their tenancies in order to maintain their principal source of financial revenue. Hence there is a marked reshuffling of the population pattern.

On the basis of this initial impression of inter-regional and inter-ethnic differences, Section II and Section III data were studied with the objective of analysing the socio-economic status of women, bearing in mind the potential influence of ethnic origin and regional location

(iv) Socio-economic characteristics

Section II sought information from women aged twelve years or more and covered a range of social and economic topics. There is a remarkable similarity between the women's answers, particularly in Rahad, giving the impression that opportunities for diversity are rare.

Most women in Northern Sudan remain in their father's house until they are married, hence marital status has a great influence on where and how women live. Data on marital status showed a greater proportion of total female population who are single, in Gezira region than in Rahad or Managil where the proportion married is greater (Table VIII). This could be attributed to the 'newness' of these societies; most women are accompanying husbands who have settled in the region. This is corroborated by the data for relationship to head of household, particularly the wife category (Table IX). Note also the greater number of daughters in the Gezira sample, a further indication that the society here is longer-established .

Table VIII : Marital Status (by region) %
(of woman)

<u>Region</u>	<u>Single</u>	<u>Married</u>	<u>Divorced</u>	<u>Widowed</u>	<u>Total ever-married</u>
Gezira	40.1	52.6	0.7	6.6	59.9
Managil	32.2	63.1	0.0	4.6	67.7
Rahad	17.5	73.7	0.0	8.8	82.5

Table IX : Relationship to head of household (by region) %
(of woman)

<u>Region</u>	<u>Wife</u>	<u>Mother</u>	<u>Daughter</u>	<u>Sister</u>	<u>Other</u>
Gezira	36.7	0.7	41.3	4.0	17.3
Managil	54.7	3.1	28.1	3.1	11.0
Rahad	59.6	5.3	28.1	1.7	5.3

Women's educational and economic activity experience was limited. Only some of the younger women had attended or were attending school and these only until they marry. The older women in general had not attended school, mostly because such action would have elicited social and family disapproval. Fathers generally disapproved strongly. Women were needed in the household. For those women who might have attended school, that is their families would not have objected, the fact that this often would have meant travelling to distant villages, precluded the possibility. Those women who were able to attend gave their reasons for leaving as failure in examinations (women interviewed all stated that they would never retake examinations) or in order to marry. Even the most educated women attended school for only a few years. The younger women now believe that a little education is beneficial since it improves the marriageability of their daughters but marriage is still the priority objective.

Data on employment status do not contradict the impression that young women are still not (nor can be) career-minded. Most women, particularly in the extensions, where there are even fewer work opportunities than in Gezira are unemployed or unpaid family workers, who seasonally assist on the tenancy. Among 'Western' families, there is no stigma associated with agricultural work; among the indigenous 'Arab' population however, only the poorest women will do this work and at the first opportunity will stop since to be working in the fields alongside men is socially degrading and evidence of one's inability to secure a husband who can financially support his wife. The figures in Table X, bearing in mind the strong 'Arab' elements in Managil and Rahad and the ethnic mix in Gezira, support these views.

Table X : Employment Status (by region) %
(of women)

<u>Region</u>	<u>Self-employed</u>	<u>Employed</u>	<u>Occasional worker</u>	<u>Unpaid family worker</u>	<u>Unemployed</u>	<u>Student</u>
Gezira	5.9	4.6	17.4	34.2	27.7	10.2
Managil	3.1	1.3	8.4	28.1	45.0	14.1
Rahad	1.8	0.0	6.3	25.2	64.9	1.8

Rahad has far fewer women classified as student than the other regions, possibly because there are fewer opportunities for girls to attend school beyond the age of 12 in this region.

Employment and economic activity were investigated more thoroughly by asking the employment status questions more specifically. The results are presented in Table XI.

Table XI : Female employment characteristics (by region)

<u>Region</u>	<u>% employed (with income)</u>	<u>% with tenancy (own name)</u>	<u>% doing agricultural work</u>	<u>% who pick cotton</u>
Gezira	8.4	4.5	65.2	61.3
Managil	1.5	12.3	41.5	27.7
Rahad	7.0	3.5	40.4	36.8

These figures vary from the those in Table X because of a different interpretation by the interviewed women of what constitutes being employed (e.g. the enumerator may consider a women with a tenancy in her name as self employed whereas, because she is able to hire others to do the work, the woman is pleased to classify herself as unemployed).

Unchanged however is the impression that women are more involved in agricultural work in Gezira than in the extensions where more are "unemployed".

The women who did work, worked long hours for little pay. For example in Gezira, 62.5% of the women who work, work for more than 25 hours

each week (38% for more than 35 hours) and 86.1% of the working women receive less than S£50 (at the time of writing S£50 is equivalent to about £20) for this work per month, often considerably less. Women had little or no savings, their income generally amounting to the money sent by 'relatives-away', which may be substantial if these relatives are abroad, for example in Saudi Arabia or Kuwait. It is unlikely that a Sudanese abroad will not send money back to his family in Sudan. This money is generally spent on the household's basic needs - clothes, kitchen items and so on.

Women were questioned about their reasons for not working and the results appear in Table XII.

Table XII : Reasons for not working (by region)

<u>Region</u>	<u>Reason (of woman)</u>					
	<u>Unable to find work</u>	<u>Too old or young</u>	<u>Husband/father disagrees</u>	<u>Poor health</u>	<u>Children or household duties</u>	<u>Other</u>
Gezira	29.0	8.1	13.0	6.5	38.7	4.8
Managil	17.1	2.4	9.8	0.0	44.0	26.7
Rahad	22.0	4.9	12.2	2.4	58.5	0.0

The higher figures for Managil and Rahad in 'children/household duties' represent the stronger and more prevalent traditional mode of social behaviour here among the 'Arab' population.

The Rahad population is far more 'local' in origin; all heads of household were born in Gezira province, whereas 23% of heads of households in the Managil sample originated from other provinces and 32% of the Gezira sample were not from that province, 5% being from Nigeria.

Greater uniformity in Rahad is also reflected in the occupation of father data (Table XIII). The greater diversity of occupation of father in Gezira is to be expected in a longer established society; in Managil there is a greater concentration in agricultural occupations, and in

Rahad, the fact that the population is only recently settled and only recently in receipt of tenancies is evidenced by the 69% of fathers who were labourers before the Scheme extension was initiated.

Table XIII : Occupation of father (by region)

<u>Occupation of father</u>	Gezira(%)	Managil(%)	Rahad(%)
Public agencies	5.1	0.0	0.0
Commerce	3.6	1.6	1.7
Tenant	53.0	50.8	22.4
Irrigated farming labourer	15.2	15.9	69.0
Rainfed cultivation	0.0	22.2	1.7
Animal husbandry	0.0	3.8	0.0
Small-scale production	0.0	4.7	0.0
Artisan	12.3	0.0	0.0
Public industry (admin)	4.4	0.0	0.0
" " (unskilled)	10.1	0.0	0.0
Private industry "	1.5	0.0	0.0
Small services (driver)	2.2	0.0	5.2

Finally an effort was made to compare the life-style of women in the three regions by asking each, how long she spent each day cooking and cleaning, collecting fuel and water, and doing agricultural work. The results are presented in Table XIV.

Table XIV : Time allocation (by region)

<u>Region</u>	<u>Cooking & cleaning</u>			<u>Fuel & water collection</u>			<u>Agricultural work</u>		
	0-3hrs	3.1-7hrs	7.1+hrs	0-3hrs	3.1-7hrs	7.1hrs+	0-3hrs	3.1-7hrs	7.1hrs+
Gezira	35.2	50.7	14.1	96.5	3.5	0.0	88.5	10.3	0.7
Managil	34.4	52.6	13.0	74.4	25.6	0.0	52.9	41.2	5.9
Rahad	12.5	53.4	34.0	87.0	12.3	0.7	78.9	15.8	5.3

Rahad women appear to be most disadvantaged in the cooking and cleaning category which may relate to food supply and fuel problems in the region. This is supported by a fairly high figure (12.3%) in the 3.1-7 hrs category for fuel and water collection. The high 25.6% for Managil here, must relate to the water problem in Wad Adam where women have to fetch all their water from the canals. Managil women also appear to devote far more time to tending animals or to other agricultural work than in the other regions. Clearly in all three regions, women spend long hours on repetitive and time-consuming tasks.

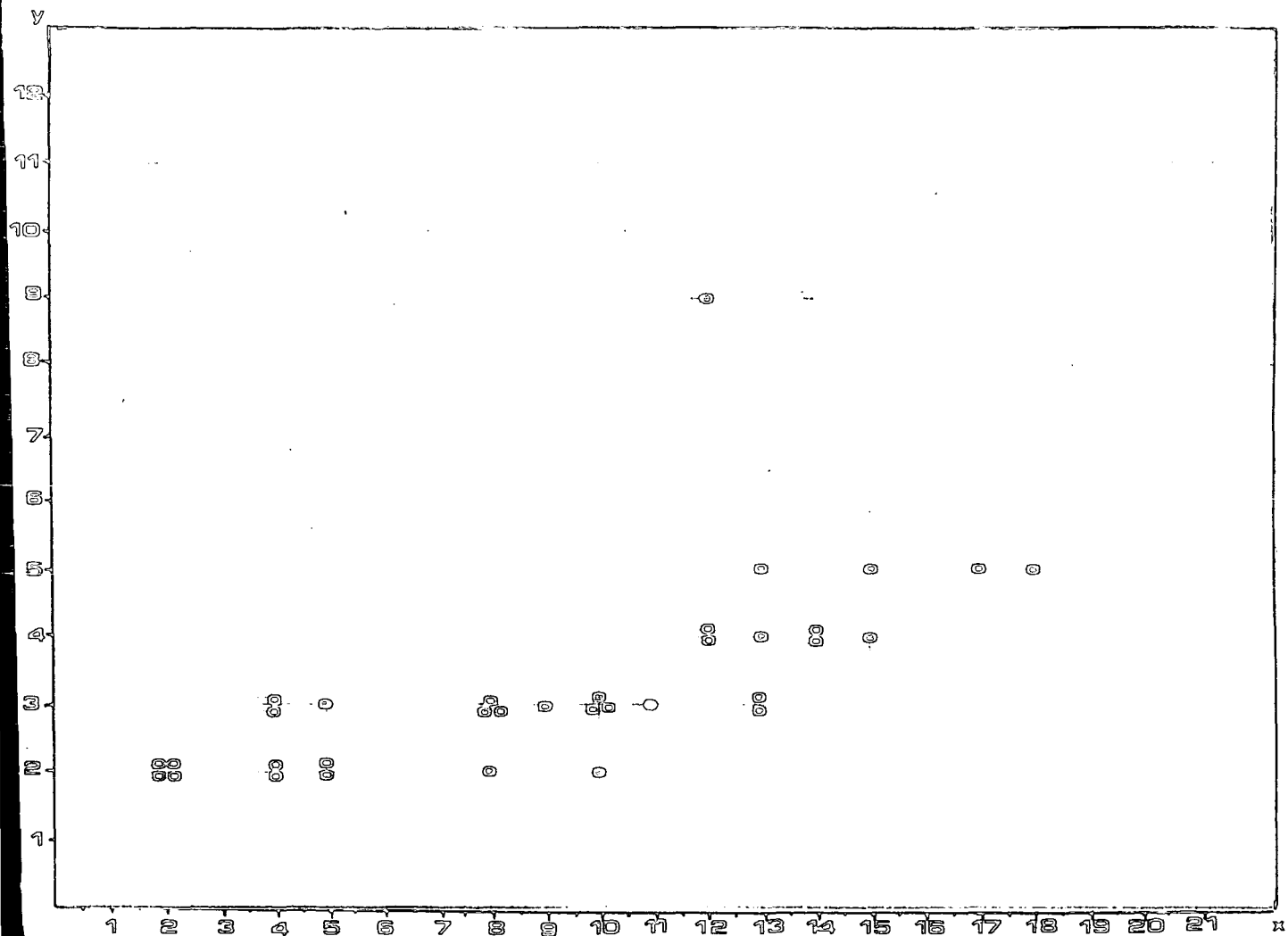
(v) Marriage and fertility

Section III sought information from 'ever-married' women, (that is married, divorced or widowed women) and was mainly concerned with issues relating to marriage, fertility and children.

One might expect women belonging to the older age groups to have been married for a longer period of time. The closer the relationship between 'age group' and 'number of years married', to a positive, linear correlation, the more uniform age at marriage for women, must be. The results for Rahad are plotted in Fig.5. A positive linear correlation exists but there are several anomalies. However, we should recognise that women's responses to age, years married and age at marriage questions cannot be considered as accurate. Often fairly large discrepancies existed between data given for age at first marriage, number of times married, number of years married and present age. This was felt to be generally due to ignorance or poor recall rather than deliberate misreporting.

The responses to age at first marriage imply a younger age at first marriage in Managil than in Gezira and younger in Rahad than Managil. While no girls in Gezira, married at the age of 12, 5% of those interviewed in Managil and 20% in Rahad were married at the age of 12 years. Data for

Fig 6 The correlation between age group and number of years married for the sample population from the Bahad extension.



x number of years married

y age group

- | | | | |
|---|-----------|----|-----------|
| 1 | 12-15 yrs | 7 | 41-45 yrs |
| 2 | 16-20 " | 8 | 46-50 " |
| 3 | 21-25 " | 9 | 51-55 " |
| 4 | 26-30 " | 10 | 56-60 " |
| 5 | 31-35 " | 11 | 61-65 " |
| 6 | 36-40 " | 12 | 65+ " |

marrying when over the age of eighteen give percentages for Gezira, Managil and Rahad as 26.6%, 10% and 4.4% respectively. This also supports the hypothesised trend for later marriages in the longer established regions (see Table XV).

Table XV : Age at first marriage (by region)

<u>Age (yrs)</u>	<u>Gezira</u>	<u>Managil</u>	<u>Rahad</u>
12	0.0	5.0	19.9
13	4.5	5.0	11.1
14	10.1	5.0	6.7
15	19.1	27.5	13.3
16	11.2	7.5	17.8
17	13.5	20.0	20.0
18	14.6	20.0	6.7
19	5.6	0.0	2.2
20	14.6	0.0	2.2
21	1.1	2.5	0.0
22	1.1	2.5	0.0
23	0.0	0.0	0.0
24	2.2	0.0	0.0
25	0.0	2.5	0.0
26	2.2	0.0	0.0
27	0.0	2.5	0.0

Average age at first marriage for Gezira ever-married women was 17.2 years, for Managil women 16.1 years and for Rahad women 14.7 years.

Data for age differences between husband and wife show that differences are less in Rahad than in Managil and less in Managil than Gezira (Table XVI).

Table XVI : Age differences between spouses (by region)

<u>Age difference</u>	<u>Region %</u>		
	<u>Gezira</u>	<u>Managil</u>	<u>Rahad</u>
0 - 5 years	29.2	40.0	53.3
6 - 10 years	33.7	37.5	35.5
11 - 15 years	19.1	12.5	8.9
16 - 20 years	17.9	10.0	2.2

There does seem to be some contradiction in the positive correlation between younger age at marriage and less difference between husband and wife ages. One might expect the latter to be characteristic of a more socially progressive society but not the former.

The second major issue dealt with by Section III was fertility and children. Examine Tables XVII and XVIII.

Table XVII : Total children born to total women (by region)

<u>Region</u>	<u>Total women</u>	<u>Total children</u>	<u>Children per woman</u>
Gezira	86	407	4.7
Managil	46	185	4.0
Rahad	43	201	4.7

Table XVIII : Sex ratio of total children born to total women

<u>Region</u>	<u>Total children</u>	<u>Total male</u>	<u>total female</u>	<u>Sex ratio</u>
Gezira	407	199	208	0.96
Managil	185	109	76	1.43
Rahad	201	120	81	1.48

The number of male children in excess of female children in Managil and Rahad is reflected in the sex ratio tables in Appendix III and may suggest that in these less-developed regions, preference for boys is still apparent. One would expect to discover a corresponding excess of

female deaths over male. This was not found. The reasons for the male majority remains unexplained by the data. However, the sex ratio data reveal percentages of women with more boys than girls as 38.9% in Gezira, 52.4% in Managil and 55.5% in Rahad. This does not seem as imbalanced as did the other figures and does suggest that only certain families are responsible for the excess of male births.

Despite the fact that we are dealing with incomplete fertility in most cases here (i.e. women will have more children during the remainder of their life time), some attempt was made to seek a correlation between the number of siblings and the number of children. The results in a simplified form are produced in Table XIX.

Table XIX : The relationship between number of siblings and number of children %

	Women with more siblings than children	Children = siblings	Women with more children than siblings
Gezira	52.2	16.3	31.6
Managil	28.9	15.6	55.6
Rahad	58.3	2.1	39.6

These figures suggest that Gezira and Rahad women possibly will produce less children than did their parents; in Managil this can not possibly occur since 55.6% of women already have more children than siblings. This might indicate that while conditions in Managil in many categories are poorer than in other regions, the population itself has experienced a marked improvement in wealth and welfare; and hence more children survive. Examine the data presented on child mortality in Table XX.

Table XX : Child mortality

<u>Region</u>	<u>Total dead</u>	<u>Total male</u>	<u>Total female</u>	<u>Sex ratio</u>
Gezira	45	26	19	1.37
Managil	24	15	9	1.67
Rahad	33	14	19	0.74

These figures do not account for the imbalance between the sexes of children referred to earlier; in fact only in Rahad do female deaths exceed male deaths. One must conclude that there has been some serious misreporting.

The total number of deaths are high; in Gezira 11.1% of children ever born to the sample women died, in Managil 13% and in Rahad 16.4%. Despite these high mortality figures (and many of the children less than a year old are still in danger) population growth is high because of the high fertility rate. The population is very youthful as a result.

Some attempt was made to discover the main causes of death among these children. The entire region of irrigated farming is known to be infected with malarial mosquitos and bilharzia parasites (living in the canals). Measles is also a serious problem, vaccination being infrequent. Sanitary conditions are poor and can lead to a variety of diseases and illnesses (food poisoning, gastro-enteritis, diarrhoea, vomiting dehydration). Women's given reasons for the death of their child or children are presented in Table XXI.

Table XXI : Cause of child death

<u>Cause</u>	<u>Total number</u>
Unknown	51
Fever	17
Measles	9
Diarrhoea	6
Malaria	3
Bilharzia	3
Pneumonia	2
Gastro enteritis	2
Evil eye	2
Whooping cough	2
Burning	1
Goitre	1
Appendicitis	1
Dysentery	1
Head pains	1

In Rahad alone, 36.2% of women had at least one child dead. One can only guess what the diseases may have been from the symptoms described. The women are poorly educated and unaware of the causes and treatment of most health problems. Outside assistance is minimal. Many resort to seeking the advice of the local religions medical man - the fakhi.

While a large proportion of births were attended by trained midwives, it was found that many women were attended by only relatives or friends. As most women in this region are circumcised, professional assistance with the birth especially to prevent infection would be desirable. Closer medical supervision during child birth and in the first year of life would undoubtedly significantly reduce the number of child deaths (see Table XXII).

Table XXII : Attendance at delivery of a child
Who attended the delivery

<u>Region</u>	%						Total women 859
	Doctor	Trained midwife	Untrained midwife	Relative	Friend	No-one	
Gezira	0.0	47.5	20.0	27.5	3.8	1.3	
Managil	0.0	67.4	32.6	0.0	0.0	0.0	
Rahad	2.3	60.5	34.9	2.3	0.0	0.0	

Gezira region shows the highest percentage of professionally 'unattended' deliveries, perhaps because of the ethnic make-up of the region's population.

Possibly, because of the high death rate, women continue to have children for as long as physiologically possible. When questioned in Rahad for example 53.5% of women interviewed stated that they would like 5 or more extra children (25% in Gezira and 43.5% in Managil).

Perhaps if a child's life was more secure, women would wish to use contraceptives to control the number of children born. However many factors militate against the use of birth control, not least the strong belief that the conception and birth of a child is the will of God. When questioned about contraceptives 4.7% of women in Gezira, none in Managil and 4.3% in Rahad said that they had at one time used contraceptives. The reasons for not using are given in Table XXIII.

Table XXIII : Reasons for not using contraceptives

<u>Reason</u>	%		
	Gezira	Managil	Rahad
Socially unacceptable	1.2	15.2	19.5
Not available	3.5	2.2	17.0
Unaware of existence	24.7	17.4	10.6
Illegal	4.7	4.4	6.4
Husband disapproves	0.0	4.4	4.3
Not required (old age/ill health)	4.7	19.6	10.6
Bad for health	18.8	4.4	6.7
Against religion	12.9	6.5	10.6
Refused to say	15.4	11.0	8.5
Want to have more children	14.1	15.0	6.4

Children are closely spaced, often one child being born every year. Not only is this likely to harm the mother's health but indirectly the child's chances of good health are reduced.

In Analysis 6, Section III, Appendix III, some attempt has been made to calculate birth-spacing. Assuming categories x1, x2 and x3 include children born within 9 months and 2 years of each other, (this can only be an estimate since given ages for children are unreliable and likely to be at best only approximate) the following percentages were calculated : Gezira 50% belong in category x1-x3, in Managil 21.2% and in Rahad 33.4% - a high proportion of children are clearly born closely together.

Women were questioned on other issues which affect or indicate their socioeconomic status. The results, presented in Table XXIV, are discussed in the next chapter.

Table XXIV : Socio-economic characteristics

	<u>Region</u>		
	Gezira	Managil	Rahad
% women who have ever worked	32.6	10.9	19.2
% women whose husband has one or more other wives	17.4	26.1	10.6
% women whose husband is not permanently resident	30.2	30.4	38.3
% women whose children do not contributed to the family income	10.5	93.3	93.6
% women whose children do not work in agriculture	65.9	66.7	62.2

The reason for husbands' absence included death, living with another wife, working abroad and employment elsewhere in Sudan.

Information about children was also thought to be significant - most daughters away from home were married although some women had hoped that their young daughters might become doctors, teachers or a member of another profession. While professional women are rare, clearly some information about the possibilities are reaching rural areas, but it is still sons who leave home in search of employment - mostly as students, drivers, engineers, factory workers, or perhaps unemployed seekers of work in the urban areas.

The data and impressions presented in this chapter leave many questions unanswered. The implications of the results as well as the limitations, are discussed in the next chapter.

CHAPTER FIVE

DISCUSSION AND INTERPRETATION

(i) Clarification

The general academic interest in the study of issues relating to gender-roles and status is a recent phenomenon. The geographical interest lies in the fact that these issues may be an influence of unknown and overlooked significance in the determination of spatial patterns at a variety of scales. Descriptions and explanations of social, political, economic and cultural relationships within regions may have to be revised in the light of our new knowledge of the influence of relationships or changing relationships between the roles and status of men and women within each particular regional or national context. This major contemporary development of thought should not be disregarded since changes in the status and role differentials between the sexes, in a variety of social contexts could be a powerful source of potential socio-economic change. However, the study of these relationships cannot proceed without a sounder understanding of the general terms and principles used in gender studies and without a clearer idea of methodological and theoretical requirements. This investigation has, therefore, aimed to define status and devise a methodology for the study of status, within a particular regional context - that of Central Sudan.

Social traditions in Central Sudan were found to be heavily influenced by Islam and by ethnicity. Data relating to these causal issues are significant and so have been included in the selected research findings in Chapter IV. Demographic behaviour questions provided much information about the consequences of traditional social forces and allowed an examination of demographic theory in the light of women's status issues. More recent socioeconomic influences stem from the Gezira Irrigation Development Scheme. Three spatially and temporarily

segregated areas were examined in terms of the influence of development planning which allowed the incorporation of some of the ideas of development theory.

As we are dealing with women's status, a relative concept, the male-female differential received priority attention.

(ii) Women's status and the macro environment

Women's status can be dealt with as a thematic issue with no locational reference points or within the context of a particular region and society. In this latter case, the relative level of socioeconomic development in the region or society has a major impact on women's status. Sudan is a very poor country. In the Central region, women exhibit little individuality; conformity to the traditional code of behaviour is characteristic and women's socioeconomic status was seen to be positively and closely correlated to a variety of household standard of living indicators. This might suggest that women are not a valid group in the context of status since if a household is poor, the whole household lives in poor conditions with few amenities. This also suggests that where the absolute standard of living is low, few options and opportunities exist for any kind of differentiation and we should therefore not attempt to separate women's status from household economic status. However, the suggestion that wealthier families can 'afford' status for women by keeping them healthier and happier, with better homes, access to services, better education, higher marriage potential, freedom from economic activity (which is generally hard manual work) and so on, suggests that status is purely an economic issue, without investigating the social causes of the uneven distribution of wealth and tells us nothing about this particular society's definition of status. Why do the poor families originate from the west of Sudan or are defined as 'fellata'? Why is the sex ratio of the population imbalanced in favour of men

(1.27 in the Rahad sample) and why does the child mortality rate not explain this imbalance? (the overall sample result was 1.25, a predominance of male deaths). Why does the education of boys receive priority at all levels, producing a very imbalanced male-female illiteracy rate ratio (32.7%/-0.8% in Rahad)? We need to know more about the Sudanese interpretation of status. We already know that wealthier families achieve higher status for their women than poorer families but there is still a male-female differential at all levels. Furthermore, there is a correlation between wealth and race and therefore status and 'race'. If race is the causal factor, we cannot support the premise that in a poor society, status is the product of economic wealth alone, since wealth may be an intervening rather than causal variable. We must investigate these socioeconomic variations between households further as well as discover more about society's definition of what constitutes high or low status for women.

(iii) The determinants of status in Central Sudan

How does Sudanese society define low and high status in this Central region? Clearly, traditional behaviour has a long history and sufficient control over the population to produce the strong social conformity observed. There must be powerful mechanisms of perpetuation at work.

To understand women's status, we must understand the role of women and to understand role, we must examine life-style. Our interpretation of the determinants of status may deviate a great deal from the Western model of status since we are dealing with the Sudanese interpretation of status. A more Western view dominates section (iv) of this chapter which deals with the consequences of the Sudanese status rules.

Analysis of the data collected and selectively presented in

Chapter IV revealed that women are strongly bound by traditions and that these traditions have strong associations with Islam. The second major influence was seen to be ethnicity; strong demarcations in women's behaviour pattern corresponded with racial boundaries. Both these influences, Islam and race, were also major determinants of male-female differentials of opportunity and expectation and hence behaviour. Despite the impact of poverty on society here, women are economically and socially far more dependent than men. Sudan's development strategies will induce change. Therefore, we must understand which relationships are stable and which unstable in order to predict the potential effect and the probable outcome of such strategies.

Islamic doctrine is male-dominated. Generally men are the economic providers while women remain in the home fulfilling their primary roles as wife and mother. While legislation provides for economic and political equality of the sexes outside the home, the effects of this legislation are only seen in the towns where women have been brought into many spheres of work and a strong educational infrastructure has existed for several years. In the rural areas, however, archaic laws governing relations between the sexes within the family have a much stronger control and women exhibit a low rate of economic integration. The personal status of Arab women is still governed by Islamic (shariah) laws, most of them evolved directly from the Qur'an. One example of the influence of these laws is in marriage, where the contract is valid only when the man has made over a dowry to his wife. Part of the dowry is usually deferred, to be paid in full if the husband dies or divorces his wife. This is an important safeguard for the wife, since divorce laws are weighted against her. A man may divorce his wife by saying 'I divorce you' three times before witnesses. No reasons need be given. A woman who wants a divorce must go to court and prove serious misconduct by her

husband. This is difficult to do and proceedings can rarely be instigated by a woman alone.

All Arab governments today have taken some measures to give women a fuller social and economic role in public life. This is true in Sudan. Policies supporting veils for women, strict seclusion and no education, no longer exist. The government has encouraged education for women as well as employment but are cautious about introducing measures that directly challenge the traditional restrictions on women, which, whatever their origin, have, over the centuries, gathered religious approval. Sadly the origins of many 'Islamic' practices are not religious.

Traditional behaviour, superstition and backwardness are common characteristics in rural Central Sudan. The domestication of women, secures the virtual monopoly by men of important positions in the socio-economic hierarchy. Rural women continue to marry while still in their teens (the average age at first marriage in the project sample was 16), some into polygamous households (18% of sample women were not their husbands' only wife), bear children at rates among the highest in the world (Total Fertility Rate in Sudan is estimated to be about 6.8) and are often unable to read or write (the illiteracy rate for the sample women was 66.7% compared to 32.1% for men). With few exceptions, they are not engaged in what is officially defined as economic activity (5.6% of the sample women said they were employed) since the social stigma attached makes only the most financially desperate of rural women wish to work. Women exhibit a deference to male authority and suffer the consequences of personal powerlessness and a narrow world view - an extreme economic, social and psychological dependence.

Life-style as an expression of individuality has only a limited place where both the status and role of women are so heavily conditioned by an Islamic ideology. Although women now have freedom of movement

^a UNFPA 'Sudan : Report of a Mission on Needs Assessment for Population Assistance' Report 9, 1979, p6.

in the community, they can rarely move away from the parental home outside the context of marriage.

Women devote their time to activities in the home of their father or husband, activities which are related to day-to-day human survival - repetitive tasks such as collecting fuel and water and food preparation. Women eat and sit separately spending most of their time with other women and children. Female seclusion even in a lesser form precludes work outside the home for the majority of women. The privacy of the hosh (enclosed yard) is important; modesty and a distancing between the sexes is also symbolised by the wearing of the tobe (the traditional dress for Sudanese women, much like the Indian sari). However, despite the ideology of non-participation in economic activity, women are overworked rather than unemployed, since they bear the responsibility of the domestic and unrewarding tasks assigned to them. Anker(1980) accurately describes women's work as "never-ending, time-consuming, unpaid and invisible."^a Women provision their families, yet they have limited information about diet, sanitation and food storage techniques. Given the relevant information, women could play an important part in raising the standard of living. However, at all levels, boys receive priority for education. Adult education classes sponsored by the SGB have folded due to lack of funds. Increased attention to women's education could also play a major health role. Major endemic and epidemic diseases in the region are often the consequences of water contamination and poor hygiene. Traditional remedies are inadequate. Child and maternal mortality could also be reduced by slowing down the repeated and closely spaced pregnancies experienced by most rural women but this too requires educational backing. Most women remain poor, uneducated and weak and their large family constitutes their real source of financial and social security. Only sons contribute financially on a long term basis. If women could contribute economically

^a Anker, R. 'Research on women's role and demographic change.'
ILO. WEP. 1980.

in a more visible way, preference might be reduced and hence the overall fertility level. Women are still expected to have children as a sign of God's blessing and are under pressure to do so soon after their marriage. Any delay is viewed with suspicion. Generally women can expect seven children by the end of their reproductive period. Any attempt to regulate fertility for economic reasons amounts to a lack of faith in God.

Early marriage and procreation is highly valued and the cost of rearing a child is relatively low, especially where no educational facilities are available. Responsibility is diffused among the extended family (which questions the existence of a clash between child-rearing and economic activity). The importance of hospitality means that more food is generally produced than is necessary. An extra child makes very little impact on the food budget. No correlation could be found in the sample data between household size and family food budget (see Appendix 3). Children contribute to agricultural productivity from an early age and are the only social security for the future. High fertility, then constitutes rational economic behaviour.

Women, however, sometimes simply can not conform with the social and economic convention, although they are reluctant to admit this. Many women pick cotton seasonally and participate in agriculture in other ways during the remainder of the year.

Women also do not like to admit that they suffer major health problems which are often related to childbirth and circumcision, but high child and maternal mortality are the undeniable evidence that these problems exist. Traditional codes of behaviour do lead to significantly severe and widespread health problems - for example those associated with circumcision and those which lead to the 'Zar'. Despite its pre-Islamic origin, circumcision is considered by women in Central Sudan to have religious

significance. The most severe form - pharaonic circumcision, is widespread - experienced by 80% of women at the age of 5-7 years. This continues despite the fact that the practice was officially banned over 35 years ago. Circumcision can lead to very serious health problems but the moral obligation is felt by even the most 'modern' of young mothers.

While circumcision exemplifies the physical harm caused by some traditional codes of behaviour, the 'Zar' ceremony exemplifies psychological damage. Women in the region interpret any severe frustration or dissatisfaction with their role and day-to-day lives as the influence of an evil spirit. During the Zar ceremony, the 'possessed' woman, dressed and behaving like a man (perhaps smoking a cigarette), drives herself into a state of frenzied activity while the attendant women chant or beat a rhythm. During this ceremony, the spirit is said to be exorcised.

All deviations from the desired norms of behaviour are widely unreported - women will not admit their role in agriculture, the number of children who have died, nor their own health problems.

The conditions and limitations influencing women's life-style, role and status must affect individual, parental, occupational, domestic and community patterns and should be investigated further.

The 'model' woman in the Central Sudanese context is most likely to be found in a wealthy Arab household. It was found that Westerners generally and traditionally participate in agriculture; fellata women too do agricultural work and also have much greater freedom of movement but are frowned upon by Arab women as a result. Clear and insurmountable barriers exist at these racial boundaries. The future implications of the ethnic (and class) barriers in the region are unknown.

Clearly, for all races but for the Arab population in particular, the difference in status between men and women is not one of degree

but of kind. Women do not gain status in the same way as men; not through economic activity but through marriage and childbirth. Generally these are far more important to women than employment or education. A woman's duty lies with the care of the family. A husband's duty lies in the provision of all his wife's needs. Women accept these conventions because they have become part of their definition of themselves and because they want to retain the good opinion of those around them. The shared values of conformity have taken on a moral significance in Sudan through association with a religious code. Changes however are being induced by the process of development and trends are not towards equilibrium but towards greater male-female differentiation. These trends must eventually lead to social change in order to avoid social breakdown.

(iv) The consequences of status in Central Sudan

In Central Sudan, the male advantage is demonstrated by an enormous number of comparative female disabilities - lower literacy, lower employment and an economic, social and psychological dependence on men. The sources of this dependence and the mechanisms which maintain it are traditional and Islamic principle which conspire to perpetuate the disadvantage. Many rural women have neither the ability nor the desire to change the situation.

One of the most unfavourable consequences of traditional practices in Sudan is the poor or non-existent education of women. Only recently has the demand grown and in most areas, educational books and buildings are still totally inadequate and distances to travel so great that girls may be prevented from attending school for this reason alone. The academic nature of the curriculum often precludes its perceived 'use' to women and acts as a further deterrent to parents who feel girls are 'safer' in the home. Since education influences many aspects of social and economic life, the chain of disadvantage begins here. Patterns of

social organisation and value systems strongly favour women remaining in the home. Early marriage is still the favoured option, this and early child-rearing are incompatible with education. Data reveals the disadvantage. The 1979 World Fertility Survey found 82% of women in North Sudan to have no schooling and only 5% had more than primary education. There are disadvantages for everyone concerned. Men are required to deal with a heavy dependency burden economically, since women do not work and for women, the lack of education affects a broad spectrum of psychological attributes, values, aspirations and decision-making ability, not to mention women's inability to take part in the labour force. Investment in education could mobilise a wasted resource and have a positive effect on production not only in the broader economy but in the domestic economy. Women could receive the benefits of improved techniques for domestic tasks in the home. Women have received very little assistance or advice in food preparation, food processing or handicrafts. Women's traditional economic role has been ignored by development planners but because men are being assisted, the disparities are growing between men and women.

We should remember of course that in Moslem societies an unmarried working girl does not automatically enjoy economic independence, emancipation from parental control nor a more favourable bargaining position in the marriage market. However, a later marriage would be of benefit in reducing the fertility rate and a longer education would allow women to participate in public life to a much greater extent. Lack of education is not the only problem in persuading women to work. Their inability to do so has become inseparably associated with a religious ideology which couples work for women with social disgrace. The 1970 ILO labour force estimation gives only a 6.64% economic activity rate for Sudanese Arab women. However, men have overcome the association of work with

slavery which acted as a stumbling block to their participation. They have taken and worked tenancies, have been introduced to a new monetary economy based on collective individualism. Women neither receive nor expect such an opportunity to overcome their inhibitions.

Social convention continues today to deprive the community of an important source of visible productive potential - the invisible contribution as family labour is unknown. Women are not directly denied access to land, inputs, education, training and employment but they are not educated to expect any of these things. Both men and women have to be encouraged to want the situation to change. More information is necessary to understand the decision-making powers of women and the attitudes of men to changes in various social customs. The variation in social types due to the involvement of migrant Western Sudanese and non-Sudanese in the scheme provides an ideal opportunity for the investigation of the situation in differing 'societies'. The future implications of the ethnic and class barriers in the region are unknown. While fellata and Western women have more freedom to participate in economic activity, they have little opportunity in education and a terribly low standard of living which severely inhibits any motivation on their part.

It is difficult to identify the measures that would be required to draw fully on the productive forces of Sudanese women. Their contribution, however, could benefit not only themselves but their families and their nation. Education must be the most likely initiator of change, and could benefit society in ways other than by increasing economic activity or delaying marriage - for example by reducing health problems. The main reason for the prevalence of malnutrition among pre-school children is believed to be the ignorance of mothers re child-feeding and dietary requirements. The majority of mothers of malnourished children have no way of knowing that anything is wrong. Later marriage and more

knowledge of child health needs could produce a stronger and more secure society. Fewer children would die. The Ministry of Health cannot cope with the health problems in Sudan; their efforts are being swallowed by the uncontrolled population growth. Educating the population may be an answer since many diseases are the consequence of insanitary conditions or ineffective treatment of illness. Education could also be the starting point for the lowering of the growth rate and for the eradication of traditional practices such as female circumcision (at least the most severe form of circumcision). Midwives have been trained in this field but it has become a lucrative occupation for them so that although they can circumcise girls more 'successfully' they are unlikely to encourage mothers to leave their daughters uncircumcised. We must also remember that circumcision is an important cultural activity and cannot be condemned outright. However, the most severe form should be discouraged since it can lead to chronic infection, sterility, haemorrhage and difficulties in child-bearing. The World Fertility Survey 1979^a found 96% of women were circumcised, 79% in the pharaonic fashion. Education could begin to attack this problem from within the society. Compulsory education for everyone would also reduce the economic benefit derived from children, increasing the cost of raising them and possibly reducing fertility.

At the moment, however, the Sudanese people are enmeshed in their social customs and traditions especially in rural areas. Changes are few and far between. Given the present environment there is no incentive for change. Younger women wishing to go to school and perhaps to University is the only evidence of female motivation and it is sad that many of these girls can only see marriage beyond this new improver of their status. If there are no opportunities for women, their incentives cannot change.

^a The Sudan National Population Committee, 'Aspects of Population Change and Development in the Sudan' 1982. p98.

(v) Demographic theory

Women's status in Central Sudan can be examined and perhaps better understood from a theoretical point of view. Demographic theory is particularly applicable since it is concerned with three processes - fertility, mortality and migration which each take on particular significance in this social context. Migration, because it highlights the immobility of women (which was thought to account for the predominance of women in the Gezira sample where men have moved to the towns for work) and the predominance of men in Rahad (which is a new region with new migrants). The significance of fertility and mortality is explained by the theory of demographic transition, which describes how, in the course of development, a society changes from the high fertility, high mortality society to a low fertility and low mortality society. Mortality levels generally fall first, however, causing a spurt in population growth which weakens over time as fertility levels fall. A period of rapid growth exists between two periods of slow growth. There is a concentration on fertility in many research projects on women since it is crucial that fertility rates fall as well as mortality rates yet the amount of power and control women have over this rate varies to an enormous extent.

In Central Sudan, Islamic traditions are intervening in the process of demographic transition and are holding the population in the stage of rapid population growth. While the introduction of accumulated Western medical knowledge has reduced mortality levels to some extent (although mortality levels have not fallen as dramatically as in other developing countries), fertility remains as high as ever, since the population are not moving into the third phase of transition because of the ideological questions fertility control raises. Women are bearing the burden of increasing child survival rates. There is no trend toward equilibrium here. There has been some adjustment in the urban areas but, in the more traditional rural areas fertility has not yet fallen. This is not a

Haggett, P. 'Geography: a modern synthesis.' Harper and Row. 1975.
Peterson, W. 'Population Collier Macmillan. 1975.

biological problem since the technology to control the rate exists, it is an institutional and social problem. Thus social change must induce fertility decline. In the urban areas, social and economic opportunities for girls and women have started to undermine the old bases of authority a little. The traditional patterns of early marriage and frequent child birth have become less easy to justify. A more desirable form of demographic behaviour is emerging in urban areas but similar incentives are not nor can be offered to rural women in the present social and economic climate, a climate which has been reinforced by development efforts. Rural women still have a low rate of economic integration and find success only as wives and mothers. Most institutional changes have religious implications and religion is male-dominated - change for women has been slow as a result. Recognising the dominance of men is only the first step; men must be encouraged to believe in the necessity of lower fertility and to encourage their wives to accept the use of contraceptive technology. Women often lack basic information about availability and use and have no access to such information. However, men may not accept the implications for autonomy that such adoption implies. Men must be taught too that child mortality in its present excessive form is unnecessary and is related to excessive fertility, and that children born to educated parents have a better chance of survival and success. Men must want women to be educated. Studies have shown that education, of all the socioeconomic variables, has the strongest negative associations with fertility, acting through income, health and nutrition improvements, which are the necessary pre-conditions for a fall in the fertility level.^a

Education also provides the opportunity for women to become visibly economically active. Dixon⁽¹⁾ argues that high fertility in many developing countries is related importantly to the social and economic

a Holsinger, D. & Kasarda, J. 'Education and human fertility: sociological perspectives' in Ridker, 'Population and development'

Caldwell, J.C. 'The demographic implications of the extension of education in a developing country: Ghana.' Population Studies. (2) 1968.

role assigned to women and that the best way to change the situation is through a change in female employment. In Central Sudan, women's domestic role contributes to the high fertility and is difficult to change because of the religious implications and the fact that men rather than women dominate and govern Islam. The traditional social structure in Central Sudan is blocking the introduction of the socio-economic prerequisites to demographic change. This highlights and explains the reasoning behind the necessary emphasis in most population policy on the equalisation of status between men and women.

Social, economic and demographic factors are closely inter-related and changes in one or more invariably involves changes in the others. In rural Sudan, levels of fertility and mortality do not seem to be changing, nor do social traditions; even the variation between social groups does not produce a variation in demographic behaviour (fertility appeared to be high for all racial groups in the survey). How then can change be induced? A lesson might be learnt from the urban areas where declining fertility seems to be correlated with a rising standard of living. Yet wealth alone is insufficient to induce demographic change (there is a variation in wealth between racial groups in the Gezira region which has had no effect). What seems to be important is the increase in opportunities and expectations in the urban areas derived from better education and economic activity potential which in urban areas are related to wealth. Some of these incentives must be transferred to rural areas because of their association with status enhancement and fertility decline. A holistic approach is required to generate change in the socio-economic conditions of rural villages particularly when the goal is to reduce the social and economic dependence of women, thereby altering reproduction attitudes and practices. During a conference conducted by Sudanese women, the women themselves recognised that "Education and wealth have been the most important determinants of women's status in the Arab world." (2)

(vi) Development theory

The Gezira Irrigation Scheme has transformed Central Sudan into the wealthiest region in the country, yet the incentives and improved opportunities required by women to ensure their development (referred to in the previous section) do not exist on a sufficient scale to induce beneficial change. Rural development and policy in Sudan is extremely male-dominated. "Planning for rural development in the Sudan is mostly carried on as if half of the human resources of the country can be safely neglected."⁽³⁾ Has development planning then, served to reinforce the mechanisms of perpetuation in the region? The answer to this question might lie in an examination of temporal changes but data is minimal. There are, however, three areas of the Scheme which have been involved for differing lengths of time. These were examined in order to investigate the effects of the development project on the status of women over time as well as to understand how the status of women influences various patterns of activity within the scheme.

The Scheme introduced a peasant society to the advantages normally only available in large-scale estate management. For the population, the potential economic benefits far outweighs the social costs of conformity. The introduction of a cash crop, however, was not to the population as a whole but to men only. Political power in the hands of the men made women and their labour inferior. The wealth of the whole population did increase dramatically but differences between the sexes became even greater. Before the Scheme, the integration of family and economic roles gave women an equality which the post-Scheme era took away. The complementary nature of the rural family was not recognised. Economic power became the motive force and men the principal agents. Men were virtually forced into the modern sector since most received tenancies and technological assistance. Women's traditional role was ignored and they

became marginal in this context. Custom, religion and traditions of male supremacy compounded by the new orientations of the Scheme all stifled women's wish to participate. Men received tenancies and technology while women continued to be immobile, unpaid and to use inefficient, traditional methods in performing domestic tasks. The allotment of tenancies to women was, until a few years ago, neither practical nor tolerated: even now, women who inherit a tenancy rarely work it themselves but hire a manager (a "wakil") for the purpose. Women have been almost completely excluded from mainstream decision making and participation in rural development. The penetration of women in the non-domestic world has been slow and usually degrading (e.g. selling in the market is usually the province of men, the only women involved are either very old or young 'fellata' girls who sell products which rarely compete with those sold by men). Brausch et al.⁽⁴⁾ sum up their impression of the detrimental impact of the scheme on the lives of women :

"In the past women contributed their share to the family labour force, by working in the fields. Now if they worked in the fields they would be in contact with strangers employed as hired labour and this is a strong reason why men have come to consider it improper for their women to work in the field. They now take pride in keeping their women away from their tenancies and the social value of women's seclusion is still considered higher than the returns which would accrue from their field work".

Irene Tinker⁽⁵⁾ supports this when she says:

"In virtually all countries and among all classes, women have lost ground relative to men; development by widening the gap between incomes of men and women has not helped to improve women's lives but rather has had an adverse effect on them."

This is not quite the case in Sudan - the differential between the sexes is no doubt wider and therefore, arguably, their relative status is lower, but women's standard of living has nonetheless improved. However, policies could be devised which further raise the general standard of living but through women rather than men, thus encouraging female participation in development, reducing the development gap between men and women and halting the present trends.

The Scheme was originally envisaged as a social as well as an economic development project and general plans for improved health and education were made. Soon after the launch of the Scheme, however, economic problems assumed priority in the fight to keep the Scheme alive. Economic insecurity is not conducive to social planning. Any social expenditure at this stage would have been a liability endangering the entire Scheme. As a result, villages remained unhygienic and improvements in the environment negligible throughout the early years.

Today, the positive effects of the Scheme are far more evident. There are more schools, health centres, transport facilities, extension services (rural television, village clubs, welfare workers) electrification, water treatment installations, consumer durables and so on. Women must have derived benefit from all these improvements. However, few of the services have been designed specifically for women; few technical improvements touch domestic tasks. Training classes introduced by the SGB tended to marginalise women in the domestic sphere by educating them for household tasks alone. These classes, like all the adult education classes and many other extension services are deteriorating or folding because of lack of the necessary financial support. Added to the education/training constraints on women's relative ability to compete in the employment market, is the fact that women are not sufficiently mobile and cannot migrate to jobs in the 'modern' sector in the towns.

The Scheme has also had a major health impact which is largely detrimental and as yet uncontrolled. Farah and Preston⁽⁶⁾ point out that the malaria incidence rate among children rose from 3% in 1962 to 20% in 1974, a direct result of the increase in surface water (irrigation canals) and, therefore, mosquitos. The water also contains certain parasites and disease. Women, having most contact because of domestic duties, and children because they are the weakest, suffer

most. Infant mortality is high, many deaths may well be attributable to water-borne disease. The Blue Nile Health Project based in Wad Medani cites Wad Suleiman, a sample village, as having a 48.9% prevalence of schistomiasis. Osman El Hassan Mohed Nur ⁽⁷⁾ provides the regional infant mortality figures listed in Table XXV.

Table XXV : Infant Mortality (by province)

<u>Province</u>	<u>Rates per 1000 live births 1974-78</u>
Central Region	116
Khartoum Province	109
Darfur "	102
Northern "	74
Eastern "	72
Kordofan "	57

Nur believes the high infant mortality rates for the Central region could be attributed to the expansion of irrigated agricultural schemes without sufficient attention to health related environmental conditions. The situation could be controlled. Midwives could be trained in rehydration techniques but this requires capital outlay. Tekce ⁽⁸⁾ points out the paradox that while the province does have higher levels of social service infrastructure and personnel than any other province, child mortality is generally believed to be a sensitive indicator of social development and in Gezira, the child mortality level is exceptionally high.

The Scheme has also without doubt been the initiator of major social "class" distinctions in the area. The migrant peoples who were attracted to the Scheme, or halted en route to Mecca, because of the work potential, generally live apart, suffering the effects of much lower standards of living in terms of housing, education, health

facilities and amenities. The Arab element of the population are deeply disposed to the lineage system and are resistant to change and the overt assimilation of the outsider- hence this racial/social segregation. There has been little investigation of the relative change that the Scheme has brought about in social and spatial patterns. Fellata women and children are involved with economic production from an early age for example. There has been little investigation of the effect of this participation on women's status generally and on regional development in particular.

The older established pre-extension Gezira region exhibits the effects of the Scheme more markedly than the other regions - infrastructure is more developed and the racial composition of the population more complex because of longer exposure to migration. A great deal of socio-economic evidence suggests that the economic aspects of the Scheme have assumed priority. Chambers⁽⁹⁾ best sums up the probable thinking behind the development scheme when he says "it seems reasonable to suggest that social and economic benefits from settlement schemes can be maximised more through raising production and returns than through providing services and welfare". Unfortunately such a policy reinforces the male advantage when the economic processes are channelled only through men.

Data collected from the sample suggest that conditions for the women in Gezira are better and opportunities greater than in the other regions (e.g. % women illiterate Gezira : 50.5%; Managil : 68.4%; Rahad : 80.8%. % households who have a pit latrine Gezira : 59.3%; Managil 19.4%; Rahad : 37.1%. Age at first marriage, 12-18 years Gezira : 73%; Managil : 90%; Rahad 95.5% and so on). This suggests that a longer involvement with the Scheme leads to more improvements for women. However, we should take into account the fact that there was a better base for progress in Gezira where the population was

already established than in Rahad where the Scheme was very much a settlement as well as an agricultural scheme. Nonetheless data such as literacy indicators do suggest that conditions improve with length of involvement with the Scheme. Particularly encouraging are the education and economic activity figures (Table XXVI)

Table XXVI ; Employment status (by region)
of women %

	<u>Self-employed</u>	<u>Employed</u>	<u>Occasional work</u>	<u>Family work</u>
Gezira	5.9	4.6	18.4	34.2
Managil	3.1	1.6	9.4	28.1
Rahad	1.8	0.0	5.3	24.6

Women who consider themselves unemployed are greater in proportionate number in Rahad : (% unemployed : Gezira 25.7%; Managil 45.3%; Rahad 64.9%).

While "the planning of the extension (Rahad) differs from the planning of the Gezira in its increased consideration for human welfare" (Ministry of Social Affairs) there is little evidence in the data that women are living in improved conditions. Perhaps more time is needed before the effects are seen; this supports the premise that the longer a population is involved with the Scheme, the better will be the standard of living and the greater opportunity there will be for women to begin to become involved in a Scheme which is essentially male orientated.

(vii) Summary

To summarise, the Scheme has introduced wealth in a region which was previously very poor. As a result the region is now the wealthiest in Sudan with the most developed socioeconomic infrastructure. This has undoubtedly had a positive impact on the lives of women because

of the rise in the general standard of living. Better general conditions in Gezira than in Rahad are evidence of this. However, with this improvement came a process of sexual discrimination which led to the development of an economically integrated population into one where the roles and life-style of the sexes are very different. The social traditions of the population inhibited women's participation - for example women could no longer work in the fields because of the presence of migrant workers, but more importantly the Scheme itself was orientated in favour of men and women were not expected to participate. If men can be encouraged to change their traditional behaviour (prior to the Scheme there was a strong association of work with slavery) so too can women, but they have been given little opportunity. Even women's traditional domestic roles could be the medium for social development if women were provided with essential nutrition and health information.

Women should not accept for ever the limitations of their status roles - nor should they be simply carried along with the general socio-economic wave of improvements instigated by the actions of men and so benefit in an indirect way. The disparity in participation between men and women cannot be acceptable in the long term - and given the opportunity women will participate more - the administrative involvement of women in urban areas demonstrates this. Development planning should proceed on the basis of a sounder understanding of the relationship between social traditions, the suggested policy and long term objectives.

Chapter Five : References

- (1) Dixon, Ruth B. 'Women in agriculture : counting the labour force in developing countries' Population and Development Review. Vol.8. No.3 1982.
- (2) Symposium on the changing status of Sudanese women. Ahfad University College for Women - 75th Anniversary Feb/March 1979 Paper No.4.
- (3) ILO 'Growth, employment and equity : a comprehensive strategy for the Sudan.' ILO Geneva 1976.
- (4) Brausch, G. Cooke, P. Shaw, J. "Bashraqra Area Settlements : A case study of village development in the Gezira Scheme" University of Khartoum. 1964.
- (5) Tinker, Irene 'The adverse impact of development on women' in Tinker, I and Bransen, M. (eds) 'Women and world development' ODA (AAAS) 1974.
- (6) Farah, Abdel-Aziz & Preston, Samuel H. 'Child mortality differentials in the Sudan' in 'Aspects of population change and development in the Sudan : Proceedings of the Second National Population Conference' National Council for Research, Khartoum, 1982.
- (7) Osman El Hassan Mohed Nur. 'Infant and child mortality and its effect on reproductive behaviour in the Northern provinces of Sudan' University of Gezira, Sudan. 1983.
- (8) Tekce, Belgin 'A research note : an investigation of childhood mortality within the Gezira Province' (Seminar on traditional practices affecting the health of women) Khartoum 1979.
- (8) Chambers, R. "Settlement Schemes in Tropical Africa : A study of organisation and development" Routledge and Kegan Paul 1970.

CHAPTER SIX

CONCLUSION

The origins of the study of women's status lie outside the discipline of geography yet the implications for future geographical research are immense. The status of women is a little used analytical tool in the study of present and future spatial patterns but its explanatory potential in a variety of contexts and at a variety of scales may be enormous. There has been insufficient 'background' work for the establishment of clear directives for geographical research. This dissertation has, therefore, attempted to understand the key issues in the study of status, has concentrated on methodological orientation (despite the data deficiencies) and on theoretical orientation - but the study is incomplete. Much more research on the geographical consequences of women's status is required.

In order to understand status, we must examine and interpret life-style and role. This is the basis of a working methodology. Life-style is an empirical manifestation of role, while role can act as an explanatory device for understanding a society's definition of status. Using this formula, in Sudan, the main determinants of status were identified as religious and other traditional practices and beliefs. In this way, an initial descriptive orientation leads to explanatory potential since once aware of the determinants of status, we can identify the consequences. This has been demonstrated in this case study.

The importance of the male/female differential has also been stressed, especially when we are examining status from outside the society (i.e. not using the society's criteria for the evaluation of women's status). The differential represents the outcome of traditional forces which discriminate between the sexes and also the effects of modern forces on these traditional forces. In the Central Sudan case, the development

scheme is seen to have provided economic opportunities for men but to have encouraged women to become more committed to traditional beliefs. This scheme has, therefore, reinforced traditional behaviour and its effects have evolved sufficiently to act as a constraint on later attempts (although these have been minimal) to equalise economic power between the sexes. Women are now dependants in terms of the scheme, religion, society and the family - the structural constraints are immense. Clearly new economic and social opportunities must be provided for women but within the context of traditional beliefs. One cannot induce social breakdown in the name of development, but new modes of behaviour are difficult to stimulate where deep-seated traditions are involved. Sudanese rural women are not about to begin a struggle for emancipation, equality or independence but socioeconomic trends are towards ever greater inequality between the sexes which surely cannot continue indefinitely. We do not know at what level of development, if at all, conflict between the sexes will begin.

This greater understanding of the concept of status, the interpretation of status by a particular society and the consequences of society's definition from an outsider's viewpoint has highlighted the relevance of two theoretical fields - demographic theory and development theory. The former can help reveal the reasons for women's present demographic behaviour and the extent to which they might be expected to control or change this behaviour, while the latter reveals the effects of far less traditional forces - the modern processes of development planning - in terms of the effect this planning has on women.

This work is only preliminary but clearly, in Sudan, the factors which control women's status (particularly Islam and racial background) have a major but poorly documented effect on a range of patterns including agricultural and other economic production activities and demographic

(particularly migratory) patterns, at the macro and micro levels. Further research is required to gain a more complete understanding of the relationship between women's status and patterns of human activity not only in Sudan but in a variety of social contexts. In development terms we also require a theoretical framework that incorporates various hypotheses with regard to the expected effects of development-related options. Only continuous research can provide the objective assessments required.

APPENDIX 1

The following results were provided by The First Report of the Findings of a Research Project on Gezira Scheme Village Census of Demographic, Occupational and Health Status' Ali Tosun Aricanli (University of Gezira, Wad Medani and the Population Council, New York, May 1982).

Only Gezira villages were included in the report. The total population of the four villages is given as 3291, the total number of households as 665. These figures are broken down according to ethnic group of which there are three broad categories:- Arab, Westerner and Fellata.

<u>Ethnic Group</u>	<u>Total % of pop</u>	<u>Total % of Households</u>
Arab	55.9	50.7
Westerner	37.1	43.0
Fellata	7.0	6.3
	<u>100.0</u>	<u>100.0</u>

Ethnic groups are further broken down according to sex:

	<u>Arab</u>	<u>Westerner</u>	<u>Fellata</u>
Male (%)	43.3	44.5	48.7
Female (%)	56.7	55.5	51.3

In all categories, females outnumber males; this is not true when the male-female ratio in each of the villages is examined:

	Wad Suleiman	Kambo Tanta	El Tayemab	Wad Krei
Male(%)	45.1	51.2	42.3	43.7
Female (%)	54.9	48.8	57.7	56.3

The reason for the above imbalances is provided by the figures below, which are the percentages of households in each village from which there has been some out-migration.

<u>Village</u>	<u>Tot.No.of Households</u>	<u>% with out-migration</u>
Wad Suleiman	136	46.3
Kambo Tanta	40	7.5
El Tayemab	183	35.5
Wad Krei	306	43.5
	<u>665</u>	

This suggests that further differences may exist which explain or co-exist with the variation in migration patterns. Some indication of standard of living variations is provided by the following figures which indicate that the wealthier villages have experienced more out-migration.

House Construction (%)

<u>House Type</u>	<u>Wad Suleiman</u>	<u>Kambo Tanta</u>	<u>El Tayemab</u>	<u>Wad Krei</u>
Fired brick	47.8	0.0	5.5	52.6
Mud brick	28.7	5.0	47.0	36.3
Mud (jalous)	22.1	7.5	46.4	10.4
Mud & grass top	0.7	80.0	0.5	0.3
Grass	0.0	7.5	0.0	0.0
Unknown	0.7	0.0	0.5	0.3

Type of sanitation(%)

<u>Type</u>	<u>Wad Suleiman</u>	<u>Kambo Tanta</u>	<u>El Tayemab</u>	<u>Wad Krei</u>
Cess-pool	61.0	0.0	12.6	47.1
Cover in compound	0.7	0.0	1.1	5.9
Fields	37.5	100.0	85.8	39.5
Unknown	0.7	0.0	0.5	7.5

The figures above offer some initial information re the difference in wealth between the villages.

Using one village as an example, we can also begin to identify differences in characteristics between ethnic groups. From these very preliminary figures, we can begin to appreciate the internal variation in these villages.

Wad Suleiman : Age Structure : Males

<u>Age group/Ethnic Group</u>	<u>Arab</u>	<u>Fellata</u>	<u>Westerner</u>
00 - 04	9.0	18.9	12.2
05 - 09	21.4	20.8	20.9
10 - 14	20.0	11.3	23.0
15 - 19	6.2	11.3	7.2
20 - 24	2.8	3.8	4.3
25 - 29	6.2	3.8	6.5
30 - 34	1.4	3.8	0.0
35 - 39	6.9	5.7	3.6
40 - 49	5.5	5.7	7.9
50 - 59	7.6	9.4	4.3
60 - 98	13.1	5.7	10.1
	<u>100</u>	<u>100</u>	<u>100</u>



Wad Suleiman : Age Structure : Females

<u>Age group/Ethnic Group</u>	<u>Arab</u>	<u>Fellata</u>	<u>Westerner</u>
00 - 04	13.4	23.2	14.3
05 - 09	14.4	21.4	13.0
10 - 14	14.9	8.9	15.5
15 - 19	8.8	5.4	11.2
20 - 24	7.2	8.9	6.8
25 - 29	7.7	7.1	6.2
30 - 34	4.1	0.0	2.5
35 - 39	4.6	8.9	6.8
40 - 49	6.7	8.9	8.7
50 - 59	6.7	3.6	4.3
60 - 98	11.3	3.6	10.6
	100	100	100

These figures suggest a longer life expectancy among Arab and Westerners than fellata as well as a lower birth rate.

Wad Suleiman : Literacy : Arab. By Age group

	<u>Male/female</u>					
<u>Literacy /Age Group</u>	<u>00 - 04</u>	<u>05 - 09</u>	<u>10 - 14</u>	<u>15 - 19</u>	<u>20 - 24</u>	<u>25 - 29</u>
Literate (%)	0/0	22.6/39.3	93/100	88.9/88.2	100/100	88.9/86.7
Illiterate (%)	100/100	77.4/60.7	6.9/0	11.1/11.8	0/0	11.1/13.3
	<u>30 - 34</u>	<u>35 - 39</u>	<u>40 - 49</u>	<u>50 - 59</u>	<u>60 - 98</u>	
Literate (%)	100/62.5	90/11.1	75/15.4	72.9/0	57.9/0	
Illiterate (%)	0/37.5	10/88.9	25/84.6	27.3/100	42.1/100	

Wad Suleiman : Literacy : Fellata By Age Group

	<u>Male/female</u>					
<u>Literacy /Age Group</u>	<u>00 - 04</u>	<u>05 - 09</u>	<u>10 - 14</u>	<u>15 - 19</u>	<u>20 - 24</u>	<u>25 - 29</u>
Literate (%)	0/0	18.2/6.7	50/20	50/0	0/20	0/0
Illiterate (%)	100/100	81.8/83.3	50/80	50/100	100/80	100/100
	<u>30 - 34</u>	<u>35 - 39</u>	<u>40 - 49</u>	<u>50 - 59</u>	<u>60 - 98</u>	
Literate (%)	100/0	66.7/20	100/0	20/0	33.3/0	
Illiterate (%)	0/100	33.3/80	0/100	80/100	66.7/100	

Wad Suleiman : Literacy : Westerner By Age Group

<u>Literacy</u>	<u>Age Group</u>	<u>Male/female</u>					
		<u>00 - 24</u>	<u>05 - 09</u>	<u>10 - 14</u>	<u>15 - 19</u>	<u>20 - 24</u>	<u>25 - 29</u>
Literate (%)		0/0	31/9.5	96.9/80	90/88.9	100/63.6	44.4/60
Illiterate (%)		100/100	69/90.5	3.1/20	10/11.1	0/36.4	55.6/40
		<u>30 - 34</u>	<u>35 - 39</u>	<u>40 - 49</u>	<u>50 - 59</u>	<u>60 - 98</u>	
Literate (%)		100/75	100/18.2	44.5/0	66.7/0	42.9/5.9	
Illiterate (%)		0/25	0/81.8	54.5/100	33.3/100	57.1/94.1	

The figures are greatly influenced by the actual numbers involved which create some statistical bias and exaggeration. However, despite inaccuracies, there is an indication that there is more illiteracy among the fellata group than the others. These preliminary results offer the basis for further research efforts, particularly on the subject of socioeconomic differences between villages, between ethnic groups and between the sexes.

Appendix II

NOTES FOR INTERVIEWERS

Research Project - THE SOCIO-ECONOMIC STATUS OF WOMEN IN CENTRAL SUDAN

(i) Social Research

An important task in all social science subjects is to construct accurate generalisations which describe and account for regularities in human group life. These generalisations are often based on knowledge obtained through social research. Survey research is a widely used research design and may provide data collected from an entire population (a census) or from a sample which is representative of the larger group. Survey research involves the use of a research instrument, (usually a questionnaire or interview schedule) which is administered to respondents. A respondent is someone who provides data directly (by completing questionnaire or taking part in an interview) and willingly to the researcher. Survey research requires active, wilfull, mutual involvement of a researcher and a respondent in the data-collection process. The results of the survey are used to test the hypotheses on which the research design is based.

For the purpose of this particular research project, we are interested in formal interview in which the respondent is asked a set of questions and the answers are recorded in a standard form. This formal approach achieves greater uniformity, an important factor when comparability between interviews is necessary and when the interest lies in the characteristics of the aggregate rather than in those of the individual.

(ii) Aims of the Research Project

This project has been designed to assess the socio-economic status of women in Central Sudan. By status, in this context we mean the position in the social structure, the social evaluation, rank or prestige of

women which influences the expectations of conduct assigned to them. Major factors influencing the status of women are the introduction of settled irrigated agriculture into the region (in terms of the extent to which women have been excluded or included in development planning), demographic behaviour, economic activity, education, religious and traditional practices and racial background. These social, economic and demographic factors are closely inter-related and the status of women is both a determinant and a consequence of them. The importance of women's status lies in the fact that status is inextricably linked to both the development process and the various components of demographic change.

In an attempt to understand the nature of women's status in Central Sudan, a questionnaire has been designed which covers several major topics, which are significant because of their implications for the status of women. Status is a composite variable dependant on cultural context. The multitude of status characteristics gain special significance when compared to levels attained by the male population. To understand the significance of female status, we must be aware of the corresponding male status since male and female status are relative to each other. As a relative concept, women's status is important because it exposes sexual differentiation of opportunity, expectation and ability. (a lesser ability is often the result of the lack of opportunity and expectation in the past). Topics covered in the schedule include family background, economic activity, education, capital and material resources, decision-making power, demographic behaviour, religious, social and traditional influences, domestic responsibilities, access to the media and ability to travel (mobility). Particular emphasis has been placed upon economic contribution and labour force participation since economically useful tasks performed by women are often not considered to be labour force activities. Social and cultural considerations often bias answers to general questions on

whether women work or have a job so more probing will be necessary in order to assess the contribution made by women. The definition of 'work' is notoriously arbitrary and can include any or all of the following:

- wage labour or salaried employment
- unpaid family work (agricultural)
- home-based productive activities (food-processing, handicrafts)
- domestic activities (child-care, cooking)

A fuller investigation of the type of contribution women make to the welfare of the family is required in order to understand how their participation in the development process can be improved. If women are not participating to the same degree as men then the potential for change lies in the understanding of the mechanisms of self-perpetuation which inhibit participation. In the Central Sudan, the structural orientation of the settled irrigated agricultural scheme and social influences (such as traditional and religious practices and attitudes) may be of enormous significance.

(iii) Defining the Population and Sampling Procedure

When the entire population cannot be covered (and in fact this is often not necessary) a sample of that population is taken. However, before constructing a research instrument, one must clearly define the population of interest from which the sample will be drawn. In this project the population is 'women in the area of settled irrigated agriculture (the Gezira Scheme and extensions) in Central Sudan'. The purpose of a sample is to obtain from a population, a manageable and yet meaningful number of respondents for the purpose of the research. By manageable we mean that the quantity of data is not too large to be handled and by meaningful we mean that there is sufficient data to make significant statements about the entire population by analysing the sample. To allow for analytical flexibility and meaningful statistical interpretation of data, samples are usually kept as large as possible

within the limits of one's own resources (i.e. finance, time, personnel). If a sample is representative of a population, important conclusions about the population can often be inferred from analysis of that sample.

For this research project, the sample of households has been taken from a census of seven villages undertaken at the University of Gezira (Ali Tosun Aricanli : Gezira Scheme Village Census of Demographic, Occupational and Health Status). The following villages are involved; in the Gezira region - Wad Suleiman, Kambo Tanta, El Tayimab and Wad Krei; in the Managil region - Wad Adam; in the Rahad region - Rughwa Ahmed and Rughwa Babikir (which are now considered as one village - village 42) Extensions to the villages such as fellata settlements and labour camps (e.g. Garadaya alongside Wad Suleiman and Abu Digin alongside Wad Adam) are considered as part of the village.

Women are studied in the context of the family and therefore the basic unit of research is the household. The households have been randomly selected from the Tosun census.

(iv) Testing the Research Instrument

Before the main survey, a pilot survey must be carried out in order to assess the adequacy of the research instrument and to detect any errors. The questionnaire is administered to a small independent sample of persons before the main sample. This pre-sample is taken from the same population as the main sample but is totally independent of the main sample. The pilot survey may lead to rewording of questions to make them more precise and straightforward, answers may be recoded and questions added or omitted. In this way the validity of the study is enhanced and the main survey can proceed on a sounder footing.

(v) The Interview

Conducting the interview is the task of the interviewer and consists of locating the sample members, obtaining interviews with them, so as to

ask the questions and recording the answers as instructed.

In order to locate the households, interviewers are provided with the name of the head of the household (plus members of the household if more details are required).

Undertaking a successful interview involves motivating the respondent to co-operate and requires both friendliness and politeness. Interviewers should aim to attain uniformity in the asking of questions and recording of answers. Efficiency in following the instructions and in asking all the applicable questions in the order given is essential. Questions which are obvious or apparent (such as sex, race or whether the house has electricity, for example) should not be asked as this can make the interview tedious. Answers to these questions should be recorded by the interviewer as the interview proceeds.

An interview consists of more than just asking questions from a schedule however. An important part of the interviewer's task is to assess the adequacy of response. Understanding the meaning and the intention of questions is crucial and reduces the risk of ambiguity in interpretation. A full understanding of the meaning of a question becomes clearly essential when probing for further details or clarification of response is necessary. However at no time should the interviewer suggest an answer to a respondent.

Key to a good interview:

(1) Review the interview schedule, make sure you understand the meaning and the wording of the questions. Be aware of the skip pattern. Some questions are 'skipped over' depending on the answer to a previous question. In this way questions are made to 'fit' the respondent. It is important to realise that the value of the survey depends on the accuracy and completeness of the data you collect. Complete or partial fabrication of response will render the data useless.

(2) Approach the head of household first if possible, for permission etc. Explain politely to respondents who you are and what you want i.e. 'I am a student of the University of Gezira helping to complete a research project. You have been chosen randomly as a household to be included in the sample. Questions are confidential and the answers remain private' You should be sure to give adequate thanks at the end of the interview. Politeness and clear explanation of purpose should reduce the problem of refusal to answer to a minimum. If the respondent does refuse to answer, remind her of the confidential nature of the questions. You may have to resort to asking the head of household or another responsible adult to answer on her behalf as many of the questions as they can. This is undesirable but if it should occur you should note at the top of the interview schedule that the answers were not received directly.

(3) The setting for the interview can be important. Make sure you have suitable seating before you begin. Interview women separately and with no audience if possible since privacy encourages independent answering.

(4) There are two types of question; be aware of the difference.

(i) Pre-coded questions already have a list of possible answers and you must circle the appropriate code depending upon what the respondent says. There is no need to read the list of answers to the respondent each time - it is the task of the interviewer to listen to the response, decide on the appropriate code and ring it. When probing for an answer is necessary, the list can be a useful tool as it can be read to the respondent in order to clarify the meaning of the question.

(ii) Open-ended questions allow a more varied and free response and the interviewer must decide on the relevant part of the respondents answer and record it. For this reason open-ended questions present a more difficult recording task.

(5) Assuming the interview is successful, the interviewer should edit the questionnaire schedule immediately i.e. go over the questions and answers in order to correct mistakes, note omissions and clarify meanings before they are forgotten (especially if interviewers have used their own abbreviations in recording open responses). Editing at an early stage also allows the interviewer to learn from his/her mistakes and also should ensure that anyone reading the completed schedule will understand everything that has been written.

Any problems arising in the field should be referred to the field-work supervisor. The completed interview schedules should be returned to the Documentation Centre, as soon as possible.

The Questionnaire Schedule:-

The schedule is structured in the following way -

No (1)	Question (2)	Code (3)	Category (4)	Instructions (5)
--------	--------------	----------	--------------	------------------

- (1) indicates the question number
- (2) is the question to be asked
- (3) is a list of code numbers corresponding to the answers listed (4). If the question in (4) is open ended there will be no coding.
- (4) is the list of possible answers for pre-coded questions corresponding to the codes in (3) or a space for an answer to be written-in, if the question is open ended.
- (5) is an instruction in procedure and depends on the respondents answer to the question. The interviewer will be instructed to either continue or to skip over a certain number of questions.

<u>Example:</u>	<u>No</u>	<u>Question</u>	<u>Code</u>	<u>Category</u>	<u>Instructions</u>
	1	Marital status?	1	Single	go to 4
			2	Married	} continue
			3	Divorced	
			4	Widowed	

The respondent answered that she was single and because of this questions 2 and 3 do not apply and the interviewer is instructed to move on to question 4.

The questionnaire schedule is divided into three parts:

- (1) Questions to head of household for household data
- (2) Questions for women aged 12 years or more
- (3) Questions for ever-married women

Section I is seeking data about the household as a unit - information on family structure, household composition, standard of living etc. Where kinship ties are strong and social rather than individual action the normal behaviour, assessing women in terms of the family unit is very important. Questions are asked to the head of household or some responsible adult member. These questions are factual rather than opinion based and therefore interview with only one person is less likely to introduce bias. For each household, only one Section I schedule will be completed.

(NB by household in this survey we mean all people who are normally resident in the compound and "eat from the same pot". Compound refers to the territorially-defined unit (usually defined by a wall within which the household members live : the hosh). Those members away for a short time (e.g. visiting but who usually live in this compound) should be included in the list of occupants. Those living permanently away (e.g. living in their place of work or study or married and living with husband, even if they do visit regularly) should not be included.

By head of household we mean he or she who provides most of the income and who is responsible for the organisation and care of the household. (The head of household is usually a man but sometimes a woman).

Section II applies to all women in the household aged 12 years or more. The total number of women in this category for a household should be entered at the top of each schedule in the space provided. You will use as many

Section II schedules as there are women in the house aged 12 years or more as each woman should answer a separate Section II interview schedule. Topics covered include family background, economic characteristics, capital assets, domestic tasks and education.

Section III applies to all ever-married women in the household, each woman in this category completing a separate Section III schedule. Topics are related to demographic behaviour and include pre-marital and marital history, fertility, family planning, children, attitudes of respondent and spouse towards demographic behaviour.

APPENDIX III

EXPLORATORY DATA ANALYSIS

The selected results of the cross-tabulations of survey data for each region (Gezira, Managil, Rahad) by section.

Section 1

Analysis 1 : Age group (x) x Household (y) (x sex)

x1 = 0 - 4 years x8 = 35-39 years y1 = household number 1
 x2 = 5 - 9 " x9 = 40-44 " .
 x3 = 10-14 " x10 = 45-49 " yn = household number n
 x4 = 15-19 " x11 = 50-54 " _____
 x5 = 20-24 " x12 = 55-59 " M = Male F = Female
 x6 = 25-29 " x13 = 60-64 "
 x7 = 30-34 x14 = 65+ years

Gezira region

	M F	M F	M F	M F	M F	M F	M F	M F	M F	M F	M F	M F	M F	M F
	x1	x2	x3	x4	x5	x6	x7	x8	x9	x10	x11	x12	x13	x14
y	30 33	25 42	37 24	32 37	21 25	10 15	12 14	7 16	5 10	15 15	6 7	4 2	9 4	12 4

Total in sample = = 473 (59 households)
 Total male = 225
 Total female = 248
 Sex ratio = 0.91

Average Household size = 8.02

Population 15 years = 191 = 40.4%

Managil Region

	M F	M F	M F	M F	M F	M F	M F	M F	M F	M F	M F	M F	M F	M F
	x1	x2	x3	x4	x5	x6	x7	x8	x9	x10	x11	x12	x13	x14
y	30 20	22 18	13 14	11 14	9 9	7 14	4 7	5 6	6 3	3 3	3 3	1 2	1 2	7 3

Total in sample = = 240 (34 households)
 Total male = 122
 Total female = 118
 Sex ratio = 1.04

Average Household size = 7.06

Population 15 years = 117 = 48.7%

Rahad region

	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F												
	x1	x2	x3	x4	x5	x6	x7	x8	x9	x10	x11	x12	x13	x14														
y	21	21	26	17	20	9	15	10	9	9	7	8	3	7	7	6	2	2	4	2	4	3	1	1	3	1	2	2

Total in sample = 222 (35 households)
 Total male = 124
 Total female = 98
 Sex ratio = 1.27

Average household size = 6.34

Population 15 years = 111 = 51.35%

Analysis 2 : Years of education (x) X Age group (y) (X sex)

x1 = never attended school or illiterate	y1 = 0 - 4 years	y8 = 35-39 years
x2 = khalwa education only	y2 = 5 - 9 "	y9 = 40-44 "
x3 = 5 years education	y3 = 10-14 "	y10 = 45-49 "
x4 = 5-10 years education	y4 = 15-19 "	y11 = 50-54 "
x5 = 10+ years education	y5 = 20-24 "	y12 = 55-59 "
x6 = University (attending or completed)	y6 = 25-29 "	y13 = 60-64 "
	y7 = 30-34 "	y14 = 65+ "

M = Male

F = Female

Gezira region

	M F x1	M F x2	M F x3	M F x4	M F x5	M F x6
y1	n/a	n/a	n/a	n/a	n/a	n/a
y2	11 18	1 1	17 21	0 2		
y3	2 5	1 0	15 10	15 9	2 0	
y4	1 11	1 0	4 7	17 14	3 5	0 1
y5	0 11	3 0	7 5	6 6	2 4	1 0
y6	0 6	0 1	5 5	1 1	2 2	1 0
y7	2 5	3 0	2 9	2 0	1 2	
y8	0 13	2 1	4 1	0 0	1 0	
y9	1 9	2 0	4 0	1 0		
y10	4 12	6 0	1 1			
y11	1 10	3	1			
y12	1 1	4				
y13	1 4	7				
y14	2 5	7	1			

For the population over the age of 5 years

Total recorded = 400

Total male = 182

Total female = 218

Total illiterate = 136 = 34%

Total illiterate or khalwa only = 179 = 44.75%

Illiterate = 26 male (14.3% of total) 110 female (50.5% of total)

Khalwa only = 40 male (22% of total) 3 female (1.4% of total)

In total, 66 males (36.26% of all men recorded) and 113 females

(51.83% of all women recorded) were illiterate or had only a khalwa education

Managil region

	M F	M F	M F	M F	M F	M F
	x1	x2	x3	x4	x5	x6
y1						
y2	8 16		10 1			
y3	2 3		5 6	4 2		
y4	3 1		4 3	3 8		
y5	1 4			2 2	1 1	
y6	2 7			2		
y7	4		1 2	1	1	
y8	3 3		2			
y9	5 4					
y10	2 3					
y11	1 3					
y12	1 2					
y13	1					
y14	7 4	1				

For the population over the age of 5 years

Total recorded = 152

Total male = 73

Total female = 79

Total illiterate = 90 = 59.2%

Total illiterate or khalwa only = 91 = 59.9%

Illiterate = 36 male (49.3% of total) 54 female (68.4% of total)

Khalwa only = 1 male (1.4% of total) 0 female

In total, 37 males (50.7% of all men recorded) and 54 females

(68.4% of all women recorded) were illiterate or had only a khalwa education

Rahad region

	M F	M F	M F	M F	M F	M F
	x1	x2	x3	x4	x5	x6
y1						
y2	11 12		11 5			
y3	2 3		12 5	6 1		
y4	1 10		1 1	10	2	
y5	2 6		2 2	4	1	
y6	1 8		3 1	2	1	
y7	7		3			
y8	4 5		3			
y9	2 2					
y10	1 3		2	1		
y11	3 3		1			
y12	1 1					
y13	3 1					
y14	1 2		1			

For the population over the age of 5 years

Total recorded = 176

Total male = 98

Total female = 78

Total illiterate = 95 = 54%

Total illiterate or khalwa only = 95 = 54%

Illiterate = 32 male (32.7% of total) and 63 female (80.8% of total)

Analysis 3 : Racial origin (x) x Household (y)

x1 = Arab y1 = household number 1

x2 = Westerner

x3 = fellata yn = household number n

x4 = other

The combined results ($y = y_1 + y_2 + \dots + y_n$)

Gezira region

	x1	x2	x3	x4
y	28	26	5	

Of the 59 households recorded, enumerators classified 47.5% as Arab, 44.1% as Westerner and 8.5% as fellata

Managil region

	x1	x2	x3	x4
y	32	2		

Of the 34 households recorded, enumerators classified 94.1% as Arab and 5.9% as Westerner.

Rahad region

	x1	x2	x3	x4
y	35			

Of the 35 households recorded, enumerators classified 100% as Arab

Analysis 4 : Amenities (x) x House construction (y)

x1 = electricity	y1 = fired brick
x2 = latrine in hosh (yard)	y2 = mud brick
x3 = access to pipe or well	y3 = mud jalous (skin)
x4 = cooking with electricity/ gas/kerosene	y4 = mud grass top
x5 = domestic help (paid)	y5 = grass
	y6 = other

Gezira region

	x1		x2		x3		x4	
	<u>yes</u>	<u>no</u>	<u>yes</u>	<u>no</u>	<u>yes</u>	<u>no</u>	<u>yes</u>	<u>no</u>
y1	6	16	20	2	2	20	2	20
y2	1	6	6	1		7		7
y3		24	7	17		24		24
y4		6	2	4		6		6
y5								
y6								

In Gezira region, the percentages obtained from the above data are as follows:-

House construction : fired brick	=	37.29%
mud brick	=	11.86%
mud jalous	=	40.86%
mud grass top	=	10.17%
grass	=	—
other	=	—

Amenities : 88.1% households do not have electricity
 40.7% have no latrine and use the fields
 89.8% have access to a pipe or well
 96.6% cook by charcoal
 96.6% have no paid domestic help

These figures represent the following:

House construction :	Fired brick	=	57.1%
	Mud brick	=	2.9%
	Mud jalous	=	8.6%
	Mud grass top	=	17.1%
	Grass	=	14.3%
	Other	=	—

Amenities: 100% households have no electricity
62.9% have no latrine and use fields
91.4% have access to a pipe or well
100% cook with charcoal
100% have no paid domestic help

Analysis 5 : Health services used (x) x Household (y)

Heads of household were asked which of the following health services the family use : hospital, health centre/clinic; private doctor; pharmacy; local doctor (fakhi) The results were as follows:-

Gezira region

Hospital	37.3%	households
Clinic	87.4%	"
Private doctor	0	
Pharmacy	6.8%	
Local doctor	3.4%	

Managil region

Hospital	41.2%
Clinic	58.8%
Private doctor	0
Pharmacy	0
Local doctor	17.6%

In Rahad region

Hospital	40%
Clinic	62.8%
Private doctor	0
Pharmacy	5.7%
Local doctor	4.3%

Analysis 6 : Type of transport (x) x Household (y)

Heads of household were asked what types of transport the family members used : private car, friend's car, taxi, bus, boxy, lorry, bicycle, horse (and cart) donkey (and cart)

The results were as follows:

Gezira region

Private car	—	Bus	72.9%	Bicycle	6.8%
Friend's car	—	Boxy	49.2%	Horse	15.3%
Taxi	—	Lorry	32.2%	Donkey	28.8%

Managil region

Private car	—	Bus	39.3	Bicycle	—
Friend's car	—	Boxy	42.9	Horse	3.6
Taxi	—	Lorry	10.7	Donkey	—

Rahad region

Private car	5.7	Bus	40	Bicycle	—
Friend's car	—	Boxy	5.7	Horse	17.1
Taxi	—	Lorry	42.9	Donkey	22.9

Further information about standard of living was sought in the following cross-tabulations:-

Analysis 7 : Family Food Budget (x) x Household (y)

x1	=	household spends	<1/3	total income on food		
x2	=	"	"	1/3 - 2/3	"	"
x3	=	"	"	>2/3	"	"

These are the combined results $y = y_1 + y_2 + \dots + y_n$

	Gezira Managil Rahad			Gezira Managil Rahad			Gezira Managil Rahad		
	x1			x2			x3		
y(%)	1.7	3	5.7	10.3	21.2	28.6	87.9	75.8	65.7

Analysis 8 : Wealth Index (x) x Persons per room (y)

x : wealth index

Households were asked which and how many of the following they possessed.

Each item was costed and an index was established based on this cost.

A 'score' for each household was calculated

<u>Item</u>	<u>Index</u>
Lorry	13
Car	12
T.V.	11
Oven)	9
Camel)	
Fridge	8
Cow	7
Cassette-player	6
Blender	5
Radio)	3
Sheep)	
Donkey	2
Goat	1

Households were then grouped according to their score

- x1 = Wealth index 0 - 20
- x2 = " 21 - 40
- x3 = " 41 - 60
- x4 = " 61 - 80
- x5 etc.

$$y = \text{Persons per room} = \frac{\text{Total in household}}{\text{Total number of rooms (eating and sleeping only)}}$$

y was grouped as follows:

- y1 0 - 0.5
 - y2 0.51 - 1
 - y3 1.01 - 1.5
 - y4 1.51 - 2
 - y5 2.01 - 2.5
 - y6 2.51 - 3
 - y7 3.01 - 3.5
- and at increments of 0.5 to yn

The cross tabulations follow:-

Gezira region

	x1	x2	x3	x4	x5	x6	x7	x8	x9	x10	x11	x12	Total %
y1													-
y2	5	1											8.5
y3	4	2											10.2
y4	7	2											16.9
y5	6	2	2										16.9
y6	12	3								1			27.1
y7	1	2											5.1
y8	3	0	1										6.8
y9	3	0											5.1
y10	2	0											3.4
Total	43	12	3							1			

as % 72.9 20.3 5.1

1.7

Managil region

	x1	x2	x3	x4	x5	x6	x7	x8	x9	x10	x11	x12	x13	x14	Tot. %
y1	0	0	0												-
y2	1	0	0												3
y3	2	1													9.1
y4	7		1												24.2
y5	3	1	1											1	18.2
y6	1			1											6.1
y7	4														12.1
y8	3														9.1
y9	1														3
y10	2														6.1
y11															-
y12	2														6.1
y13															-
y14															-
y15															-
y16															-
y17															-
y18	1														3

% 81.8 6.1 6.1 3

3

Rahad region

	x1	x2	x3	x4	x5	x6	x7	x8	x9	x10	Total %
y1											
y2	2										5.7
y3	3		1								11.4
y4	3	1			1						14.3
y5	1										2.9
y6	5										14.3
y7	3									1	11.4
y8	4										11.4
y9		1						1			5.7
y10	3			1							11.4
y11											
y12	1										2.9
y13											
y14					1						2.9
y15											
y16	2										5.7
Total%	77.1	5.7	2.9	2.9	5.7			2.9		2.9	

Analysis 9 : Occupation of Head of household

Information for occupation of head of household based on the following list produced the results:-

- y1 = public agencies (ministries, banks, schools)
- y2 = commerce
- y3 = tenant
- y4 = irrigated farming labourer
- y5 = rainfed cultivation
- y6 = animal husbandry
- y7 = artisan
- y8 = handicrafts
- y9 = small-scale production
- y10 = public industry (admin, technician)

- y11 = public industry (unskilled worker)
- y12 = private industry (admin, technician)
- y13 = " (unskilled worker)
- y14 = public services (hospital, railway)
- y15 = private services (corporations)
- y16 = abroad
- y17 = small services (bus, taxidriver)
- y18 = " " (" " owner)
- y19 = fakhi (local doctor)
- y20 = student
- y21 = housewife
- y22 = unknown

In Gezira region 74.1% of the population fell into category y1, 18.9% in y2 and 5.17% in y3 and 1.72% in y10

In this region 34 out of 59 households held tenancies (57.6%) 20 of 5 feddans, 12 with 10 feddans and 2 with 15 feddans.

In Managil region 71.9% in y1, 9.4% in y2, 9.4% in y3, 3.1% in y4 3.1% in y5 and 3.1% in y14

In this region 26 out of 35 households held tenancies (74.2%) which were mostly 15 feddans although some were 30 feddans.

Analysis 10 : Household chores

An analysis of domestic chores which divided the chores into the following categories:-

- x1 cooking
- x2 washing clothes
- x3 tend animals
- x4 clean house
- x5 shopping
- x6 cotton picking

and grouped members of the household as follows:

- | | |
|---------------------|-------------------|
| y1 female <10 yrs | y6 male 10-20 yrs |
| y2 female 10-20 yrs | y7 male 21-45 yrs |
| y3 female 21-45 yrs | y8 male 45+ yrs |
| y4 female 45+ yrs | |
| y5 male <10 yrs | |

produced these results for Gezira region:-

	x1	x2	x3	x4	x5
y1	1	0	5	2	0
y2	28	32	7	31	2
y3	47	36	12	43	9
y4	19	14	8	10	5
y5	0	0	0	0	0
y6	0	0	7	15	5
y7	0	0	6	0	23
y8	0	0	8	0	22

Section 11_a

Analysis 1 : Marital status (x) x Age group (y)

x1 = single	y1 = 12-15	y7 = 41-45
x2 = married	y2 = 16-20	y8 = 46-50
x3 = divorced	y3 = 21-25	y9 = 51-55
x4 = widowed	y4 = 26-30	y10 = 56-60
	y5 = 31-35	y11 = 61-65
	y6 = 36-40	y12 = 65+

Gezira region

					Row Total
	x1	x2	x3	x4	%
y1	32	2			22.4
y2	17	10			17.8
y3	9	10		1	13.2
y4		10			6.6
y5	1	14			9.9
y6	1	9		1	7.2
y7	1	9	1	1	7.9
y8		7		2	5.9
y9		2		2	2.6
y10		1			0.7
y11		3		1	2.6
y12		3		2	3.3
Column totals	40.1%	52.6%	0.7%	6.6%	152

a All respondents in Section II are women
The minimum age for inclusion = 12 years

Managil region

Row total

	x1	x2	x3	x4	%
y1	9				13.8
y2	8	5			20
y3	1	8			13.8
y4		9			13.8
y5		4		1	7.7
y6	2	4		1	10.8
y7		2			3.1
y8	1	3			6.2
y9		3			4.6
y10		1			1.5
y11					
y12		2		1	4.6
Column Tot(%)	32.3	63.1		4.6	65

Rahad region

Row total

	x1	x2	x3	x4	%
y1	8				14
y2	1	9			17.5
y3		10		1	19.3
y4	1	7			14
y5		5			8.8
y6		5			8.8
y7		3			5.3
y8		1			1.8
y9		2		1	5.3
y10					
y11				1	1.8
y12				2	3.5
Column Tot.%	17.5	73.7		8.8	57

Analysis 2 : Relationship to head of household(x) x Marital status (y)

- | | |
|---------------|---------------|
| x1 = wife | y1 = single |
| x2 = mother | y2 = married |
| x3 = daughter | y3 = divorced |
| x4 = sister | y4 = widowed |
| x5 = other | |

Gezira region

	x1	x2	x3	x4	x5	Row total(%)
y1			43	1	13	38
y2	55		16	3	9	55.3
y3				1		0.7
y4		1	3	1	4	6
Col tot.(%)	36.7	0.7	41.3	4.0	17.3	150

Managil region

	x1	x2	x3	x4	x5	Row total(%)
y1		1	12	1	4	28.1
y2	34	1	5		3	67.2
y3						
y4	1		1		1	4.7
Col. tot.(%)	54.7	3.1	28.1	1.6	12.5	64

Rahad region

	x1	x2	x3	x4	x5	Row total(%)
y1			9		1	17.9
y2	34	1	6		1	75.0
y3						
y4		2	1		1	7.7
Col. tot.(%)	60.7	5.4	28.6		5.4	56

Analysis 4 ; Employment/Economic Indicators (x) x Person (y)

x1 = employed (1) unemployed (0)

x2 = possesses a tenancy (1) no tenancy (0)

x3 = takes part in agricultural work (1) no agricultural work (0)

x4 = picks cotton (1) does not pick cotton (0)

y1 = person number 1

y2 = person number 2

yn = person number n

Combined results $y = (y1 + y2 \dots yn)$

Gezira region

%

	x1	x2	x3	x4
y1	8.4	4.5	65.2	61.3
0	91.6	95.5	34.8	38.7

Managil region

%

	x1	x2	x3	x4
y1	1.5	12.3	41.5	27.7
0	98.5	87.7	58.5	72.3

Rahad region

	x1	x2	x3	x4
y1	7	3.5	40.4	36.8
0	93	96.5	59.6	63.2

Analysis 5 : Main reason for not working (x) x Age group (y)

x1 = unable to find work	y1	12-15 years	y7	41-45
x2 = too old or too young	y2	16-20	y8	46-50
x3 = husband or father disagrees	y3	21-25	y9	51-55
x4 = poor health	y4	26-30	y10	56-60
x5 = children or housework duties	y5	31-35	y11	61-65
x6 = other	y6	36-40	y12	65+

Gezira region

	x1	x2	x3	x4	x5	x6	
y1	2		1		2		
y2	8	1	5		4		
y3	4				1		
y4	1		1		4		
y5	1		1	1	3	3	
y6	1				4		
y7		1			3		
y8	1			1	2		
y9		1			1		
y10		1					
y11				2			
y12		1					
Col. tot.%	29.0	8.1	13	6.5	38.7	4.8	62 Total

Rahad region

	x1	x2	x3	x4	x5	x6	x7	x8	x9	x10	x11	x12	x13	x14	x15	x17	x18	x19	x20	x21	x22	
y1				1																		
y2																						
y3			1	3																		
y4		1	5	11																		
y5			7	23			1										3					
y6				1																		
%	1.7	2.2	4.6	9.0	-	-	1.7										5.2					

Analysis 7 : Time spent cooking/cleaning (x) x age group (y)

(per day)

x1	0 - 1 hrs	y1	12-15 years	y7	41-45 years
x2	1.1- 3 hrs	y2	16-20	y8	46-50
x3	3.1- 5 hrs	y3	21-25	y9	51-55
x4	5.1- 7 hrs.	y4	26-30	y10	56-60
x5	7.1- 9 hrs	y5	31-35	y11	61-65
x6	9 hrs	y6	36-40	y12	65+

Gezira region

	x1	x2	x3	x4	x5	x6	
y1	4	10	8	4		2	
y2	3	5	12	2	3	2	
y3	4	1	7	3	1	1	
y4		1	5	2		3	
y5		2	5		2	1	
y6		3	9	4		2	
y7		1	3	2		1	
y8	2	5	3		1	1	
y9	1	2	2				
y10	2						
y11	1						
y12	2	1		1			
%	13.4	21.8	38	12.7	4.9	9.2	142 Total

Managil region

	x1	x2	x3	x4	x5	x6
y1	3	4	1			
y2		6	5	2	1	
y3		1	4	1	1	
y4		1	1	6	1	
y5			1	2	1	
y6	2	1	2		2	
y7				1	1	
y8		1		1		
y9			1	1		
y10						
y11						
y12		1		1		
%	8.8	26.3	26.3	26.3	12.3	57 Total

Rahad region

	x1	x2	x3	x4	x5	x6
y1	1	2	3		1	1
y2	1		3	2	3	1
y3			4	4	3	
y4				3	2	3
y5			1	1	1	2
y6		1	2	1		1
y7	1			1		1
y8				1		
y9				2		
y10						
y11			1			
y12	1		1			
%	7.1	7.1	26.7	26.7	17.9	16.1 56 Total

Analysis 8 : Time spent collecting fuel + water (x) x age group (y)

Gezira region

x = as Analysis 7 y = as analysis 7

	x1	x2	x3	x4	x5	x6
y1	24	2	1			
y2	22	5		2		
y3	14	1				
y4	9	2				
y5	7	2				
y6	14	4		1		
y7	5	2				
y8	11			1		
y9	4	1				
y10	2					
y11	2					
y12	3					
%	83	13.5	0.7	2.8		141 Total

Managil region

	x1	x2	x3	x4	x5	x6
y1	3	2	1			
y2		6	2			
y3	1	1	3			
y4	3	2	2			
y5			1			
y6	1	4	1			
y7		1				
y8		1				
y9		2				
y10						
y11						
y12	1	1				
%	23.1	51.3	25.6			39 Total

Rahad region

	x1	x2	x3	x4	x5	x6	
y1	6	3					
y2	4	6	1				
y3	2	3	2				
y4	2	6					
y5	4	1	1				
y6	2	2		1			
y7	2	1	1				
y8			1				
y9	1	1					
y10							
y11	1						
y12	2						
%	45.6	40.4	10.5	1.8			56 Total

Analysis 9 : Time spent on agricultural work (x) x Age group (y)

x - as analysis 7

y as analysis 7

Gezira region

	x1	x2	x3	x4	x5	x6	
y1	19	3	4	1	1		
y2	21	4	2	1			
y3	12	3	1				
y4	10		1				
y5	8			1	1		
y6	7	4	3	3	1		
y7	4	2				1	
y8	11	1	1				
y9	3	1					
y10	2						
y11	2						
y12	2						
%	71.1	13.4	8.5	4.2	2.1	0.7	142 Total

Managil region

	x1	x2	x3	x4	x5	x6
y1		1				
y2		2	1			
y3			1			
y4		1		2		
y5						
y6		3	1			
y7		1	2			
y8		1			1	
y9						
y10						
y11						
y12						
%(tot)		52.9	29.4	11.8	5.9	17 Total

Rahad region

	x1	x2	x3	x4	x5	x6
y1	4			2		2
y2	9			1		
y3	9		1	1		
y4	6	1	1			
y5	4	1				
y6	4	1				
y7	3					
y8				1		
y9	1		1	1		
y10						
y11		1				
y12	1					
%(tot.)	71.9	7.0	5.3	10.5		5.3 57 Total

Section 111

Analysis 1 : Total years married (x) x Age group (y)

x1 = 1 year	y1 = 12-15	y7 = 41-45
x2 = 2 years	y2 = 16-20	y8 = 46-50
	y3 = 21-25	y9 = 51-55
xn = n years	y4 = 26-30	y10 = 56-60
	y5 = 31-35	y11 = 61-65
	y6 = 36-40	y12 = 65+

Gezira region

	x1	x2	x3	x4	x5	x6	x7	x8	x9	x10	x11	x12	x13	x14	x15	x>15	
y1	1																1
y2		1	3	2	2	1											
y3	1		1		1			1		1	1						2
y4		1				1		1	1	1			2		2	2	
y5	1														1	5	
y6			1		1	1					1						12
y7																	10
y8														1			10
y9																	
y10																	4
y11															1		
y12																	2
% (tot)	3.7	2.5	6.2	2.5	4.9	3.7	0	2.5	1.2	2.5	2.5	0	2.5	1.2	4.9	59.3	81 Total

Analysis 2 : Age difference between self and husband (x) x age at first marriage (y)

Gezira region

	x1	x2	x3	x4	x5	x6	x7	x8	x9	x10	x11	x12	x13	x14	x15	x16	Row %
y1																	-
y2						1	1					1			1		4.4
y3					2		1		1	1		1			1	2	10.0
y4		1			2		1	2	1	3	1		2		1	3	18.9
y5			1		1					1	1		1			5	11.1
y6	1				2	2		2		2		1		2			13.3
y7		1		1	4	2	2			2			1				14.4
y8		1			1			1								2	5.6
y9		2	1	1				2	2				2	1		2	14.4
y10				1													1.1
y11					1												1.1
y12																	
y13		2															2.2
y14																	
y15																2	2.2
Col. %	1.1	7.9	2.2	3.4	14.6	5.6	5.6	7.9	4.5	10.1	2.2	5.6	5.6	2.2	3.4	18.0	89 Total

Key x1 = no difference y1 = 12 years
x2 = 1 year difference y2 = 13
x3 = 2 years difference y3 = 14
etc. etc.

Rahad region

	x1	x2	x3	x4	x5	x6	x7	x8	x9	x10	x11	x12	x13	x14	x15	x15+	% tot.
y1		1	1	1	1	1			1	2					1		19.9
y2				1	2	1	1										11.1
y3						1		1		1							6.7
y4			1	1					1	1	1	1					13.3
y5	1	1		1	2			1		2							17.8
y6	2	1	4								1					1	20.1
y7				1	1					1							6.7
y8						1											2.2
y9					1												2.2
y10																	
% tot.	6.7, 6.7, 13.3, 11.1, 15.6, 8.9, 4.4, 4.4, 4.4, 15.6, 4.4, 2.2, 2.2, 2.2,															45 Total	

Analysis 3 : Total number of children 8x9 x Total number of brothers/sisters (y)

- x = no children
- x1 = 1 child
- xn = n children
- yo = 0 brothers/sisters
- y1 = 1 brother/sister
- yn = n brothers/sisters

Gezira region

	x0	x1	x2	x3	x4	x5	x6	x7	x8	x9	x10	x11	Row %
yo			2	3		1	2			1			9.7
y1		1		1	2		1				2		7.5
y2	1	1	4	1		2	1		1				11.8
y3		1				1	1	1		1			5.4
y4			2	4	3	1						1	11.8
y5		1	2	1		2		1					7.5
y6	1		1	4	4	2	2	2					17.2
y7	1	2	2	3	1	1		1		1			12.9
y8		1	2	1	1	1	1		2				9.7
y9	1						2						3.2
y10			1				1			1			3.2
Col %	4.3	7.5	17.2	19.4	11.8	11.8	11.8	5.4	3.2	4.3	2.2	1.1	93 Total

Managil region

	x0	x1	x2	x3	x4	x5	x6	x7	x8	x9		% total
y0				1	1	1		1				8.9
y1		1		2					1			8.9
y2				1	3							8.9
y3		1		2	1	1	1	2				17.8
y4		1			3	1	3	1		1		22.2
y5	1		2	1	1	1	1	1				17.8
y6			1	1	1							6.7
y7						1			1			4.4
y8												
y9												
y10						1						2.2
y11												
y12				1								2.2
% tot	2.2	6.8	6.8	20.0	22.2	13.3	11.1	11.1	4.4	2.2		45 Total

Rahad region

	x0	x1	x2	x3	x4	x5	x6	x7	x8	x9	x10	x11	% total
y0						1	1						4.3
y1				1	1		1						6.4
y2		1			1								4.3
y3	1		2			1	1	1		1	1		17.0
y4	1	1	1					1	1				10.6
y5	1	1		2	1		3		1				19.2
y6			1			1	1			1		1	10.6
y7			2	1	2	1							12.8
y8	1	2			1								8.5
y9					1				1				4.3
y10													
y11							1						2.1
% tot	8.5	10.6	12.8	8.5	14.9	8.5	17	4.3	6.4	4.3	2.1	2.1	47 Total

Analysis 4 : Total number of children dead (x) x Total children (y)
(per woman)

x₀ = no children dead

y₀ = no children

x₁ = 1 child dead

y₁ = one child

x_n = n children dead

y_n = n children

Gezira region

	x ₀	x ₁	x ₂	x ₃	x ₄	Row %
y ₀	1					1.2
y ₁	8					9.3
y ₂	14		1			17.4
y ₃	7					8.1
y ₄	6	4	2			14.0
y ₅	3	3	2			9.3
y ₆	4	4	1	2		12.8
y ₇	6	1		1		9.3
y ₈	8				1	10.5
y ₉	3					3.5
y ₁₀	1	1			2	4.7
Col.%	70.9	15.1	7.0	3.5	3.5	86 Total

Managil region

	x ₀	x ₁	x ₂	Row%
y ₀	2			4.3
y ₁	2	1		6.5
y ₂	2	1		6.5
y ₃	3	2	4	19.6
y ₄	8	2		21.7
y ₅	4		2	13.0
y ₆	4		1	10.9
y ₇	3	2		10.9
y ₈	1		1	4.3
y ₉			1	2.2
Col.%	63.0	17.4	19.6	46 Total

Rahad region

	x0	x1	x2	x3	x4	Row %
y0	4					8.5
y1	5					10.6
y2	5	1				12.8
y3	4					8.5
y4	3	2	1	1		14.9
y5	2	2				8.5
y6	5	1		1	1	17.0
y7	1		1			4.3
y8	1		2			6.4
y9				1	1	4.3
y10		1				2.1
y11		1				2.1
Col.%	63.8	17.0	8.5	6.4	4.3	47 Total

Analysis 5 : Who attended last delivery (x) x Total children dead (y)

x1	doctor	y0	no children dead
x2	trained midwife	y1	one child dead
x3	untrained midwife		
x4	relative	yn	n children dead
x5	friend		
x6	no-one		
x7	other		

Gezira region

	x1	x2	x3	x4	x5	x6	
y1		31	9	12	2	1	
y2		4	4	6	1		
y3		1	2	2			
y4		1	1	1			
y5		1		1			
Col.%		47.5	20.0	27.5	3.8	1.3	80 Total

Managil region

	x1	x2	x3	x4	
y0	0	23	6	0	
y1	0	5	1	0	
y2	0	1	7	0	
Col.%	0.0	67.4	32.6	0.0	43 Total

Rahad region

	x1	x2	x3	x4	
y0		17	6	1	
y1	1	3	5		
y2		3	1		
y3		1	3		
y4		2			
Col.%	2.3	60.5	34.9	2.3	43 Total

Analysis 6 : Birth spacing (x) x Age group (y)

x = birth spacing

Calculated using the following equation:-

$$\frac{\text{Age of oldest living child} - \text{age of youngest living child}}{\text{total children ever born}}$$

x1 = 0.05

y1 = 12-15 yrs.

x2 = 0.51-1

y2 = 16-20

x3 = 1.01-1.5

y3 = 21-25

x4 = 1.51-2

y4 = 26-30

x5 = 2.01-2.5

y5 = 31-35

x6 = 2.51-3

y6 = 36-40

x7 = 3.01-3.5

y7 = 41-45

x8 = 3.51-4

y8 = 46-50

x9 = 4.01-4.5

y9 = 51-55

x10 = 4.51-5

y10 = 56-60

y11 = 61-65

y12 = 65+

Gezira region

	x1	x2	x3	x4	x5	x6	x7	x8	x9	x10	
y1											
y2	1	8		1	1						
y3		2	3	1							
y4	2	3	2	6							
y5			3	3		2					
y6		3	4	6	4			1	1		
y7	1	1	3	2	2	1					
y8		1		2	1	2	1				1
y9	1				1						
y10							1				
y11		1	1				1				
y12		1						1			
Col.%	6.0	24.1	19.3	25.3	10.8	6.0	3.6	2.4	1.2	1.2	83 Total

Managil region

	x1	x2	x3	x4	x5	x6	x7	x8	x9	x10	x11	
y1												
y2		1	1			1						
y3			3	1	2							
y4			1	6	2							
y5				1	3							1
y6			1	2	2							
y7				1	1							
y8				1								
y9					1		1					
y10												
Col.%		3.0	18.2	36.4	33.3	3.0	3.0					3.0 33 Total

Rahad region

	x1	x2	x3	4x	x5	x6	x7	x8	x9	x10	x11
y1											
y2		1	1			1					
y3	1	3	4	2		1					
y4			2	2	1			1			
y5				3	2	2					
y6			1		2	1					
y7				1	1		1				
y8											
y9				2							1
y10											
y11				1							
y12				1	1						
Col.%	2.6	10.3	20.5	30.8	15.4	12.8	2.6	2.6			2.6
											39
											Total

Analysis 6 : Sex ratio x age group

$$x = \text{sex ratio} = \frac{\text{Total male children ever born}}{\text{Total female children ever born}}$$

- | | |
|-------------------------------|------------------|
| x1 = 0.9 (excess of females) | y1 = 12-15 years |
| x2 = 1 (females = males) | y2 = 16-20 |
| x3 = 1.01-2 (excess of males) | y3 = 21-25 |
| x4 = 2.01-3 (" " ") | y4 = 26-30 |
| x5 = 3.01-4 (" " ") | y5 = 31-35 |
| | y6 = 36-40 |
| | y7 = 41-45 |
| | y8 = 46-50 |
| | y9 = 51-55 |
| | y10 = 56-60 |
| | y11 = 61-65 |
| | y12 = 65+ |

Gezira region

	x1	x2	x3	x4	x5	x6	x7	x8	x9
y1	1								
y2	5	1	3	1					
y3	3		1	1					
y4	5	1	6						
y5	2	2	1			1			1
y6	11	3	2	5	1				
y7	2	3	1						
y8	7	2	1						
y9	3			2					
y10			2	2					
y11									
y12		1	2						
Col.%	45.9	15.3	22.4	12.9	1.2	1.2			1.2 85 Total

Managil region

	x1	x2	x3	x4	x5	x6	x7	x8
y1								
y2		3	1					
y3	1	1	1	1		1		
y4	3		4	1	1			
y5	2		2			1		
y6	2	2	2					
y7			2	1				1
y8	1	1						
y9	2	1						
y10		1		1				
y11								
y12		1		2				
Col.%	25	22.7	27.3	15.9	2.3	4.6		2.3 44 Total

Rahad region

	x1	x2	x3	x4	x5	x6	x8	
y1								
y2	2		2	2				
y3	1	2	2	3	2	1		
y4	2	2	1	1	1			
y5	1	1	2	1				
y6	1	1	1		1	1		
y7				1			2	
y8								
y9	1	1		1				
y10								
y11	1							
y12	1		1					
Col.%	23.3	16.3	20.9	20.9	9.3	4.7	4.7	43 Total

Analysis 8 : Total children more wanted (x) x Total children now (y)

x0 no more children wanted

y0 0 child

x1 1 " " "

y1 1 child

x2 2 " " "

y2 2 children

xn n more children wanted

yn n children

Rahad region

	x0	x1	x2	x3	x4	x5	x6	x7	x8	x9	x10	unstated	
y1	1						2	1				1	
y2	1				1	1		3					
y3						1	1	1			1		
y4	2					1			1			3	
y5	1					1					1	1	
y6	3			1		1		1	1				
y7	1							1				1	
y8								1				1	
y9												1	
y10	1												
y11	1												
y12													
Col. %	26.7			2.2	2.2	17.8	6.7	17.8	4.4		6.7	15.6	42 Total

Analysis 9 : Socio-economic factors (x) x age group (y)

- x1 1 = has worked before 0 = never worked
- x2 1 = husband has no other wives 0 = husband has one or more ^{othe. wife}
- x3 1 = husband permanently resident 0 = husband not permanently resident
- x4 1 = has used contraceptives 0 = has never used contraceptives
- x5 1 = children do not contribute to family's income 0 = children contribute to family's income
- x6 1 = children do not work in agriculture 0 = children do agricultural work

- y1 = 12-15 years
- y2 = 16-20 years
- y3 = 21-25 years
- y4 = 26-30 years
- y5 = 31-35 years
- y6 = 36-40 years
- y7 = 41-45 years
- y8 = 46-50 years
- y9 = 51-55 years
- y10 = 56-60 years
- y11 = 61-65 years
- y12 = 65+ years

Gezira region

		x1	x2	x3	x4	x5	x6
y1	1	-	1	-	-	1	1
	0	1	-	1	1	-	-
y2	1	1	8	7	-	8	7
	0	7	-	1	8	-	1
y3	1	3	8	6	-	8	8
	0	5	-	2	8	-	-
y4	1	4	10	7	1	10	9
	0	7	1	4	10	1	2
y5	1	2	5	4	1	5	3
	0	4	1	2	6	2	4
y6	1	4	16	17	1	16	9
	0	15	3	2	17	2	9
y7	1	1	4	5	-	5	3
	0	5	2	1	6	1	3
y8	1	7	9	7	-	11	7
	0	6	4	6	12	1	5
y9	1	3	3	2	-	5	3
	0	2	1	3	5	-	2
y10	1	1	1	1	-	-	-
	0	-	-	-	1	1	1
y11	1	-	1	1	-	1	-
	0	1	-	-	1	-	1
y12	1	2	4	3	1	6	5
	0	5	3	4	6	1	2
Col	1	32.6	82.6	69.8	4.7	10.5	65.9
Tot							
%	0	57.4	17.4	30.2	95.4	89.5	34.1

Managil region

		x1	x2	x3	x4	x5	x6
y1	1	-	-	-	-	-	-
	0	-	-	-	-	-	-
y2	1	1	5	3	-	5	4
	0	4	-	2	5	-	1
y3	1	-	6	5	-	7	5
	0	7	1	2	7	-	2
y4	1	-	7	7	-	9	7
	0	9	2	2	9	-	2
y5	1	-	4	4	-	5	5
	0	5	1	1	5	-	-
y6	1	1	1	2	-	6	3
	0	5	5	4	6	-	3
y7	1	1	2	3	-	2	3
	0	2	1	-	3	1	-
y8	1	-	2	2	-	2	2
	0	3	1	1	3	1	1
y9	1	-	3	3	-	2	-
	0	3	-	-	3	1	3
y10	1	1	2	2	-	2	1
	0	1	-	-	2	-	1
y11	1	-	-	-	-	-	-
	0	-	-	-	-	-	-
y12	1	1	2	1	-	3	2
	0	2	1	2	3	-	1
Co1	1	10.9	73.9	69.6	0	93.3	66.7
Tot							
%	0	89.1	26.1	30.4	100	6.7	33.3

Rahad region

		x1	x2	x3	x4	x5	x6
y1	1	-	1	-	-	1	1
	0	1	-	1	1	-	-
y2	1	4	7	5	-	8	7
	0	4	1	3	8	-	1
y3	1	1	10	7	1	11	9
	0	10	1	4	10	-	2
y4	1	1	7	6	6	6	4
	0	7	1	2	8	2	4
y5	1	-	5	4	1	4	3
	0	5	-	1	4	1	2
y6	1	1	5	3	-	5	2
	0	4	-	2	5	-	3
y7	1	-	2	1	-	2	1
	0	2	-	1	2	-	1
y8	1	-	-	1	-	1	1
	0	1	1	-	1	-	-
y9	1	-	2	2	-	3	1
	0	3	1	1	3	-	0
y10	1	-	-	-	-	-	-
	0	-	-	-	-	-	-
y11	1	-	1	-	-	1	-
	0	1	-	1	1	-	1
y12	1	2	2	-	-	2	1
	0	-	-	2	2	-	1
Co1	1	19.2	89.4	61.7	4.3	93.6	62.2
Tot							
%	0	80.9	10.6	38.3	95.7	6.4	37.8

BIBLIOGRAPHY

- ABDEL-GAFFAR M.AHMED 'Tribal elite : a base for social stratification in modern Sudan.' Economic and Social Research Council. Khartoum. 1976.
- ABDEL-HAFIZ GAFAAR ALI 'Location of service centres in Rahad Scheme' M.A. Thesis University of Khartoum, 1983.
- ABDEL-MONIEN ALI GUSSMAEEL SAED 'Labour supply situation and family labour participation in Rahad Irrigation Scheme' Rahad Corporation, University of Khartoum, Ford Foundation, 1983.
- ABDEL-RAHIM OMRAN 'Population in the Arab world : problems and prospects' UNFPA 1980.
- ABDEL-RAHMAN ATTABARI; ABDEL-RAHMAN EL TOM; MOHED HASSAN BALDO. 'Family planning activities and services in the Sudan' from the Second National Population Conference, National Council for Research, Khartoum, 1982.
- ABDEL-WAHAB ALI MODAWI 'A review of retrospective and prospective data in Sudan' from the Second National Population Conference, National Council for Research, Khartoum 1982.
- AHMED ABDEL-HAMID 'The agricultural labour and the Gezira Scheme' MUSAAD, Sudan Gezira Board, Social Research Section.
- AHFAD UNIVERSITY COLLEGE FOR WOMEN 'Symposium on the changing status of Sudanese Women' Feb 23-Mar 1 1979, Ahfad College, Sudan 1979.
- A.I.D. 'A.I.D. Project Impact Evaluation Report No.31'; Sudan; The Rahad Irrigation Project, A.I.D. 1982.
- ALI TOSUN ARICANLI 'Gezira Scheme Village Census of Demographic, Occupational and Health Status: First Report' University of Gezira, Sudan, 1981.
- ALI TOSUN ARICANLI 'Agricultural labour : a dynamic approach' University of Gezira, Sudan, 1981.
- AMAL M. ADNAN; SALAH ABU-BAKR 'Postpartum lactational amenorrhoea as a means of family planning in the Sudan, a study of 500 cases' Journal of Biosocial Science {Galton Foundation} Vol.15, No.1 (January 1983).
- AMNA EL SADIK BADRI 'Integrating programs for rural women' from the Second National Population Conference, National Council for Research, Khartoum, 1982.
- ANKER, RICHARD. 'Research on women's role and demographic change: survey questionnaires for households, women, men and communities with background explanations' ILO, World Employment Programme. May 1980.

- ASIM HAMID ABDALLA 'Some socio-economic factors affecting the participation of family labour' University of Khartoum, Rahad Corporation; Ford Foundation, 1983.
- BEER, C.W. 'Social development in the Gezira Scheme' Journal of the Royal Empire Society Vol.46, No.1 January-February 1955 pp.14-18.
- BELGIS BADRI; AMNA HUMODI 'Women, development and education' from the Second National Conference, National Council for Research, Khartoum, 1982.
- BERRY, L.; FORD, R.; HOSIER, R. 'The impact of irrigation on development issues : for a comprehensive evaluation study' A.I.D. (Evaluation discussion paper No.9) 1980.
- BIRKS, J.S. and SINCLAIR, C.A. International migration project : Country case study : Democratic Republic of Sudan' Department of Economics, University of Durham.
- BOSERUP, ESTER. 'Women's role in economic development' St.Martin's Press.1970.
- BOSERUP, ESTER. and LILJENCANTZ, C. 'Integration of women in development' UNDP, 1975.
- ✓ BRAUSCH, GEORGES; COOKE, PATRICK, and SHAW, JOHN 'Bashraqra area settlements : a case study of village development in the Gezira Scheme.' University of Khartoum, 1964.
- ✓ CHAMBERS, R. 'Settlement schemes in tropical Africa : a study of organisation and development.' Routledge and Kegan Paul. 1970.
- CLEMENTS, M.L. 'Sudan community-based family health project' Tripartite report Aug 21-Sept 2 1980. Unpublished.
- CULWICK, G.M. 'Some problems of social survey in the Sudan' : Sudan Notes and Records Vol.35, 1954.
- CULWICK, G.M. 'A study of the human factor in the Gezira Scheme' Sudan Gezira Board, 1957 (1975-reprint).
- CULWICK, G.M. 'Social changes in the Gezira Scheme' Civilizations, Vol.5 No.2, 1955.
- DAUBER, ROSLYN. CAIN, M.L. 'Women and technical change in developing countries' A.A.A. Selected Symposium 53, West View Press Inc. 1981.
- DEMENY, PAUL 'The demography of the Sudan: an analysis of the 1955/1956 census' in BRASS et al 'The demography of tropical Africa' Princeton University Press 1973 (2nd ed).
- DEMOCRATIC REPUBLIC OF THE SUDAN; DEPARTMENT OF STATISTICS 'The Sudan Fertility Survey 1979 : A summary of findings' 1978-79 World Fertility Survey 1980.

- DEMOCRATIC REPUBLIC OF THE SUDAN; DEPARTMENT OF STATISTICS, CENSUS OFFICE
'Third Population Census, 1983, Training Guide' 1983.
- DEMOCRATIC REPUBLIC OF SUDAN; MINISTRY OF AGRICULTURE, FOOD AND NATURAL
RESOURCES; RAHAD CORPORATION 'The Rahad socio-
economic research project reports'.
- DEMOCRATIC REPUBLIC OF THE SUDAN; MINISTRY OF FINANCE AND ECONOMIC PLANNING.
'Rural labour study in the Northern Sudan' UNDP/IBRD
Planning assistance and training project, Khartoum, 1983.
- DEMOCRATIC REPUBLIC OF THE SUDAN, MINISTRY OF HEALTH, WAD MEDANI 'Blue
Nile Health Project, Annual report, 1981.
- DEMOCRATIC REPUBLIC OF THE SUDAN MINISTRY OF INFORMATION AND SOCIAL
AFFAIRS; CULTURAL SECTION 'The Gezira Scheme and
Managil Extension' 1969.
- DEMOCRATIC REPUBLIC OF THE SUDAN; MINISTRY OF NATIONAL PLANNING. 'Sudan
Fertility Survey' Principal Report, 1979. World
Fertility Survey, 1982.
- DEMOCRATIC REPUBLIC OF THE SUDAN; MINISTRY OF SOCIAL AFFAIRS 'The Managil
Extension; An Achievement of the Republic of Sudan
after Independence' 1958.
- DEMOCRATIC REPUBLIC OF THE SUDAN; MINISTRY OF GUIDANCE, CULTURAL SECTION
'The Gezira Scheme, past and present' 1970.
- DEMOCRATIC REPUBLIC OF THE SUDAN; MINISTRY OF SOCIAL AFFAIRS 'A study
of the social services in Gezira Province' Department
of Anthropology, University of Khartoum, 1978.
- DIXON, RUTH B. 'Women in agriculture : counting the labour force in developing
countries' Population and Development Review
Vol.8, No.3 (Sept.1982).
- ECONOMIST INTELLIGENCE UNIT. 'Quarterly Economic Review of the Sudan'
E.I.U. 1982.
- ELLEN, G. 'Patterns of family living : a case study of two villages on the
Rahad River' Monograph Series No.12, University of
Khartoum, 1979.
- ESSLIN, MARTIN. 'Reports on an African journey : The Gezira Scheme' F.A.O.
F.A.O. 'Report on the FAO/SIDA Workshop on the integration of women in
agriculture and rural development' FAO 1981.
- FARAH, ABDEL-AZIZ; PRESTON, SAMUEL H. 'Child mortality differentials in
the Sudan' in 'Aspects of population change and
development in the Sudan : Proceedings of the Second
National Population Conference' National Council for
Research, Khartoum 1982.
- FARAH, ABDEL-AZIZ. 'Demographic intermediation in the process of development
and population redistribution, the case of Sudan.'
(Symposium, Khartoum 8-12 March 1982) IGU 1982.

- FARBROTHER, H.G. 'Annual Report 1970-71' Gezira Research Station, Wad Medani 1971.
- FATIMA MAHMOUD 'The role of Sudanese women in integrated rural development' E.C.A./U.N. 1980.
- FAYSAL ABDEL-GADIR 'Integrating population and development planning' from 'Second National Population Conference, Khartoum, National Council for Research 1982.
- FERGUSON, H. 'The Gezira Scheme'.
- FORD FOUNDATION 'The Rahad Project Case' Working paper for the Rahad social science workshop at Fau. Nov 28-30 1973
Ford Foundation 1979.
- FRANCIS MADING DENG 'Dynamics of identification : a basis of national integration in the Sudan' Khartoum University Press 1973.
- GAITSKELL, ARTHUR 'Gezira : A study of development in the Sudan' Faber 1959.
- GIELE, J.A. and SMOCK, A. (eds) 'Women's role and status in eight countries' Wiley 1977.
- GISMALLA MOHED IBRAHIM 'The Gezira tenants : problems and prospects', Khartoum University, 1980.
- GRUENBAUM, ELLEN 'A study of social services in Gezira Province, Khartoum' Ministry of Social Affairs, 1978.
- HANCE, W.A. 'The Gezira : an example in development' Geographical Review Vol. 44, No.3 1954.
- HAUSER, P.M. 'World population and development : challenges and prospects' Syracuse, N.Y, Univ. Press. 1979.
- HERRIN, ALENJANDRO, N. 'Rural electrification and fertility change' Population and Development Review Vol.5, No.1.
- HOLT, P.M. 'A modern history of the Sudan' Wiedenfeld and Nicolson, 1958.
- IBRD 'Staff working paper No.404, July 1980, 'Population and poverty in the developing world' IBRD 1980.
- IBRD 'World Development Report' 1982, New York, Oxford University Press.
- IGU, COMMISSION ON POPULATION GEOGRAPHY 'Symposium : The impact of development projects upon population redistribution' University of Khartoum, IGU.
- ILO 'Growth, employment and equity : a comprehensive strategy for the Sudan' ILO Geneva 1976.
- ISMAIL, B.A. and HALL, M. 'Sisters under the sun : the story of Sudanese women' Longman 1981.

- IUSSP 'International population conference 3' (IUSSP Mexico 1977).
- JANSSEN-JURREINT, MARIE-LOUISE. 'Sexism : the male monopoly on history and thought' Pluto Press 1982.
- KROTKI, KAROL JOSEF 'First population census of Sudan 1955/567 Democratic Republic of Sudan, Ministry of Social Affairs. "21 facts about the Sudanese".
- LESTHAEGHE, RON 'On the social control of human reproduction' Population and Development Review Vol.6, No.4.
- MATHER, D. 'Migrations in the Sudan' Geographical essays on British Tropical lands. Phillip 1954.
- M.A. KHALIFA 'Age pattern of fertility in the Sudan' Journal of Biosocial Science (Galton Foundation) Vol.15, No.3 (July 1983).
- MONA A. KHALIFA 'The demand for family planning services in the Sudan' from 'Second National Population Conference, Khartoum, National Council for Research, 1982.
- MOHED EL AWAD GALAL EL DIN 'The economic value of children.'
- MOHED MIRIGHANI ABDEL-SALIM 'Rural population translocation, some implications for Sudanese agriculture' Second National Population Conference Khartoum 1982.
- MOHED SHAZALI OSMAN 'Large scale agriculture and employment creation' Paper submitted to the Preparatory Conference for the Comprehensive Employment Strategy Mission to the Sudan, 1975.
- MUSTAFA. M. KHOGALI 'Population and development in the Sudan' from Second National Conference on Population, Khartoum, National Council for Research, 1982.
- OPPONG, CHRISTINE 'UNFPA Project GLO/P14 : Population and labour-policies programme Working Paper No.94 A synopsis of seven roles and status of women; an outline of conceptual and methodological approach' UNFPA World Employment Programme, 1980.
- OSMAN, EL-HASSAN MOHED NUR 'Infant and child mortality and its effect on reproduction and behaviour in the Northern Province of Sudan. University of Gezira, Sudan 1983.
- OSMAN, EL-HASSAN MOHED NUR 'Research Report : Infant and child mortality and its effect on reproductive behaviour in the Northern Province of Sudan' Population Studies Centre, Faculty of Economics and Rural Development, University of Gezira. 1983.
- OSMAN MODAWI 'Sudan' from BLOCH, L.S. 'The physician and population change : a strategy for Africa, Middle East and Europe' 1979.

- PALMER, INGRID 'The Nemow Case : Case studies of the impact of large scale development projects on women : a series for planners' Working Paper No 7 (International Programs) Population Council 1979.
- PEACOCK, H. 'A report on the land settlement of the Gezira' (Messelemia District) Darling 1983.
- POPULATION COUNCIL 'Report of a study group Beirut 12-13 October 1979 The measurement of women's economic participation' Population Council, Regional papers 1979.
- PRESTON, SAMUEL H. 'Health programs and population growth' Population and Development Review Vol.1 No.2.
- RANDALL, J.R. 'El Gedid : A Blue Nile Gezira village' Sudan Notes and Records Vol.39. 1958.
- RAHIM, R.A. 'An epidemiological study of female circumcision in the Sudan' Women's International Network News Vol.7, No.2 1981.
- RASHID, MOHED HASSAN 'The impact of the Rahad Scheme on the distribution of income, expenditure and savings of the tenant farmers' Rahad Corporation; University of Khartoum; Ford Foundation. Nov. 1983.
- RIDKER, RONALD, G. (ed) 'Population and development - the search for selective intervention' John Hopkins University Press 1980 (2nd edition).
- RIZIGALLA, M.K. and RAMACHANDRAN, K.V. 'Mortality levels and differentials in the Sudan' from 'Aspects of Population Change:Devt. in the Sudan' Proceedings of the Second National Population Conference. National Council for Research, Khartoum, 1982.
- ROGERS, BARBARA. 'The domestication of women : Discrimination in developing societies' Tavistock Publications Ltd. 1981.
- ROSALDO, M.Z. and LAMPHERE, L. 'Women, culture and society' Stanford University Press, 1974.
- SANDAY, P.R. 'Female status in the public domain' in M.Z. Rosaldo & L. Lamphere, 'Women, culture and society' Stanford University Press 1974.
- SALAH ABDEL RAHMAN ALI TAHA 'Society, food and nutrition in the Gezira' Khartoum University Press 1977.
- SHAW, D.V. 'The Managil south-western extension - an extension of the Gezira Scheme. An example of an irrigation development project in the republic of the Sudan' Tijdschrift van het Koninklijk Nederlandsch Vol.82 No.2 1965.
- SIDDIK NASIR OSMAN 'On basic statistics in the Sudan' Bulletin No.36. National Council for research, Khartoum 1976.

- SILVEY, John. 'Deciphering data : aspects of modern sociology : social research' Longman 1975.
- STAMPER, B. MAXWELL 'Population and planning in developing nations : A review of sixty development plans for the 1970's' Population Council 1977.
- STANDING, G. and SHEEHAN, G. (eds) 'Labour force participation in low income countries' ILO 1978.
- STOUT, SUSAN A. 'Population and development policy program : Final country report : Sudan' Battelle, Human Affairs Research Centre 1983.
- SUDAN GEZIRA BOARD, ECONOMICS AND SOCIAL RESEARCH CENTRE 'The Gezira current statistics 1980-82 Sudan Gezira Board 1982.
- SUDAN NATIONAL POPULATION COMMITTEE 'Proceedings of the Second National Population Conference, Khartoum : Aspects of population change and development in the Sudan' National Council for Research, Khartoum 1982.
- TAYFOUR, S.A. 'The economics of cotton in the Sudan : with special reference to the Sudan Gezira Scheme' PhD thesis, Khartoum University 1968.
- TEKCE, BELGIN 'A research note : an investigation of childhood mortality within the Gezira Province ' (Seminar on traditional practices affecting women) Khartoum Feb 10-18 1979.
- TEWFIK, B. EL-DEEB 'Population, health and development' from Second National Population Conference, Khartoum 1982, National Council for Research.
- TINKER, IRENE 'The adverse impact of development on women' in Irene Tinker and Michele Bo Bramsen (eds) 'Women and world development' ODC (AAAS) 1974.
- UNITED NATIONS 'S.T/E.S.A/SER.R/51 Population and human rights : Proceedings of the symposium on population and human rights' Vienna 1981.
- UNITED NATIONS, RESEARCH INSTITUTE FOR SOCIAL DEVELOPMENT 'Report No.70.10 Contents and measurement of socioeconomic development' U.N. 1970.
- UNITED NATIONS 'The determinants and consequences of population trends' Vol.1 United Nations 1973.
- UNITED NATIONS 'Demographic Yearbook for Africa 1980' U.N.
- UNDP 'Twentieth session of the UNDP Governing Council : The Integration of Women in Development' 1975.
- UNFPA 'Sudan Profile 1978 Draft'.
- UNFPA 'Sudan : Report of a mission on needs assessment for population assistance' Report No.9 (Feb 1979).

- WELLESLEY EDITORIAL COMMITTEE 'Women and national development : the complexities of change' University of Chicago Press 1977.
- WHYTE, M.K. 'Cross-cultural codes dealing with the relative status of women' Ethnology vol.XVIII, No.2 (April) 1978.
- WINTON, CHESTER 'Theory and measurement in sociology' John Wiley and Sons Inc. 1974.
- WORLD FERTILITY SURVEY 'Technical Bulletin : Dec 1982 No.11, Vijay Verma 'The estimation and presentation of sampling errors' World Fertility Survey 1982.
- WISEMAN AND ARON 'Field projects for sociology students' Shuman Tanfield Pub. 1970.
- YOUSSEF, NADIA, HAGGAG 'Women and agricultural production in Muslim societies' Studies in Comparative International Development Vol.12. No.1 (Spring 1977).
- YOUSSEF, NADIA HAGGAG 'Women and work in developing societies ' Population Monograph Series No.15 Berkley Institute of International Studies University of California.
- YOUSSEF, NADIA, HAGGAG 'The status and fertility patterns of Muslim Women' Institute of International Studies, Berkley, University of California 1978.
- ZEIDENSTEIN, SONDRRA 'Studies in family planning Vol.20 No. 11/12 'Learning about rural women. A special issue' Studies in Family Planning 1979.
- ZEINAB EL FATIH EL BADAWI 'The development of the Sudanese Women's Movement' Khartoum Ministry of Information and Social Affairs.

