Pastoral livelihoods: changes in the role and function of livestock in the northern Jordan Badia

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This thesis considers the importance of livestock in the household economy of the Ahl al Jebel Bedouin in the arid Badia region of north east Jordan. The principal objective of the study is to provide development planners working within the Badia region with information on how livestock are used and valued within a pastoral society and indicate ways in which these values may be subject to change.

The study demonstrates that Bedouin herdowners have responded purposefully to developing regional markets for livestock products and have identified the income and capital growth values of livestock investments. However, the study further suggests that in important ways production for market supply is closely bound with the management of household resources, notably production for domestic consumption and the two spheres of production constitute complimentary aspects of the pastoral livelihood strategy. It is further argued that pastoral production in the Badia is mediated by the prevailing Bedouin value system which ascribes non-material values to livestock, thus giving social meaning to the way in which herd owners choose to manage their herds.

The thesis argues that the relationship between herd owners and their livestock must necessarily be flexible and suggests that changes in the way in which livestock are valued may constitute an important element in how households respond to change. The study thus characterises the Ahl al Jebel herd management objectives as innovative and fluid, and indicates that approaches to pastoral development need to be more sensitive to household objectives and more supportive of indigenous innovation.

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Transliteration of Arabic words and use of Names

In its spoken form the pronunciation of Arabic differs regionally as well as between ethnically differently groups within the same area. As no standard system of transliteration exists for the Bedouin dialect of northern Jordan, Arabic words within the text are spelled to best reproduce the local pronunciation into English form. To avoid unnecessary confusion, the spelling of place names are given as spelled in other publications of the Jordan Badia Research and Development Programme

In the text, Arabic words are italicised and translation is given every time a term is first used. Thereafter, the reader should consult the glossary.

In order to protect identities, all personal names (other than those of public figures) have been changed.

Glossary of Arabic terms

Abu	Father, Father of
Ahl al Jebel	Predominant tribal grouping of the JBRDP area, consisting of the Adhamat, Masai'd and Sharafat sub-tribes.
'alaaf	Purchased animal feed
'amm	Uncle
'ashirah	Sub –tribe
Badia	Desert steppe of Northern Arabia
baladi	Local
baladiyya	Municipality
Bedu	Inhabitant of the Badia
beit (pl. beiyut)	House, minimal kinship group
beit sha'ar	Goat hair tent
berseem	Egyptian clover
dirah	Tribal territory
dowla	The state
eid al adha	Slaughter feast, Muslim feastday
fakhad	Maximal lineage group
ghadir (pl. ghudran)	Rainwater pool
ghanam beidha	White sheep (sheep)
ghanam eswad	Black sheep (goats)
hammad	Desert plain (often sand or gravel)
harra	Volcanic boulder field
hima	Protected pastureland
ibn 'amm	Cousin
jamidh	Dried yoghurt
jebel	Mountain
jibna	Cheese
kushan	Official livestock ownership certificate
khana	Kinship defined residential locale
laban	Yoghurt
mahfar (pl. mahafir)	Artificial water storage pool
marab	Laterally spread water channel
mansaf	A dish of sheep or goat meat and rice poured served with reconstituted jamidh
maqa'd	Formal reception area
meriyya	Castrated lead sheep
Mokhtar	Village major
Mudir	Manager

Muhafedh	Governor
Mutaseraf	Local administrator
mughzl	Gravity spindle
qaa	Evaporation pan , mudflat
qabila	Tribe
qaym	Sale by liveweight (on the hoof)
qoum	Co-resdential group of households which 'breaks camp' together
qisab	Fleece of immature yearlings
'urf	Traditional or customary law
Umm	Mother, Mother of
rabi'a	Season of spring grazing, pastures
Rayyis	Leader
samn	Clarified butter
shaqa (pl. ashqaq)	Goat hair strip used for tent roofing
sitt al beit	Mistress of the house
shirka	Economic partnership
sheikh	Traditional tribal leader
suq	Market
suwan	Flint, flint plain
taghreeb	Westward migration (autumn)
tarheel	Travel, migration
tashreeq	Eastward migration (spring)
wadi (pl. wadiyan)	Seasonal watercourse
warath	Inheritance

Acronyms

DoS	Department of Statistics, Hashemite Kingdom of Jordan
FAO	Food and Agriculture Organisation of the United Nations
GDP	Gross Domestic Product
HCST	Higher Council for Science and Technology
HKJ	Hashemite Kingdom of Jordan
ICARDA	International Centre for Agricultural Research in Dry Areas
IFAD	International Fund for Agricultural Development
JBRDP	Jordan Badia Research and Development Programme
JCO	Jordan Co-operative Organisation
JD	Jordanian Dinar
Kg	Kilogram
MoA	Ministry of Agriculture
MoS	Ministry of Supply
MSS	Multi-Spectral Scanner
RGS	Royal Geographical Society
TM	Thematic Mapping

Exchange rates and Measures

Annual Average	1994	1995	1996	1997
United States dollars per JD	1.433	1.429	1.417	1.412
Pounds Sterling per JD	0.937	0.907	0.902	0.854

Source: Central Bank of Jordan at http://www.cbj.gov.jo

1 Jordanian Dinar = 1000 Fils

1 Dunnam = 0.1 hectare

Part One (Chapters 1 – 4)

Plate 1: *Hearth of a Bedouin household. The relationship between the two neighbours is that of* ibn 'amm

Chapter 1: Introduction

1.1 Introduction

In recent years there has been an increasing interest in pastoral societies and their livestock production systems, along with a growing recognition of the contribution these may make to the economies of developing nations (Sandford 1983, Swift 1988). While pastoral populations have long been the focus of scholarly inquiry, the revival of interest into pastoral systems in the final decade of the twentieth century owes much to the realisation that pastoral systems world-wide are undergoing substantial transformations, both as a result of the imposition of change by external agencies, but also as a consequence of endogenous adaptation.

The current study focuses upon pastoralist economic behaviour and herding objectives from the perspective of how livestock are valued and used within pastoral livelihoods. This is an aspect of pastoral decision-making about which relatively little is known (Mulder and Sellen 1994), and must be further explored before effective development interventions based upon the interests of pastoralists (rather than their 'rational' interests as perceived by outsiders) may be facilitated.

This chapter outlines the background to, and offers the rationale for, a study of the role and utility of livestock in the contemporary pastoral system of the Jordanian Badia. In order to make clear the importance of and necessity for the study, the chapter begins by identifying current problems in the prevailing process of pastoral development planning. The introduction also provides a working definition of 'pastoralism' as it is employed throughout the study, and locates the research within the broader context of the Jordan Badia Research and Development Programme. Against this background, the principal research objectives are given and the organisation of the thesis is outlined.

1.2 Problems of pastoral development

There exists a consensus of opinion that the livestock development efforts of governments and agencies in pastoral communities have met with disappointing results, if they have not failed completely (Galaty and Johnson 1990, Prior 1994, and Swift 1988). Supporting evidence has been supplied from both the Near East (Chatty 1996) and the African continent (Swift 1988). The failure of development initiatives has often contributed to the marginalisation of pastoralists.

This marginalisation may occur if failure to reach prescribed standards of development leads governments to conclude that pastoralists are somehow external to the national economy.

Equally, lack of progress may disillusion donors and governments, leading them to redirect development resources elsewhere (Harbeson 1991). The continuing marginalisation of pastoralists provides fuel for misconceptions which have historically existed between states and their (mobile) pastoral populations (Barfield 1993).

No explanation is yet generally accepted as to why livestock development efforts among pastoralists have had such a poor track record. However, many professionals concede that problems may lie in the way that development projects have been planned. Specifically, it has been argued that pastoralists may be indifferent to the development goals planned for them. Prior has noted that:

> *"Clearly much pastoral development has been largely irrelevant to the long-term needs of pastoral peoples. Historically, development policy has been aimed at improving pastoralists' production mechanisms through technological change..." (1994:120)*

Prior reflects widespread concern with the way in which technical problems have hitherto been emphasised by development planners, and points to the risk of divergence between the respective development agendas of planners are their designated 'beneficiaries'.

Chatty (1996) suggests that the root of these problems may lie in the prevailing culture of development institutions. Citing the work of Escobar (1991), she argues that contemporary development strategy is largely oriented towards replicating western-style market economies, even in societies where these have little cultural precedent. Such arguments portray international development culture as insufficiently sensitive to the specific needs and concerns of distinct populations

If, as many contend, this has been part of the problem with livestock development efforts, then clearly the development community has failed to understand the underlying motives and objectives of pastoral herding strategies. It has been argued that the understanding of economic behaviour has been particularly weak where pastoralists engage with markets and that development planners have demonstrated a fundamental misunderstanding of how herders respond to market incentives relative to other herding objectives (Galaty and Johnson 1990, Harbeson 1991).

The implications of these criticisms of recent development planning is that "*policy objectives for pastoral development need to be rethought, to change the emphasis away from macro-economic or narrowly technical goals*" (Swift 1988:4). For development interventions to succeed, it is necessary for these to be more closely attuned to the interests of herders. It is therefore of primary importance that development planners develop a more comprehensive understanding of what these interests are.

1.3 Pastoralism in the Jordanian context

The existence of important questions about how pastoralists value and use their animals implies that human-animal relations within a pastoral system are somehow distinct from human-animal relations under other systems of livestock production (such as farming). For this reason, it is important at the outset of this study to carefully define the common terms that will be employed, notably by considering what 'pastoralism' is and placing this concept within the context of the Jordanian Badia.

1.3.1 Defining pastoralism

A variety of criteria are commonly applied to describe pastoralism (e.g. economic activities, mobility or social structure). Sandford (1983:1) defines pastoralists as people who "*derive most of their income or sustenance from keeping domestic livestock in conditions where most of the feed that their livestock eat is natural forage rather than cultivated fodders or pastures*"

While indicative, this type of definition is rather rigid for general application. Like many commentators, Sandford identifies pastoral systems as largely or fully dependent on natural grazing. This may be true in some parts of Africa but in other areas (particularly the Near East), pastoralists have traditionally used agricultural residues and have become increasingly reliant upon purchased feed concentrates (Leybourne 1994, Bocco and Jaubert 1994, IFAD 1995). Furthermore, by narrowly defining pastoralism in terms of economic production, Sandford neglects the cultural dimensions of pastoralism, which are often made reference to (Barfield 1993, Galaty and Johnson 1990). Kohler-Rollefson (1993:185) offers a more flexible interpretation, which clearly distinguishes pastoralism from other forms of livestock, production:

> *"Pastoralism is an advanced, highly developed form of human-animal relationship in which a high degree of mutual dependence has developed...not only human control over animals but also far reaching adaptations by the human society to the needs of its herds. Pastoral societies have adopted specific residence types (such as nomadic, semi-nomadic and transhumant) and associated forms of organisation and inheritance mechanisms"*

The essence of Kohler Rollefson's argument is that pastoralism implies a distinct set of human-animal relations around which the pastoral society is ordered. With reference to this working definition, it is possible to consider how pastoralism is manifested in the Badia.

1.3.2 Bedouin pastoralists

Pastoralism in the Near East is predominantly practised by the *Bedu* (or Bedouins). However, the clarification should be made between these respective terms.

Lancaster and Lancaster (1988) define 'being Bedouin' in terms of a peer recognised genealogy and participation within a Bedouin value system. As such, the term 'Bedouin' describes an indigenous category by which an individual can identify himself and be identified by others.

This should be distinguished from 'pastoralism', which is essentially an economic categorisation (although, as suggested in section 1.3.1, it also carries some cultural meaning).

Certainly not all of those who identify themselves as Bedouin in Jordan are pastoralists (*Abu* Jaber *et al* 1987). However, all of the pastoralists and livestock owners described in this study are Bedouin. The tribal organisation of the Bedouin described within this study is discussed in further detail in Chapter 4.

1.3.3 Pastoral production in Jordan

According to official figures, livestock production in Jordan accounts for 2.2% of the GDP, or approximately 50% of the total agricultural GDP (Agrodev 1998). However, the true importance of the livestock sector in Jordan is perhaps better illustrated with reference to the population that it supports. The pastoral population[1] of Jordan has been recently estimated at 89,000 inhabitants (19,078 families), which represents approximately 2% of the national population or approximately 11% of the total population resident within the Jordanian Badia region (Agrodev 1998). Given the otherwise poor productive potential of the Badia, pastoralism is recognised as the most efficient form of production in this area (Juneidi and *Abu* Zanat 1993).

In recent years, pastoral production in Jordan has become increasingly monetarised and market oriented (Juneidi and *Abu* Zanat 1993), and pastoral systems have evolved around the growing availability of new resources and technologies, including motorised transport. Increasingly Bedouin households have supplemented their livestock herding with other economic activities. However, concerns have grown for the sustainability of pastoralism in the Badia owing to the increasing degradation of rangelands, and living standards in the Badia remain the lowest in Jordan (Agrodev 1998).

1.4 The Jordan Badia Research and Development Programme

The current research was undertaken under the auspices of the Jordan Badia Research and Development Programme (JBRDP) which was initiated as a joint venture between the Higher Council for Science and Technology (HCST) in Amman, and the Royal Geographical Society (RGS) in London, with the principal aim of:

> *"The sustainable development of desertified Badia environment and the improvement of the standard of living of the inhabitants" (JBRDP 1994:5)*

The JBRDP was conceived shortly after the 1991 Gulf conflict and formally inaugurated in April 1994, with its field centre located at Safawi in the northeastern Badia of Jordan (Figure 1.1). The portion of the Badia region selected for study encompassed 11,210 km^2 (JBRDP

[1] In the Agrodev study, pastoralists were defined as livestock herders who practised some form of residential mobility. Thus the figures do not take account of sedentary livestock producers, nor do they give any indication of whether in all cases livestock constituted the sole source of basis of livelihood.

1994) and shares international borders with Syria to the north and Saudi Arabia to the south (Figure 1.2).

Figure 1.1: Boundary of the JBRDP in the Jordanian Badia

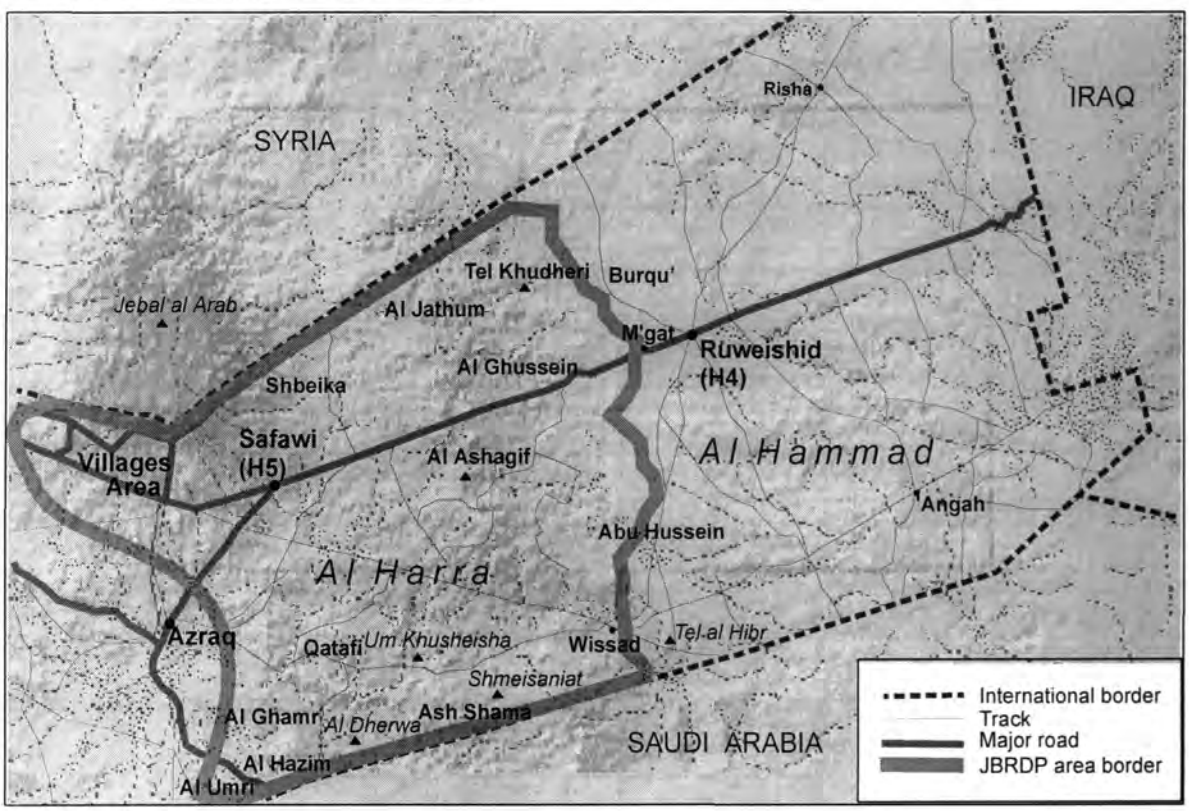
1.4.1 General objectives of the JBRDP

The 1994 JBRDP prospectus states that the sustainable development of the Badia will be achieved by:

- Conservation of natural resources through appropriate management systems, so that production levels will be sustainable in the long-term.

- Optimisation of returns from investments already made by people in the region. This will involve the identification of constraints on livestock and agricultural activities with the intention of overcoming these constraints in order to optimise the returns on the investments made in them

Figure 1.2: Boundary of the JBRDP study area



- Enhancing the returns from future investments in the region through optimal allocation of resources

The early emphasis of the JBRDP has been on research rather than development, with the ultimate purpose of gathering accurate and relevant information which will help identify or overcome constraints on development or define developmental potential. The programme is therefore intended to produce:

> *"Genuine scientific research with results and conclusions that carry conviction with those involved in subsequent development planning and project implementation" (Dutton 1998:16)*

The Programme places a heavy emphasis upon human factors and community participation in the twin processes of research and development. It argued that long-term management of change will need to be in the hands of the local Badia population and therefore:

> *"They will need to be convinced that change is in their own individual and collective interests, and will need to be involved in the whole process of change from the beginning" (Dutton 1998:16)*

1.4.2 Livestock research objectives of the JBRDP

From the very outset of the Badia Programme, the livestock economy of the Badia region was prioritised as of special research interest. This was due not only to the historical importance of livestock to Bedouin within the Badia, but also because few other development options could be identified within the BRDP area (Dutton and Shahbaz 1999). The principal objective of livestock research at the JBRDP was to stimulate beneficial economic change through an improvement of livestock productivity. Research was to encompass a range of technical and human science components including veterinary science, sheep production, milk and dairy production, livestock marketing, human demography and pastoral management systems.

The Programme philosophy of improving livestock productivity was not only justified by the stated objective of raising the living standards of the Badia population, but also by concerns for the sustainability of the Badia rangeland resources. The rationale for this deserves quotation in full:

> *"A working hypothesis (not an assumption) is that a new generation of pastoralists confident of the health and greatly enhanced productivity of their animals will keep fewer of them, thereby spending less money while maintaining total production and increasing profit margins. Fewer sheep make less demand on the range...We hope that by collecting and demonstrating the required information, pastoralists will modify their production systems.... (Dutton 1998:18)*[2]

[2] This hypothesis will be re-evaluated in the light of the current research (see section 9.5.2).

1.4.3 Origin of the current research

The current study began as a component of overall JBRDP livestock research aimed at characterising pastoral management systems and quantifying in monetary terms the performance of sheep herds under Bedouin management[3].

However, as this original work progressed, findings suggested that the scope of research was far too limited. Indeed, it seemed that trying to define livestock performance in monetary terms was missing important reasons for why the Bedouin managed their herds the way they did. Consequently, the approach threatened to misrepresent the way in which Badia livestock herders were making management decisions.

For this reason, there was clearly a need to extend the work to consider a much broader set of relationships between livestock managers and their herds, notably in the way that households derived benefits from them and the objectives that underlay the planning of the Badia livestock economy.

Thus expanded, the current study makes an important contribution to, and builds upon, a range of livestock related studies which have already been completed within the context of the Badia Programme, including the work of Al-Oun (1998), Al-Sirhan (1999) Al-Srour (1999) Al-Tabini (1996), Campbell and Roe (1995), Campbell (1996, 1998), Jones (1996) Oakely (1997), Oughton and Adas (1999) Papadopulos (1999) and Roe (1996, 1998 and 1999). Specifically, the study serves to place household decisions about the use and values of livestock and their products within a broader conceptual framework.

1.5 Objectives of the research

As described in section 1.2, there is concern among many development professionals that development planning for pastoral communities has hitherto been inadequate or badly targeted, resulting in the failure of initiatives. An important constraint upon the effectiveness of development planning seems to be a lack of information regarding the way in which pastoralists value their animals and how these values affect their herding objectives.

The Jordan Badia Research and Development Programme has the stated objective of improving standards of living for Badia communities (including pastoralists) and has identified livestock production as an area of economic activity in which beneficial change may be effected. This study, as a component within the wider JBRDP research effort, aims to provide development planners for the JBRDP area with much needed information about the role of livestock herds within contemporary Badia livelihoods and the broader livestock management objectives of households. This information will provide a basis for more effective development planning.

[3] I was initially employed as a research assistant on a two-year contract, and allocated two research proposals to complete. My contract was subsequently extended for a third year, during which time I was able to undertake work of my own design.

While the general objective of the study is to explore the ways in which livestock are valued in the contemporary Badia household, the investigation also seeks to relate the way that livestock are used to a wider field of social and economic activity, which may be broken down into more specific research objectives. These are:

- To describe the ways in which livestock are valued in contemporary Badia households
- To ascertain the extent to which these values are constant at different levels of production and in different socio-economic circumstances
- To investigate how livestock values may change and how this change may be expressed
- To explore how livestock management decisions are influenced by the different utilities of livestock

In addition to the expected benefits the study will have for development, the research will contribute to the existing theoretical knowledge base about the role of herds in pastoral households, with specific reference to the contemporary Near East region.

The contemporary Badia may be of particular interest to scholars since pastoral systems in Jordan demonstrate some signs of modernisation (with respect to the level of market integration and changes in the methods of livestock production). Thus, the Jordanian case could potentially provide additional information about the way in which pastoral households engage with market economies.

The central theme of this study is to explore the role of livestock in pastoral livelihoods. Since in most societies the household constitutes the primary institution for managing livelihoods, the research will focus at this level. As the household is the forum in which the core interests of Badia inhabitants is decided, this will empower planners to offer meaningful development assistance. Furthermore, the study offers the opportunity to add to existing knowledge of the relationship between household institutions, families and herds.

1.6 Organisation of the research

This thesis is divided into three major parts and consists of nine chapters.

Part one of the thesis contains four chapters (including this chapter). Chapter 2 places the present study in its wider context by a review of relevant theory from the contemporary literature on pastoralism and agricultural development. The literature is drawn upon to outline existing theories on the role of livestock in pastoral systems, and to consider alternative theoretical perspectives from which to investigate the interplay between livestock and household livelihood strategies. The methods employed in the collection of data (Chapter 3)

reflect the conclusions of the previous chapter. Chapter 4 provides the principal geographical, historical and economic orientation for the study by summarising the historical pattern of livelihoods in the Badia. It also describes the impact that recent political and economic change has had upon Bedouin livelihoods in general, and upon livestock production specifically.

Part two of the thesis describes the principal findings of the research in three chapters. Chapter 5 investigates the monetary values that livestock commanded between 1994 and 1996, how these monetary values were realised and the ways in which these values shaped livestock management behaviour. The following chapter (Chapter 6) considers the non-monetary material values of livestock. This chapter builds upon the demographic and organisational characteristics of households by evaluating how domestically consumed livestock products contributed to household livelihoods. In Chapter 7, the evidence is presented for how livestock owners attached non-material worth to livestock, principally social and symbolic values. This chapter also points to the structuring effects of livestock on Bedouin society and the ways in which livestock management influenced how pastoralists engaged with social and value systems.

Part three of the thesis builds upon the evidence of the previous three chapters and offers conclusions. Chapter 8 reviews how Bedouin attitudes to livestock changed following the 1996 removal of government feed subsidies and what this meant in terms of household livelihoods. In the final chapter (Chapter 9) the research is summarised and conclusions are drawn.

Chapter 2: Approaches to the study of livestock in pastoral systems and change in pastoral livelihoods

2.1 Introduction

The notion of economic change and development is always a complex issue, and with reference to pastoral societies, this is perhaps doubly true. While an extensive literature exists describing pastoral societies, a large part of this material focuses either on the cultural anthropology of pastoralists or on their ecological adaptation. There also exists a more peripheral (albeit growing) literature on the socio-economics of pastoralism, yet this material is at its weakest on the subject of socio-economic development and change, which still remains a relatively new field of investigation (particularly so in a Near Eastern context).

Traditionally, a great deal of emphasis has been placed on continuity, rather than change, in the study of pastoral communities. Evidence for a shift of research focus to the latter has only appeared in the literature in the last two decades, yet the very rapidity of change in the pastoral sector frequently outpaces these efforts (FAO 1991).

The principal objective of this chapter is to further develop the research question posited in section 1.5 by contextualising it relative to existing knowledge, thus establishing a starting point for further research. The second objective of the chapter is to establish a theoretical approach upon which the succeeding research may be built.

This chapter begins with a selective overview of theoretical perspectives on the role and utility of livestock herds in pastoral systems. A wider discussion and criticism of these perspectives follows. However, the applicability of many of the models under discussion is hindered by the lack of an appropriate framework for placing Near Eastern herding households within the context of a dynamic modernising economy.

In order to address this shortcoming, the latter part of the discussion focuses upon decisions and economic behaviour, introducing these concepts in relation to small scale agriculturally-based households. Drawing heavily on the literature of 'peasant studies' (although recognising that in some important ways pastoralists are not like peasants),[4] the discussion outlines contemporary approaches to the study of household organisation and resource management in development.

[4] Perhaps the major distinct between pastoral and peasant economic production is the relative capital instability of pastoralism, with the potential for both rapid growth and decline. Differences between agricultural and pastoral economics have been discussed with reference to both labour (Bradburd 1990:78-79) and production ecology (Cribb 1991:23-25).

These diverse elements are brought together in the conclusion, which suggests the possibilities for revised approaches to the study of pastoral development and new ways forward.

2.2 The development of a pastoralism literature

Historically, the development of a literature on pastoral societies has been characterised by shifting theoretical and methodological approaches (Salzman and Galaty 1990). The first modern studies (Evans-Pritchard 1940, Baxter 1954, and Gulliver 1955) focused primarily on human and social adaptation to the marginal lands which herders inhabited. Later generations of anthropologists in the 1960's and 1970's (notably Barth 1964, Chatty 1976, Cole 1971, Dahl and Hjort 1976, Dyson Hudson 1972, Rigby 1969, Spencer 1965 and Swift 1975), applied a much wider range of analytical tools and approaches to the study of pastoral societies (Fratkin *et al* 1994). New data revealed the dynamism and complexity of pastoral social organisation and adaptation. Accordingly, pastoral societies became viewed within a wider system of explanatory factors, exogenous as well as endogenous. Thus, new approaches stressed social and economic linkages outside of subject peoples rather than dealing with them as isolates (Salzman and Galaty 1990).

The extending horizons of the 1970's continued to expand with the advance of research in the 1980's. The large volume of data generated during this period reflected the growing interest in pastoralists following drought, famine and environmental degradation in Sahelian Africa and other areas. Many studies were linked to multidisciplinary environmental projects and as a result, ethnographers were exposed to the techniques of a wide range of disciplines including demography, health and nutrition and human and livestock ecology. The literature of the time acknowledges these acquisitions with a holistic approach to social organisation, investigating a multiplicity of cultural and natural phenomena (Baxter and Hogg 1990, Johnson and Anderson 1988.).

Recent studies benefit from this research heritage both theoretically and methodologically while also addressing further questions raised by the progress of scholarship. The challenge today is to relocate pastoralism amidst "*changing economies and increased integration in the market economy*" which "*herald major changes in pastoral societies*" (Roth *et al* 1994:231-232). Interest in redefining pastoral livelihood strategies comes from a diametric (albeit related) position of pastoralist/rangeland interactions. New findings in rangeland ecology suggest that the old paradigm of a fragile ecological equilibrium disrupted by overgrazing may be false (see Roe *et al* 1998 and Warren 1995). The prevailing 'disequilibrium theories' now question current understanding of 'rational' livestock stocking and herding strategies (Livingstone 1991). This debate to re-evaluate pastoral livestock strategies within the context of developing livelihood options and market integration has been championed by Salzman and Galaty (1990). They have, in a sense, drawn the lines of battle by highlighting the key question of the perceived value of livestock in pastoral systems and how the livestock operate within the context of the contemporary pastoral livelihood strategies.

2.3 Concepts of livestock utility in pastoral society

At present, most discourse upon the role of domestic animals in pastoral systems may be accommodated within three general perspectives: that which emphasises the capital values of domestic herds, that which emphasises the subsistence values of herds and, finally, those perspectives which stress the social and symbolic functions of livestock. It should be recognised that these schools of opinion are vaguely bounded and some commentators insist that these groups of functions should be considered in combination rather than individually.

One assumption needs to be made clear at the outset of this discussion. A substantial portion of theoretical analysis of pastoral systems has been undertaken with reference to African societies. While it is recognised that important differences may exist between cultures and livestock management environments in Africa and in the Near East, it is assumed that if these differences are recognised, lessons learned from pastoral systems in Africa may have relevance to management systems in the Near East.

2.3.1 Livestock as capital

Lewis (1975:437) describes his Somali pastoralists as the "*thickest skinned capitalists on earth*" people who "*regularly risked their lives in speculation*". Theories linking pastoralism to capitalism, which emphasise the monetary value of livestock to pastoralists are multiple and cannot easily be assembled beneath a single banner. However, limited common ground does exist between perspectives and at the risk of over-emphasising this, the spectrum of opinion will be reduced to four generalised positions. These are the theories of 'livestock as currency', 'livestock as commodities', 'livestock as a store of value' and 'livestock as family business assets'. Despite some areas of overlap and agreement between positions, the meaning of 'capitalism', as applied to each approach differs. This will be considered later within the context of a general critique of theoretical approaches (section 2.3.4)

The conceptualisation of livestock as units of currency within a non-monetarised economy is one developed by Schneider (1979), but also utilised by others (Henriksen 1974, Widstrand 1975, Haaland 1977) and elsewhere acknowledged (Livingstone 1977). In some respects, the utility of this approach is limited when considering societies well integrated within a market economy. However, as Haaland indicates, even where money is in widespread circulation, livestock commonly remain the currency of exchange in several types of ritual transactions (e.g. bride price, inheritance, credit, hospitality, gifts etc.). In support of this assertion, he suggests that the low rate of consumption of livestock reflects the degree to which they are tied up in reciprocal relations.

Schneider argues that within a pastoral context livestock demonstrate all the attributes of a currency. He argues that the available literature describes widespread exchange-value uses of livestock in pastoralist transactions. Animals are mobile and 'liquid'. Their utilities include use as a medium of exchange, a store of value, a unit of account and a standard of deferred

payment. 'Pastoral monetary theory' thus challenges the hypothesis that 'rational' decisions about livestock are entirely based upon their commodity value.

According to this theory, if livestock is valued as a 'currency' rather than a commodity and a source of commodities (with the unit value of the currency higher than the value of the commodities), the 'economically rational' decision maker acts to maximise his units of currency at the expense of commodity surplus.

To demonstrate the validity of a pastoral monetary theory, both Haaland (1977) and Schneider (1990) point to evidence from East Africa: consistently low rates of annual takeoff and poor milk productivity. They argue that this results from a peculiar feature of investment in pastoral capital; the income from capital gains (i.e. animals produce animals). While growth in other forms of enterprise depend on increasing involvement in market transactions, growth in pastoral enterprise depends upon reducing involvement in market transactions (Haaland 1977). Owners choose to manage animals as stores of value and therefore maximise production to the 'economic optimum' rather than the 'production optimum'. The self-reproducing qualities of livestock imply that a pastoral currency would be essentially inflatory in nature.

In addition to pointing to strategies of herd size maximisation, Schneider (1990:191) argues that the minimal levels of care given to pastoral livestock "*under most circumstances*" again indicates their primary utility as capital. He suggests that improved provision of housing, feed and veterinary care would lead to increased animal health and productivity, and would indicate that optimisation of productivity (for subsistence or exchange reasons) was the objective of herding.

Another perspective from within the neo-classical approaches stresses the commodity values of pastoral stock and the integration of pastoralists into commercial systems and markets. However, as all pastoral groups must necessarily sell off some animals (often young males or infertile females) in order to meet their needs for non-pastoral products, the transition between subsistence and commercial forms of production may be difficult to define. However, Prior (1994) suggests that:

> *"What distinguishes subsistence groups from commercial groups is not so much the quantity of herd off-take for the market, but the quality of that response to market demand" (1994:14)*

According to Prior's assertion, subsistence producers would maximise off-take for consumption while commercial producers sacrifice this to increase the marketability of their livestock. However, the reality is rather more complex than this model suggests since most pastoral households consume something of what they produce. Therefore, *"the commercial supply response is the outcome of the way the pastoralist balances his demand for values realised through market transactions with his demand for values realised through non-market transactions"* (Haaland 1977:128).

The commercialisation of production has been strongly linked to the existence or development of markets for pastoral products. Lancaster and Lancaster (1994) define the historical development of pastoral systems in Jordan and Saudi Arabia in terms of changing demands from urban and sedentary communities on the desert's edge. In Syria too, evidence has demonstrated that improved access to markets stimulates a commercial orientation in production (Chatty 1974). In West Africa, widespread comparative studies of herd structures and herding strategies suggest that pastoral production may be highly integrated into regional markets. Furthermore, herding strategies may be geared to specific types of commodity production and distinct sets of market relations with non-pastoral communities. Amanor (1995) found that while arid zone pastoralists specialised in rapid breeding and high, early off-take, milk production and the fattening of calves for adult sale characterised pastoral systems in semi arid areas. The former group enjoyed strong links with urban livestock traders while the production from the latter was almost exclusively met by the demands of a rural market. In this way, Amanor demonstrated that pastoral management strategies might increasingly be governed by market prices and opportunity, rather than by constraints on the natural increase of herds.

Evidence from the Middle East (see Dalton 1990, Lancaster 1981 and Marx 1990) indicates that some Bedouin entrepreneurs have become *"pastoralists on an industrial scale... they maintain herds of sheep and goats - camels become less important - amounting to hundreds or even thousands and employ other tribesmen as herders"* (Marx 1990:8). Enterprise of this type has been described as 'commercial ranching', and at this level of market integration and labour relations it is questionable whether owners remain 'pastoralists' (Behnke, 1980). Lancaster's analysis of changing Rwala economics concludes that human-animal relations underwent a major change when many of the tribe switched from camel to sheep rearing. In contrast to camels, which held intrinsic cultural value, the Rwala don't much like sheep and recognise only their commodity and capital-generating value. Some theorists of this persuasion (Barth 1964, Dalton 1973) contend that large-scale livestock capitalism (and the consequent patterns of labour and consumption it stimulates) commonly lead to sedentarisation and an end to pastoral relations. Livestock entrepreneurs are considered to manage their livestock resources in keeping with neo-classical 'rationality', although like Spencer (1990), Dalton (1973) links the development of a profitable livestock enterprise to the developing family cycle of the pastoral household.

Studies of pastoral herding strategies and livestock marketing of this type are essentially descriptive. Analytical studies of the economic rationale of commodity production are less common. Contemporary theory (Dercon 1998, Mace 1993) however, seems to differ little from the established (Barth 1964, Dalton 1973).

Barth's analysis, echoed in Livingstone (1977) indicates that in the absence of financial institutions, livestock represent the best available investment prospect for pastoralists. They are considered a relatively secure and profitable store of value, a position that closely approximates

the 'livestock as currency' theory. This theory has since been developed further, linking the rationale of investment choices to wealth and risk. Dercon's study of investment choices in Tanzania (1998) suggests that economically secure households invest in livestock as a mechanism for generating further wealth. This form of investment was described as *"profitable but lumpy investment and a liquid asset for consumption smoothing"* Dercon (1998:1). Investment of this kind were characterised by certain 'entry constraints', specifically credit availability and risk. Consequently, poorly endowed households were less likely to accumulate sufficient assets to build up or maintain a herd. When a household's herd is below a given level of viability (given in Dahl and Hjort 1976), the nature of livestock as a secure investment changes. Under these conditions, herders are much more likely to move into low risk, low return activities such as some form of labouring (perhaps shepherding for a larger household, Barth 1964, Dercon 1998). Thus employed, the pastoralist may be described as having slipped off the bottom end of the pastoral continuum (Finkelstein 1995), although this state may be only temporary (Barth 1964).

Within the same analytical framework, Haaland (1977) has pointed out that livestock remain a desirable investment for herders from economically viable sized herds up to the very largest stock holders, at which point the marginal productivity of further investment approaches zero. Stockholders reaching this point would 'rationally' diversify into alternative investments, commonly agricultural land or equipment (Barth 1964, Dercon 1998, Dalton 1973), although Dalton also gestures towards Spencer (1990), acknowledging the utility of direct investment in family reproduction.

Investment theory suggests that the extent to which livestock represent a neo-classical 'rational' investment decision is not constant. Instead, the rationality of livestock as an investment decision may fluctuate relative to a range of social and economic variables. Attempts have been made to model herder decisions about livestock accumulation by utilising techniques developed from ecological optimal foraging theories (Mace and Huston 1989, Mace 1993). Based on the assumption that herders have as their objective the maximisation of commodity units (calculated in terms of storable grain units exchanged for livestock) these theories demonstrate that optimal livestock investment strategies vary relative to economic and physical environmental factors, and the current status of the household resource/consumption base.

Spencer (1990) reconsiders the rationale and motivation for livestock maximisation strategies. He contends that *"the ultimate purpose of pastoralism is still growth of the herd paralleled by marriage and the growth of lineage; and the day to day symbiotic relationship between man and beast is supplemented by this longer term symbiosis"* (1990:4). Focusing on East African pastoralists, Spencer argues that a successful family herding enterprise is as dependent on family development as on herd development. Therefore, the twin processes of building up the herd and extending the family exist as two elements of the same overall 'business strategy'. Within the process of expansion, pastoralists exchange cattle freely for wives (who are in a sense themselves reduced to commodities) yet, by depleting the herd by a few beasts, owners

are investing in future children. Spencer concedes that his model for the direct transfer of wives for animals has little applicability outside of Africa, but other work in the Islamic world (Barth 1964, Dalton 1990 and Black-Michaud 1974) has stressed the linked development of the household and the herd. Dalton (1973) states that the ambition of all Libyan Bedouin males was to ultimately head a large household comprising of his own extended family. To achieve this goal necessitated rapid herd development, first to finance the individual's own multiple marriages, and later to provide the nucleus of herds for his sons' households at marriage.

Spencer argues a "*rudimentary capitalism*" which he describes as "*family enterprise*" is pervasive in pastoral society. Pastoral economics are consequently characterised by an "*optimistic ideology of growth*" and the symbiosis of herd and family (1990:12).

2.3.2 Livestock as consumables

The role of livestock as a source of consumables predominates throughout the pastoral literature. However, it is evident that economic analysis of herding livelihoods has, in the anthropological literature at least, been obscured by studies of the social and ritual value of livestock (Dahl and Hjort, 1976). In recent years, a developing field of investigation has focused on the links between pastoral production and consumption, both autoconsumption in the form of livestock meat and products and the exchange values of livestock in the form of purchased commodities (Huss Ashmore 1996, Galvin *et al* 1994). Studies of this type challenge the existing assertions that integration into market economies necessarily leads to a reduction in autoconsumption and entry into the markets for foodstuff commodities. Instead, data suggest that diet and nutrition are in fact conservative aspects of pastoral livelihood strategies and thus to some extent insulated against changes in access to markets and cash.

The principal economic function of livestock is, of course, the supply of meat and milk (and other consumables such as fibres). It is argued that livestock management strategy is actually the composite of complex decisions regarding two disparate livelihood problems. These are the satisfaction of both the herders' immediate requirements and the security of his long-term survival (Western and Finch, 1986). The value of livestock in the latter capacity is closely linked to the neo-classical notion of storage of value, albeit in a different currency. Widstrand (1975:149) encompasses this duality when he describes the aims of pastoral livestock operations as: *"to provide a good, regular supply of food for the family, to enable them to survive physically and socially and to maximise the chances of their surviving prolonged drought and other risks".*

The first of these two distinct facets of livestock strategy has been disengaged and considered in isolation. Dahl and Hjort (1976) have mapped biological parameters of both herd productivity and human nutritional requirements, in order to calculate the minimal viable subsistence herd sizes for various species (and combinations of species). A model of this type demonstrates (for example) that a family of six individuals consisting of three adults and three children could theoretically survive upon the output of 131 sheep managed for optimal productivity. Despite

the obvious inaccuracy of such methods (Dahl and Hjort admit as much), they have given rise to a theoretical approach which expresses the human-animal relationship in terms of a pastoral subsistence ratio (Widstrand 1975, Livingstone 1977, Haaland 1977). From this perspective, investment in livestock occurs to produce the necessary quantity of consumables required to meet total consumer demand. Livingstone argues that livestock population increases may mirror human population increases within the same area, and presents data to suggest that even the highest livestock populations, when divided by the total population dependent upon (or recipient of) their products, result in quite reasonable human-livestock ratios.

Subsistence oriented livelihoods are distinct from capitalist enterprises in that the producers consume their own product. The family (or other unit of production) is compelled to satisfy its own consumption needs, which are defined as its minimal survival requirements. It is the absolute necessity to constantly meet these requirements that structures choice in subsistence economics.

Minimal survival requirements must be met by the subsistence or 'maintenance' level of productivity (Scott 1976). Productivity cannot be allowed to fall below this level. This level is determined by a combination of physiological and cultural criteria, related to expectations as well as absolute nutritional necessity. In this way, definitions of minimal survival requirements might differ regionally and across social and economic groups (e.g. minimum survival requirements may be the output of 160 sheep for a family of 6 in one area but only 120 sheep for a similar sized family in a more impoverished area with lower expectations). Scott describes the subsistence crisis level as *"a threshold below which the qualitative deterioration in subsistence, security, status, and family social cohesion is massive,"* (Figure 2.1).

The day to day proximity of this subsistence crisis level is the rationale for following risk averting strategies in low marginal product herding and agricultural societies. Risk avoiding strategies generally rule out improvements in overall net productivity that might carry any risk of jeopardising subsistence. For this reason risk avoidance has been described as a basis for "*economic conservatism*" (Mellor 1969:214). The strategy of risk avoidance explains a preference among many herders to orientate production towards household consumption rather than cash exchanges. Scott quotes Leonard Joy's (1969:377-78) suggestion that subsistence producers *"may resist innovation because it means departing from a system that is efficient in minimising the risk of a catastrophe for one that significantly increases this risk".* This notion of resistance to economic change has often been emphasised in the literature of pastoralism e.g. Schneider (1959).

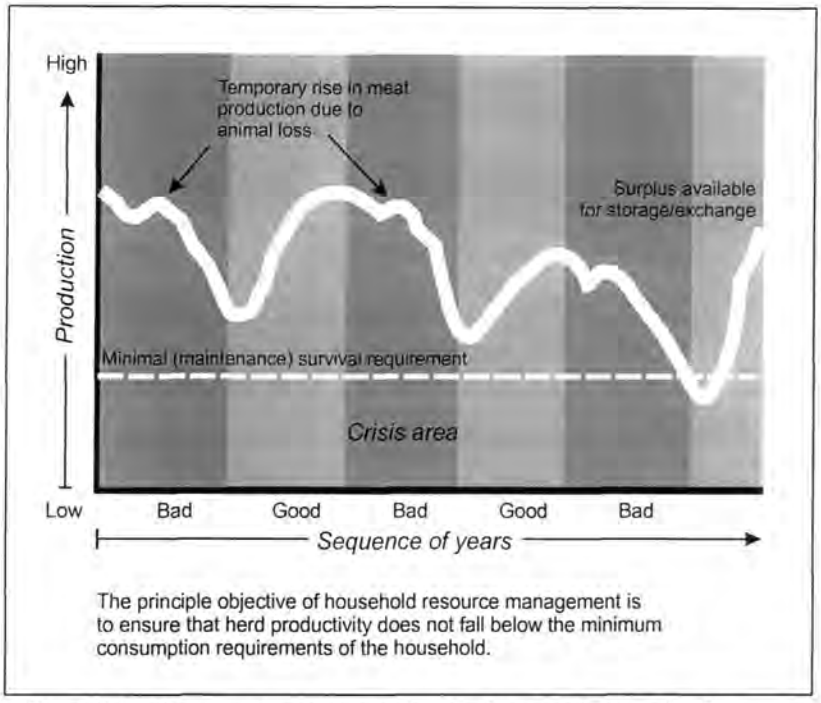


Figure 2.1: Diagrammatic representation of subsistence (meat and milk) productivity in a pastoral household.

However, even the most failsafe of production strategies is not risk free. Much of the literature pertinent to pastoralists emphasises dramatic stochastic events such as drought, flooding, disease and theft as threats to subsistence levels of productivity (Dahl and Hjort 1976, Lancaster 1981, Livingstone 1991 and Mulder and Sellen 1994). Even the addition of an extra family member during the normal reproductive cycle of a household can push the unit towards subsistence crises by increasing minimal survival requirements (if there is no corresponding increase in productivity). At certain times of a family's natural history, such as when there are many unproductive mouths to feed, the family is particularly vulnerable to such crises (Scott 1976). Equally, it takes only minor livestock feed shortages, owing to deterioration of the range or macro-economic factors to decrease the productive capability of livestock to the extent that production falls below the required subsistence level (Widstrand 1975).

The literature on risk avoidance has catalogued a wide variety of pastoral strategies designed to minimise risk to subsistence levels of production.

The accumulation of large herds, widely reported in the pastoral literature, in fact serves multiple risk avoiding functions. Most obviously a large herd offers greater 'strategic depth' against animal losses or general reductions in productivity (Dahl and Hjort 1976, Livingstone 1977). Furthermore, large herds act as a storage facility, storing surplus, usually 'meat on the hoof' from good years to bad years (Western and Finch 1986). Large herds give owners greater flexibility to slaughter and consume animals in anticipation of their death from starvation or illness. In doing so they obtain more meat than if waiting for deaths from emaciation. Large herds also provide herders with greater energy off-take during the difficult recovery period following subsistence crisis, allowing a swifter recovery (Dahl and Hjort 1976, Western and Finch 1986). Finally, Livingstone suggests that large herds can be spread over a wide

geographical area so to 'spread risks'. This latter strategy is manifest in systems of 'stock friends' and livestock loans and exchanges which are characteristic of almost all pastoral societies.

A mixed meat/milk subsistence economy gives better energy conversion efficiency than meat alone, increasing livestock productivity. Widstrand (1975) and Lancaster (1981) suggest that mobility and herd species diversification, as well as economic diversification into other economic activities, significantly spreads risks. Livingstone (1991) argues that subsistence pastoralists prioritise consumption of products and market surpluses only. This in part explains the low level of off-takes common to pastoral herds.

Furthermore, subsistence producers commonly have final recourse to an array of networks and institutions which may offer support during times of economic hardship (Halstead and O'Shea 1989). These include friends, kinsmen and the wider tribe. Scott (1976) makes the important point that there exists an inverse relationship between the reliability of a source of assistance and its resource poverty. Thus, while immediate kinsmen are likely to offer highly dependable support during a period of subsistence crisis, they are unlikely to be materially securer than the seeker of help. In contrast, the state, with vast resources at its disposal, is unlikely to be forthcoming on behalf of an impoverished individual.

2.3.3 Social and symbolic value of livestock

During the early history of anthropological research into pastoral societies, attention focused closely upon the social value of cattle, following Herskovits' (1926) identification of the East African 'cattle complex'. While a useful contribution, Herskovits' work drew attention away from other reasons that households maintain livestock, and subsequent distortion and widespread misuse of the theory has prejudiced many later and more rigorous analyses of the social values of livestock (Dahl and Hjort 1976).

Perhaps the social function most consistently referred to in the literature is that of payment of bridewealth. Livingstone (1977), Haaland (1977) and Rigby (1990) describe transfers of up 50 head of cattle in East Africa between the groom and his future father in law, with a small number relayed to the bride herself. Behaviour of this kind has been subject to a wide spectrum of interpretation, but a broad consensus has begun to emerge. The bridegroom's investment is principally in securing the services of a wife and her children. As major labour providers (over a number of years) and ultimately a source of support and old age security, this family represent a rational investment to the groom as well as a lasting source of social prestige and status (Livingstone 1977). The bride's father, who might otherwise receive no further labour from her, accumulates a number of cattle in lieu to make good the loss. The bride herself acquires status and prestige from the transfer of cattle on her behalf as well as a guarantee of her husband's commitment. Furthermore, she may receive a number of animals personally, guaranteeing her children and herself subsistence independent of her husband. New interpretations of transactions of this kind (Spencer 1990, Rigby 1990) attribute much greater emphasis to the

broader social allegiances being forged between respective parent households and within the new one. In this kind of transaction, it is not always necessary that debt actually be settled in full, as these links of debt and credit themselves service numerous functions. Barth's socio-economic analysis of an Islamic pastoral group places special emphasis on the exchange of livestock not only at time of marriage (from father to son) but also through inheritance, gifts, loans and other social processes. Each of these reinforces reciprocity and interdependence within the social group.

Evidence of ritual slaughter and hospitality is presented in nearly every anthropological account of pastoral societies world-wide. As well as the very practical benefits of storing 'surplus' meat (a commitment to reciprocate hospitality to the host on the part of the guests), the act of slaughter for guests carries special symbolic significance in pastoral society because the culling of an animal and subsequent reduction of livestock capital runs contrary to the 'logic' of subsistence. Haaland (1977) interprets ritual slaughter in terms of developing credit and debt relations between host and guest.

Many researchers make reference to 'stock friends' and other forms of informal exchange or loan of animals between herders. These transactions may occur simply as a 'risk spreading' exercise to distribute components of a herd across a wide geographical area or as an alliance building strategy: *"one of the social aspects of such a system is that by creating friendships by sharing animals, there is always a group of men that an owner can rely on to take his part and side with him in conflicts concerning grazing cattle etc..."* (Widstrand 1975:150). Livingstone describes another common form of exchange relationship in pastoral societies whereby a destitute individual exchanges a young male for a pregnant female animal, the milk of the latter remaining with the recipient. The utility of this system is in *"reducing inequality and providing social security against risk"* (1977:216).

Finally, *"all ethnographic material on pastoralism points to the diverse ways in which the wealthy can and do use their livestock: to secure wives for themselves and their dependants; to secure alliances; to entrain labourers and, more diffusely but perhaps most important, to establish high social status through indebtedness, generosity, and reputation"* (Mulder and Sellen, 1994:214). Notions of animal wealth in pastoral society are therefore inextricable from theories of subsistence and risk reduction, and furthermore, closely aligned with the concept of livestock as a 'store of value'. In response to the observation that the accumulation of livestock as a display of wealth constitutes an irrational judgement, Livingstone (1977) argues that it is no more irrational than the purchase of large houses or expensive motor cars as shows of wealth in the West. However, as Barth (1964) points out, a pastoralist would be irrational to invest in any other commodity since through livestock he can increase his capital without the presence of any market institutions.

Marxist scholars have levelled a major critique at neo-classical notions of livestock as a currency or commodity value in pastoral society. They argue that livestock are instead the

'means of production', implying an entirely different set of relations. The essence of the Marxist approaches is that livestock service highly important social functions, integral to the reproduction of family units. Livestock become in a sense the 'means' of social reproduction.

Bonte (1990) asserts that livestock can never be considered as simply a commodity, since animals in fact constitute the principal means of production in pastoral society. Livestock further service a whole range of fundamental social relationships including legitimising marriage through transfer of animals and creating 'a network of affinal relations'. It is hypothesised that the ritual value of informal transactions such as gifts and loans consolidate the basic ties of kinship co-residence and co-operation, which define the entire social context of human relations. Bonte (1990) describes livestock as the *"ultimate guarantor of pastoralist social order"*. This does not refute the commodity value of livestock and indeed argues that the commodity value of livestock rests with the 'mediating' function it assumes.

Rigby's (1990) analysis begins with the contention that in pre-colonial East African pastoral society, economic relations occurred within a 'Germanic' or domestic mode of production. Despite the limited penetration of commoditisation, this context remains fundamentally unchanged. It is asserted that this domestic mode of production (notably the labour transactions) are based around marriage, reproduction and the transfer of control of the means of reproduction from one generation to the next. In this sense women have *"almost total control of the primary objects of the productive process in its distribution and consumption, both elements in the relations of production"* Rigby (1990:38). In this way, the Maasai cattle act as central components in the processes of reproduction and redistribution.

Marxist perspectives thus focus on livestock roles as both the means of production and (through the social processes surrounding their exchange), the means of reproduction.

2.3.4 Discussion

The contemporary theory describing livestock utility within pastoral societies is characterised by some general limitations. Perhaps the most pronounced of these are related to the difficulties in the collection of empirical data. Owing to the time-consuming nature of meaningful ethnographic data collection, few commentators are intimately familiar with more than a single pastoral society. With the exception of broad literature based studies, much theoretical work is based on case-study evidence drawn from culturally, geographically and temporally diverse societies. Methods have not been standardised and researchers have analysed pastoralist livestock strategies on levels ranging from that of the individual actor to macro 'systems' approaches. Researchers are universally restricted by time availability, and studies consequently may fail to appreciate the significance of longer-term dynamic processes in subject societies. Furthermore, many studies remain largely gender insensitive, with data collected by either male or female researchers. These general limitations may in part explain some of the discrepancies between the various theoretical positions under discussion.

There is clearly strong evidence from a number of sources for the currency use of livestock within some pastoral transactions. However, the extent to which a 'livestock as currency' theory can be applied is clearly limited, given the greater mobility and exchangeability of monetary currency where pastoralists are integrated into a monetary economy. Other problems exist too; a rational choice to manage livestock as currency rather than commodity requires that currency value must be higher. If this is so, increasing herd sizes and 'monetary' inflation would surely drive down currency value to the point where the livestock commodity value becomes the higher of the two, leading 'rational' decision makers to again reverse their management strategies.

We must further question the general applicability of Schneider's (1990) comments to the effect that low levels of investment into livestock demonstrate maximising to the 'economic optimum' rather than the 'productive optimum'. Would not a better-cared for, healthier animal command a higher currency value? Even if it did not (as Schneider seems to be arguing), would not a better cared for animal have a better reproductive performance, and therefore higher capital growth potential? Would this instead not constitute behaviour maximising to the economic optimum?

Critics of the neo-classical approaches question whether a true entrepreneurial business ethic really does hallmark even the largest pastoralist livestock enterprise. To infer that it does would repudiate a whole catalogue of non-market transactions (e.g. offering of gifts, hospitality slaughters, extension of livestock credit etc.) which quite clearly perpetuate even in the most market integrated pastoral economies (Marx 1990). To pursue this observation further, Haaland (1977) has described a theoretical economic position where very large herd owners reach the point where marginal productivity approaches zero and negative economies of scale begin to operate. This analysis completely ignores a wide range of transactions the herd-owner may informally be servicing and profiting from. Marxists such as Rigby (1990) have speculated that non-durable surpluses of meat or milk would nearly always be redistributed throughout a pastoral economy, investing in non-market relationships. As pointed out by the subsistence theorist Scott (1976), in peasant societies the wealthy are commonly burdened with a 'moral responsibility' to extend generosity and largess throughout the community in return for recognition of status and ties of obligations.

Fundamental to the neo-classical position is the contention that pastoral livestock economics are essentially driven by profit considerations. Yet contrary evidence from a variety of sources (Marx 1990, Lancaster 1981) suggests that uneconomic pastoral institutions and loss making herds may in fact be maintained by subsidy at the expense of the owner in order to service ritual and security functions. The inflexibility of 'rational' decision models developed by Redding (1981) Mace and Huston (1989) and Mace (1993) have likewise met with broad criticism. A consensus of opinion suggests that rational decision analysis based on maximising assumptions fails to reflect the complexity of the pastoral decision-making environment (specifically by considering households as production/consumption units operating in economic isolation).

The methods offered to validate neo-classical models are problematic. Some (e.g. Amanor 1995 Haaland 1977 and Schneider 1990) assert that maximising patterns of behaviour can be established by the comparative analysis of herd structures and sales records. However, given that such analyses focus upon formal economic transactions only, others would argue that resulting conclusions are based upon incomplete data. Furthermore, as Ingold, (1990) has pointed out, the growth of herds might in fact be considered a natural rather than an economic process.

Pastoral monetary theorists apply a model of capitalist relations distinct from that employed by commodity theorists. In the former perspective, livestock themselves are the resource which herd-owners attempt to maximise and speculate upon. However, in the commodity model, large-scale livestock entrepreneurs possess the means of production which produces commodities (surplus new animals or animal products) and profit from the waged labour of those who undertake herding tasks. Stretching the analogy to include a proletariat would perhaps be going too far - in many cases waged labour may be drawn from kinsmen with common interest in the means of production. While the latter model approximates Marxist definitions of capitalism quite closely, the former does not, other than by virtue of ownership and maximisation of capital. However, maximisation of capital in this way bears more than a passing resemblance to Ostrom, Schroeder and Wynt's (1993) notion of 'capital investment'.

The neo-classical approaches explain pastoralist decision-making as individuals weighing up the direct economic benefits and costs of the various options and strategies available to them. The simplicity of this approach is its great strength, but it is perhaps indicative that nearly all capitalist models of herding relations acknowledge the importance of institutions and non-market transactions in influencing pastoralist economic behaviour (Spencer 1990, Dalton 1973, Haaland 1977, Barth 1964 and even Schneider, to the extent that *"all points argue for a capitalistic orientation, in addition to whatever subsistence orientation there may be"* 1990:13). In this way, they at least implicitly accept the limitations of their respective approaches and open the way for further (and more substantive) evaluation of the economic processes and relations to which livestock are central.

The contention that livestock represent sources of consumables (and by extension a subsistence livelihood) is initially enticing. Almost by definition, pastoralists are to some extent dependent on livestock products. However, problems of data validity again emerge. As argued by Lancaster (1981) Livingstone (1977) Rigby (1990) and others, the produce of herds is commonly dispersed widely throughout socially and economically networked households. This makes accurate evaluation of the role of autoconsumption in pastoral societies difficult.

Furthermore, even the most rigorous of theorists concede that subsistence upon livestock products alone is virtually impossible (Dahl and Hjort 1976, Smith 1992) and that most herders have historically practised some form of mixed economy (Marx 1992, Lancaster 1981, Smith 1992). Additional questions may be raised regarding the relevance of the 'subsistence ethic' and

notions of 'economic conservatism' given the considerable weight of evidence behind the view that pastoralists are highly adaptable and responsive to economic opportunity (Chatty 1986, Lancaster 1981, Marx 1990). This question of pastoral adaptability has in itself been identified as a major unresolved debate in the literature (Roth *et. al.* 1994).

What seems to have been overlooked by researchers who emphasise the continuing importance of the subsistence functions of livestock when pastoralists engage with market economies, is the possibility of qualitative changes in the products which are being consumed. If domestically produced animal products remain important to households which are supplying markets, are the products being used necessarily the same as those being sold? Are distinctions drawn between the milk of different species of animal, or between the meat of weak and healthy animals? As yet, the literature remains uninformative on these issues.

While many researchers have commented upon the social and symbolic value of livestock in pastoral societies, none have suggested that these values represent the sole utility of livestock. Altogether more likely is that the symbolic and social values described by researchers are tied closely to other values elsewhere discussed. In this way, livestock might represent a source of prestige to an individual inasmuch as they indicate personal wealth, or perhaps long-term household security. They also enable the owner to maintain and extend social networks through generosity and hospitality and strengthen his household through the acquisition of additional wives and the establishment of his sons' households upon their marriage. These are clearly functions of livestock's storage and exchange values utility.

However, the associated 'responsibilities' attached to displays of wealth (and prestige derived from livestock ownership) makes the actual short-term tangible benefits of utilising livestock in this way unclear. These benefits remain "*unmeasured, merely assumed*" (Mulder and Sellen 1994:214).

Spencer (1990:18) has labelled Marxist interpretations of livestock utility 'formalist'. This is a reference to the inflexibility of the approach, which seems to reject the significance of the commodity and commercial utility of livestock despite the volume of evidence to support it. Arguably, Rigby's 'Germanic' mode of production, with which he characterises pastoral relations in Tanzania, may not be generally applicable elsewhere. Additionally, Rigby emphasises the division of labour between sexes and the relative levels of control over the means of production maintained by each. Yet this analysis is invalidated by Rigby's 'articulation with commodity relations' and limited sales of surplus, which unlike subsistence functions are presumably undertaken by male members of the household.

Given the central 'mediatory' role in social reproduction attributed to livestock by Marxists, it is reasonable to assume that pastoralists would not voluntarily give up livestock in order to take up more profitable occupations, yet considerable evidence for this is offered by many

researchers (Barth 1964, Haaland 1977, Lancaster and Lancaster 1990, Marx 1980 and even Rigby 1990, himself).

However, it is notable that in linking livestock to the central processes of social reproduction Marxists clearly emphasise the workings of the household as central to understanding relations of production and the role of livestock in pastoral society. Consequently, despite the wide spectrum of theoretical positions, there exists a clear consensus within the literature that socio-economic and anthropological studies of pastoral decision-making and livelihoods would benefit from employing an institutional approach.

2.4 New approaches to investigate pastoralist behaviour

There remain important limitations upon contemporary understanding of the role livestock in pastoral systems. These are in part related to inflexibility in the way that rational and maximising behaviour is currently understood. Furthermore, the literature reveals a clear need for improved institutional awareness in the analysis of pastoralists' decision-making. As a result of these and other problems, current perspectives (section 2.3.4) seem unsuitable for general application and none seem wholly pertinent to understanding Bedouin livestock strategies in the contemporary Badia.

To better appreciate the limitations of contemporary theoretical approaches to the research problem (with the objective of identifying alternatives that are more appropriate), the remaining sections of this chapter draw upon a wide range of literature within the fields of economic anthropology, household economics, peasant studies and development theory. Through the application of these new theoretical tools, the underlying precepts of the research problem will be re-examined.

Reconsideration of the research problem begins with a discussion of how a new appreciation of the role of institutions in decision-making can develop our understanding of rational choice. This recognition of the role of institutions prompts a more detailed evaluation of the institution that is the principal focus of this study - the household.

On the basis of this developing theoretical framework, the discussion reviews the current understanding of economic behaviour in marginal rural communities before finally considering the impact of modernisation upon pastoral Bedouin institutions.

2.5 Rational decisions, risk and uncertainty

Plattner (1989) provides a normative definition for rational economic decision-making

> *"The rational or economising actor will select those opportunities that yield the maximal good. This assumption is called the maximising assumption and has been at the heart of microeconomics for many years. It assumes that people (1) are calculating beings who use forethought before acting and understand their own values; (2) have the necessary knowledge about costs incomes and yields with respect to their options and (3) have the necessary calculating ability to solve maximisation problems"*

In searching for a 'rationality' to explain the value and role of livestock within pastoral livelihoods, many theorists retread the contested territory of the formalist-substantivist debate of the 1960's. This debate arises out of criticism of formalist attempts to apply neo-classical models of economic behaviour outside of the capitalist society in which it was developed. Substantivist critics challenged the validity of formal economic concepts such as preferences, maximisation of utility, markets and pursuit of individual interests, when applied outside a given cultural context. In this way, Dalton (1969:67) insisted that *"primitive economy is different from market industrialisation not in degree but in kind"*. Substantive economics instead described economics as an instituted process, 'embedded' within a socio-cultural context and inseparable from it.

In its original form, the debate exhausted itself inconclusively, but with the passage of time economic theorists have returned to the original contested questions. Recent attempts to re-evaluate economic rationality has resulted in the emergence of a 'New Institutional Economics' (Heap 1989, Michie 1994, Ostrom *et al* 1993). The new economics are built upon the same assumptions as neo-classical economics but argue that things like markets are human rather than natural creations and thus subject to change (e.g. North 1990).

Fundamentally, the new institutional economics is an extension and elaboration on risk, uncertainty and bounded rationality in models of decision behaviour. Economist Frank Knight (1921) defined risk as random situations in which underlying probabilities are fully known. Uncertainty then refers to all other random situations in which knowledge of probabilities is less than complete. Consequently, risk is what a gambler faces, while uncertainty is what is faced in the real world. The most common mechanisms deployed by man against uncertainty are cultural and the most powerful of these are social mechanisms (Halstead and O'Shea, 1989), an observation which has contributed to the growing scholarly interest in institutions.

New institutionalists argue that given limited human capacity to comprehend complexity, institutions (including all forms of economic organisation - businesses, partnerships, and various other socio-economic groupings) act as substitutes or shortcuts for information that routinise, stabilise and make more predictable the outcomes of individual decision-making. In essence, the new hypothesis suggests that institutions represent a stable interface between the

individual and his environment and in doing so significantly lower the cost of his transactions when attempting to maximise (North 1990).

Furthermore, new institutional economics are sympathetic to the social and cultural nature of human beings and thus recognise the active and interdependent effect institutions have on individuals and their behaviour. In the words of Michie (1994:405)

> *"Institutions are things which provide identity, place, meaning order and purpose to human life and do not spring from individuals in isolate. Furthermore, institutions are things that individuals commit themselves to follow and perpetuate as worthy..."*

Heap (1989), working from within the new institutional approach, expands existing understanding of rationality, by conceptualising multiple rationalities. These he names as 'instrumental', 'procedural' and 'expressive'. He argues that the process of economic decision-making necessarily implies a combination of all three rationalities. Instrumental rationality is equitable with the intellectual pursuit of goals and perceived interests, in keeping with neo-classical theory on maximisation of utility. However, he points out that 'utility' (or currency) may be literally anything, material (such as monetary wealth) or non-material (such as reputation). Thus, in some circumstances, maximising and the pursuit of self-interest may actually run contrary to the acquisition of material resources and appear as 'irrational' behaviour when analysed using neo-classical approaches. Procedural rationality is defined as the rationality of an individual operating within a given social or institutional context, subject to cultural conventions and rules, which govern choice. Finally, Heap's expressive rationality is governed by the individuals' true or moral higher interests. In this way, Heap argues that the individuals' pursuit of self-interest may be tempered by concepts such as 'right', 'wrong' and 'justice'.

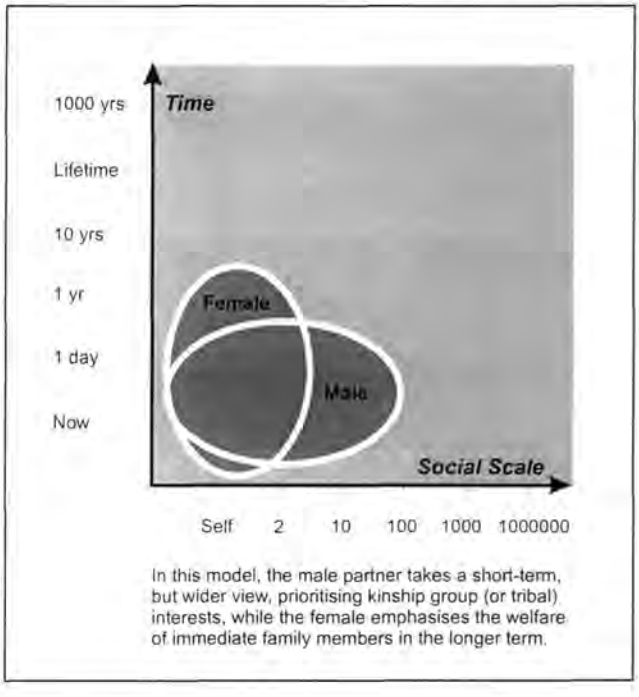


Figure 2.2: Divergence of rational interests within a hypothetical household (based on Wilk, 1996:151)

Economic anthropologist Richard Wilk (1996) agrees that in real-world transactions, the complexity of human behaviour requires the construction of hybrid models, drawing on combinations of neo-classical, social and moral theoretical approaches to economic decision-making. Wilk concludes his discussion of *'Economies and Cultures'* by attempting to

demonstrate how all behaviour can be viewed as rational, but at different scales and in different contexts. In his hypothetical model (Figure 2.2), immediate self-interest lies at the intersection of the axis, while what could generally be described as 'altruism' radiates out in different directions, with perfect altruism described as "timeless totality". Wilk uses this model as a tool to effectively demonstrate how different yet equally 'rational' positions may be adopted by individuals on the basis of their personal values.

New institutional economics, grounded in the neo-classical approach, look for 'rational choices' in decision-making everywhere. However, by placing rationality within an institutional context and broadening definitions of utility, they can embrace substantivist concerns for the integrity and logic of local cultures. These approaches, acknowledging the operation of parallel moral and political economies are emerging as important tools in the analysis of household resource management (Cheal 1989), and are currently being applied within a wide range of cultural contexts (Wilk 1989, 1996).

2.6 The household as a unit of analysis

If we accept that a 'rational' decision is best understood with reference to an institutional context, the question arises of selecting the most appropriate institutions for this type of analysis. As apparent in the literature on pastoralism, pastoral activity may be identified within a number of different institutional contexts, including those of state, macro economy, tribe, and kinship group. Indeed, this study will consider pastoral decisions in the Badia with selective reference to all of these institutions.

However, given that the principal focus of this study is upon pastoral livelihoods, the most relevant level of analysis is undoubtedly that of the household. This assumption may be justified in several important ways.

First, the household is the smallest distinct corporate unit of livestock management and economic decision-making. Second, pastoral households exist as distinct units of both production and consumption and mediate between these economic activities. Third, households are the units of social reproduction and, consistent with this, operate as the immediate unit of resource storage. Furthermore, households operate both formal and informal economic transactions, allowing the role of livestock in each of these to be explored. Finally, but of no less importance, households have been identified as the most common point of contact between society and the state (Harris 1981). For a combination of these reasons we can identify the household as being the predominant institution within which Bedouin livelihoods are constructed and decisions are made in the Badia.

As yet, the literature lacks a precise definition of the household, perhaps reflecting the complexity and multifunctional role of the institution. While the household is recognised by some to imply some form of residence group (Crehan 1992), others place less emphasis on co-

residence and instead stress in their definitions the criteria of activity and function (Oughton and Wheelock 1995, Roberts 1991, Wallman 1986).

Households generally constitute units of production, consumption, reproduction and operate as forums for planning and decision-making about allocation of resources (Hareven 1988, Wallman 1986 Wilk 1989a). Given the centrality of these functions in the lives of most individuals, households have been referred to as 'society's basic building blocks' (Crehan 1992). While in some cultures the household will approximate nuclear or extended kinship relations, it is a concept wholly distinct from that of the 'family' which expresses an essentially social relationship (Harris 1981, Oughton and Wheelock 1995). My own discussion of how the institution is manifest in the northern Badia appears in section 6.2.

Boundaries remain vague, for as Laslett (1984) and others point out, there exist no societies in which households are totally isolated and self-sufficient. Furthermore, the natural historic dynamism of households means that needs and opportunities change, goals shift and priorities are frequently reappraised (Crehan 1992, Oughton and Wheelock 1995). Some theorists instead prefer to conceptualise households as resource 'systems' without impermeable boundaries (Wallman 1986). Studies of resource stress in the American south-west undertaken by archaeologist Paul Minnis (1985) indicates the fluidity of boundaries in these resource systems. Minis argues that under conditions of resource stress social and economic responses are initially activated at a household level, but these may need to be superseded at a kin-group level if they prove ineffective (Figure 2.3). This counteraction of uncertainties or asymmetries through adapting or extending institutions is a strategy recognised by the new institutional approach (Ostrom et al 1993), and underlines the ambiguity and dynamism of household-based resource systems.

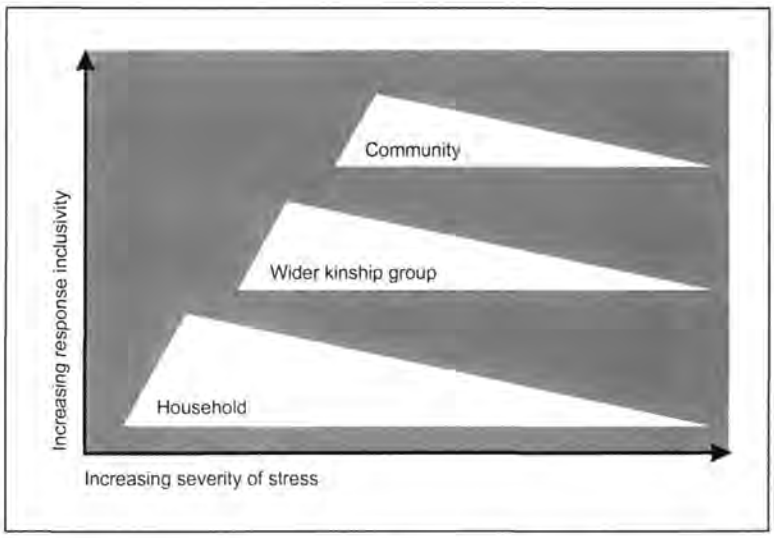


Figure 2.3: Fluctuating boundaries of household resource systems under conditions of increasing resource stress (based on Minnis, 1985:23)

Early theorists of agricultural and peasant economies, following Marshall Sahlins (1974), stressed discontinuity between inter- and intra- household relations. According to this model, intra-household economic relations were characterised by pooling generosity and reciprocity,

while external relations were based upon exchange transactions. Contemporary approaches to household economics are now challenging this position, contending that parallel systems of moral economy (reciprocity) and political economy (exchange) define intra-household informal transactions (Cheal 1989). Complex 'co-operative–conflict' models of household behaviour (Clark 1989, Lockwood 1989 and Wilson 1991) now provide a sophisticated alternative to static formalist and culturally embedded substantivist models, and in doing so accommodate the interplay of pragmatic action with ideology and values. Furthermore, recent theory asserts that numerous types of independent property rights may exist within the household. These property resources may be managed in distinct ways (Wilk 1991) and provide power of negotiation over resources.

The study of socio-economic organisation at a household level has been subject to criticism by some Marxist anthropologists. Donham (1990) is one such critic. Analysing the economics of a southern Ethiopian tribe, he argued that many social and economic structures and relationships within households are derived from 'ideologies' and values originating externally to it. Here, insists Donham, Marxist political economics are required to understand power relations, and social units larger than households are necessary to consider long-term social and economic change. The point is a valid one, and supported by the evidence of Bradburd (1990) who conducted fieldwork among the Komachi, an Iranian tribe. In his monograph, Bradburd considers households carefully, particularly the respective importance of livestock and labour relations to their social and economic reproduction. Bradburd describes Komachi households as bound into highly structured relationships of production and exploitation, both with other members of their own society and individuals and institutions external to it. Furthermore, he argues that some Iranian pastoralists have been actively linked to world markets for over 200 years. As a result, Bradburd maintains that a systems-based approach is necessary to supplement studies of the operation and organisation of Komachi society at a household level.

Marxists argue that the household cannot be considered as a bounded institution in isolation from broader society and other economic groups, and they emphasise the importance of power relations and historical context. In doing so, Marxists make an important contribution to the developing field of household economic studies. This point is noted by Bartlett (1989) who points out that *"authors have documented changes in household activities and composition with penetration of market systems and the incorporation of local areas into the world system...."*. (Barlett 1989:5) Among other examples, Bartlett cites the shifting relations between men and women in rural Portuguese households following male labour out-migration. Clearly, such evidence stands in contradiction to the notion that intra-household relationships can be dealt with in isolation from a broader social political and economic landscape, and reflects the utility of making reference to other institutional levels.

2.7 Reconsidering economic behaviour among pre-modern rural producers

Traditionally, the study of economic behaviour in pre-modern agricultural communities (sometimes referred to as the discipline of 'peasant studies'), has described peasant society as essentially 'homogeneous'. This approach, linked to substantivist theory in the 1950's and 1960's, was built upon the observation that peasant households display almost consistent poverty and lack of economic resources. As a much wider range of socio-economic variation was observed in non-peasant society, proponents of this approach were led to believe that something about peasant behaviour was actively resisting the heterogeneity generated elsewhere by free market economics. It was assumed that peasant and pre-modern agricultural economics must be influenced by local social organisation and/or cultural configuration.

Homogeneity theorists developed models to characterise peasants as subjugated, resistant to change, economically and politically isolated (Cancian 1989). Some influential theorists such as Eric Wolf considered pre-modern agriculturists to live in closed corporate communities within which culture dictated that surplus is expended upon communal ritual activity, exchanging wealth for prestige and status. Wolf's peasants had to "*content themselves with the rewards of shared poverty*" (Wolf, 1957:1), as ritual redistribution tended to 'level' individuals who were becoming wealthier. Foster (1965), argued that peasants saw wealth and resources existing in finite quantities which peasant labour had no power to increase. Consequently, economic behaviour was essentially conservative, and the distribution of existing limited resources between households highly political. In contrast to Wolf's notion of sharing poverty, Fosters' peasants were non-cooperative and competitive. However, unlike Chayanov (1966), American anthropologists tended to highlight the importance of relations between peasant economies and the outside world.

The Chayanovian model is based upon the assumption that the peasant producers have 'limited' (as opposed to unlimited) wants, all of which are related to the subsistence needs of the household group. It is argued that labour and resource inputs into production responds to the changing consumption requirements of the household. Chayanov suggests that peasant economic strategies can be understood in terms of a cyclical consumer/worker ratio (Table 2.1). Thus, for Chayanov, peasant economics are the economics of the household. His approach thus isolates peasants from the wider societies in which they live and considers only endogenous causal factors. However, Chayonov's influential work shares common ground with other homogeneity theorists in that he describes a distinct culturally structured economic form for peasant economics.

Table 2.1: Simplified representation of Chayanov's family cycle

Years married	People present*	Consumers	Workers	C/W Ratio
1	HW	2	2	1.0
5	HWC	3	2	1.5
10	HWCC	4	2	2.0
20	HWCC	4	3	1.3
25	HWC	3	3	1.0
30	HW	2	2	1.0

*H = Husband, W = Wife, C = Child

Chayanov's original model was more complex in that he quantified individual contributions to household labour according to a range of values for males, females and children of different ages. (Based upon Chayanov, 1966)

However, in recent decades, researchers have begun to challenge some of these assumptions. Essentially, they argue that peasant economic behaviour does not represent a special type. Without totally rejecting the insights of homogeneity theorists, contemporary approaches state that peasant economic behaviour may be more complex still. Typical of the new approach, Cancian (1989) describes how peasant societies, while appearing uniformly poor relative to wealthier people outside their communities, may in fact demonstrate considerable internal social and economic stratification. Indeed, far from being resistant to change, data has demonstrated that pre-modern agricultural producers are generally responsive to opportunities such as the introduction of new technologies and infrastructures. However, responses are often delayed and technologies and institutions adapted to serve the producer's own purposes, (Cancian 1989).

Studies of economic change in peasant and primary commodity producing households demonstrate that it is those with the most economic resources which lead change (Rogers 1983), followed by poorer households (Figure 2.4).

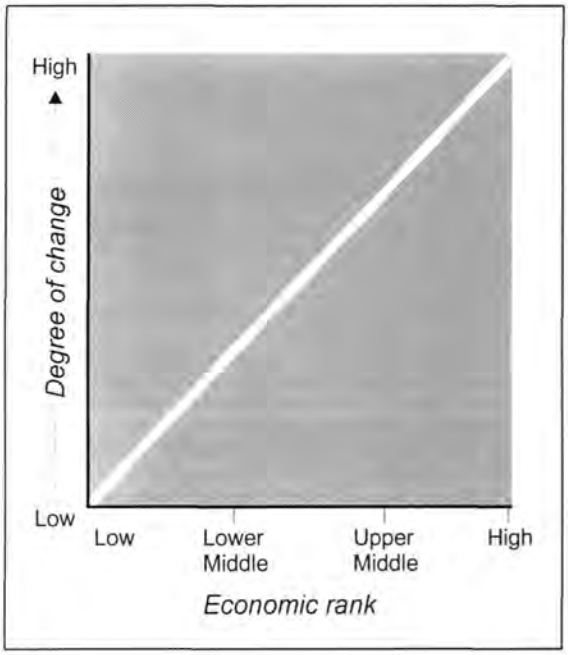


Figure 2.4: Predicted relationship between economic resource availability and new economic behaviour (based on Rogers, 1983)

Anthropologist William Lancaster, in his work on the Rwala Bedouin (1981), employs an analytical system of 'options' and 'assets' to account for this phenomena. Central to his approach is the idea that all assets create options (i.e. widen the scope of choices open to a manager). The accumulation of assets is therefore crucial to successful management and development. Conversely, as assets diminish, decision-makers find their management flexibility curtailed. Lancaster argues that in Bedouin life, the notion of assets can mean virtually any resource, tangible or non-tangible, which may be used to the benefit of the decision-maker. These include economic resources in the common sense as well as valuable business, political or social relationships, which may be exploited in a variety of ways. Bebbington's (1997) study of Andean peasantry seems to further confirm this trend, although he employs the term 'social capital' to characterise some forms of non-material assets. This theoretical position is further defended by the findings of Adams and Mortimore who argue that:

> *"Intensification is a social process, one that requires extensive and focused social organisation at either the household or community level (or both)" (Adams and Mortimore, 1997:158)*

Bebbington's (1997) contention is that accumulated social capital, in the form of informal networks and indigenous associations, can assist in negotiating markets and other external institutions. Together with Lancaster's non-tangible 'assets', it therefore stands as a powerful critique of homogeneity theory, which portrays peasant social configurations and institutions as ultimately stifling economic intensification and diversification.

Abandoning possibly flawed characterisations of a universal static peasant economy, and instead emphasising heterogeneity, dynamism and adaptation, contemporary researchers have sought to redefine relations of production in remote rural areas. They offer an alternative picture, one of economic intensification based upon flexibility in livelihood strategies (Adams and Mortimore, 1997), willing engagements with larger economic systems (Lockwood, 1989) and the diminishing importance of subsistence production (Cancian 1989). The conclusions of these and other studies suggest whole new meanings for the term 'peasantry'. Rather than explaining evidence for peasant 'resistance to change' and 'isolation' in cultural terms, they instead point to structural factors such as a historical lack of access to resources and institutionalised inequalities in exchange relations.

This debate in the field of peasant studies has been mirrored by similar questions raised by the study of pastoralists. For this reason, the changing appreciation of economic behaviour among peasants is directly relevant to the current study. A number of influential early researchers, (notably, Barth 1964, and Sweet 1965) applied cultural models to describe the apparent homogeneity they found in herding societies. More recently, however, in the light of new empirical data, these models have attracted strong criticism (Black-Michaud 1986, Bradburd, 1990, Fratkin *et al* 1994, Mulder and Sellen 1994).

In addition to questioning the existence of 'special' peasant economics, the new approaches switch from a focus on community 'cultures' to the organisation of individual households within dynamic economic environments. Consequently, scholars have been compelled to investigate politics and negotiation at an intra-household level, as described by 'co-operative-conflict' models of household behaviour and contemporary approaches to household economics (Wilson 1991, Wilk 1994).

2.8 Intra-household differentiation and gender

While some research has highlighted the process of exchange between parents and children and between siblings (Clark 1989), particular attention has been drawn to gender differentiation in production and the apparent male control of market oriented production in fledgling commodity producing households. It has been suggested that this is linked to the male ownership of wealth producing resources (Bossen 1975, Nash 1977). In such circumstances, men control the product of family labour, its sale and thus manage household incomes (Pape, Doppler and Nordblom 1994). Consequently, women's labour in household reproduction and domestic activities may be devalued, for, as in capitalist systems elsewhere, the concept of labour generally requires the product of surplus value and marketable commodities.

In some societies, women quite clearly take the lead in devising new economic strategies for the household. Lockwood's (1989) results suggest that although women may take the economic initiative, this does not necessarily challenge male domination of household resources or improve their social status. She prefers to draw a more general conclusion: that in many cases it is not household units but individual members of households who respond to new economic opportunity. Furthermore, she argues, "*...one member's economic decisions may not necessarily reflect the interests of economic priorities of other household members*" Lockwood (1989:200).

Issues of gender have been found to be particularly significant in livestock managing and pastoral households, where gender based divisions of labour commonly exist (Galaty and Johnson 1990) and where, not infrequently, women share in ownership of the means of production (Chatty 1996, Barfield 1993, Hobbs 1989), namely livestock.

Gender sensitive investigations of economic development and modernisation in livestock production systems seem to suggest that the commoditisation of production may generate asymmetries and tensions within households, as control of traditional domestic production activities are shifted from women to men. Dahl (1987) uses the example of milk production to illustrate how a shift to commercial dairying may transform women from producers in their own right to 'labourers' in commodity production. Similarly, Horowitz and Jowkar (1992) describe how a change in strategy from subsistence (milk and meat) production to commercial meat production in pastoral households results in milk being directed away from family consumption or processing for sale (both activities managed by women), and is instead

consumed by lambs or calves, which are then sold by men. Again, this model hypothesises a transfer of household resources between areas of female and male domination.

2.9 Rational choice, social change and modernisation

The proceeding discussion of contemporary theoretical approaches to economic behaviour in agricultural societies began with some remarks on rational behaviour, institutions and our widening understanding and application of these important concepts. The discussion has built upon these foundations, introducing households as flexible resource systems and arenas for both reciprocity and exchange. Thus distinct from bounded and unitary institutions, households are themselves forums within which members may decide and pursue their own best interests.

Many of these ideas are united in the notion of 'individualism', which has been employed in a variety of ways (some conflicting) within the pastoral development literature. The final part of this discussion will consider this idea and its relation to the process of pastoral modernisation at a societal level.

For the Israeli geographer, Avinoam Meir, economic development and change in Bedouin communities is a highly complex process within which a series of cause and effect relationships exist. However at the heart of change lies an ideological shift from tribalism to individualism. Meir's basic contention deserves quotation:

> *"Individuals...gradually extricate themselves from the bonds that commit them to the traditional social organisation (e.g. the tribe). They become more highly motivated by their newer, more personal, complex and varied value system" (Meir 1997: 11)*

Meir (1997) argues that rational choice, leading to autonomy and the prioritising of self-interest (in whatever currencies), is a key stage in precipitating modernisation. He further contends that differentiation, born of individual choice, further disengages decision-makers from their corporate group roles and the operation of regulating and allocating mechanisms (Figure 2.5).

Cole's and Altorki's (1998) study of the transformation of Bedouin livestock production in Egypt likewise identifies the breakdown of tribal land-tenure and the increase of private ownership as a contributing factor in the changing livestock economy. They concluded that:

> *"Although the ideology of the old kin-ordered system continues, most of the livestock related factors of production have been commercialised, along with the implied individualisation of relations among actors engaged in the new system". Cole and Altorki (1998:225)*

Lancaster's (1981) references to 'economic individualism' among the Rwala Bedouins, like Cole's, fall short of implying any structural change in Bedouin society while suggesting innovation, entrepreneurship and a growing specialisation. Indeed, Lancaster's perspective (1981) like Chatty's (1986, 1996) emphasises that the process of modernisation has been, and is being, accommodated within existing social and cultural forms. However, Chatty (1996:127)

states that "*most decision-making and subsequent change among the Harasis tribe is based upon rational choices aimed at the steady improvement of the conditions of life*", still implying a certain degree of self-interest by decision makers.

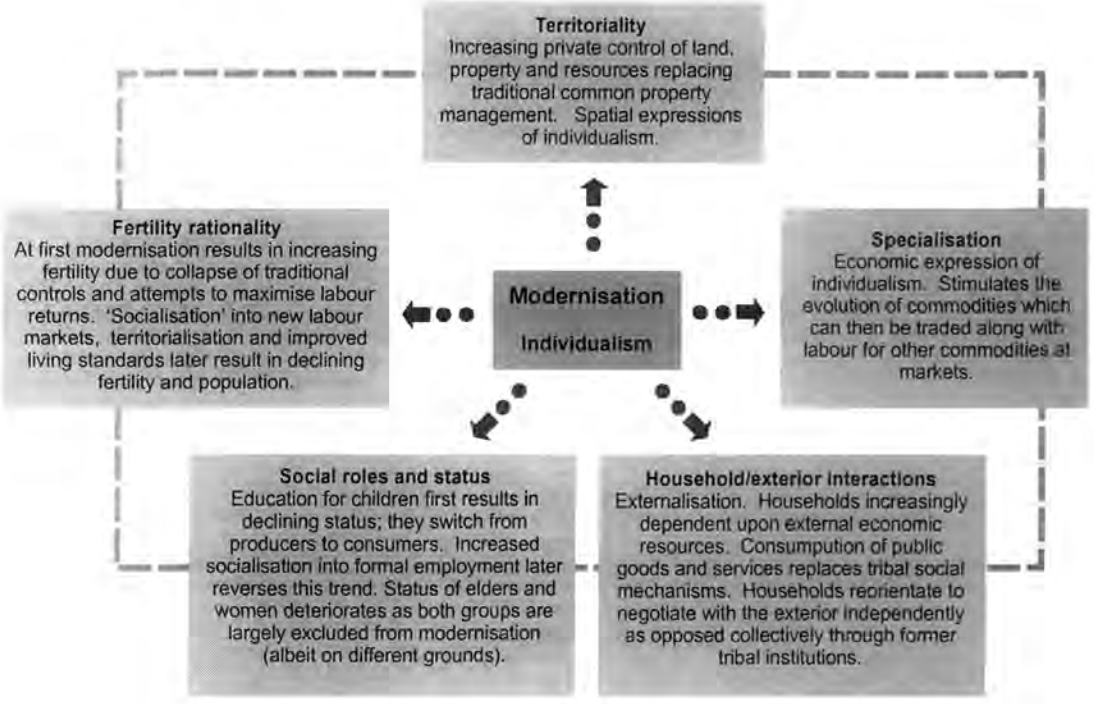


Figure 2.5: Meir's model for social, political and economic modernisation in bedouin pastoral households (adapted from Meir 1977)

A number of problems clearly exist with employing the concept of 'individualisation' to pastoral modernisation. Fundamentally, the notion of individualisation and breaking with old value systems retreads the path of homogeneity theories, implying the existence of homogeneous and heterogeneous extremes and suggesting that development is a transition between the two forms. As such, there exists the danger of oversimplification of complex issues. Lending substance to this critique is the body of empirical evidence which describes the durability of traditional pastoral social and cultural institutions within the process of modernisation.

Evidence of this type has been offered by Thomas Barfield, who suggests that where Bedouin diversify beyond livestock, they demonstrate preferences "*for occupations that fall within their own ideology of culturally appropriate livelihoods*". Consequently, "*cultural values and social organisation have not been transformed to the same extent as has their economic life*" Barfield (1993:87). An unresolved problem emerges from this dichotomy: is it truly possible to isolate the pastoral economy from its social and cultural institutions? Meir states decisively that the economy is "*controlled*" by the spheres of society and status (1997:15), while others,

particularly Chatty (1996:192), argue that economic development can actually increase group and tribal interdependence.

Furthermore, 'individual' or 'rational' decision on the part of autonomous decision-makers must be considered something of a rarely achieved ideal. Most decision-making units (households) must operate in complex, multivariate socio-economic environments and contain a plurality of interests. Economic behaviour cannot be the product of individualism (or one ideology) alone but is instead the sum of diverse forces upon, and negotiation within, the household; what emerges is compromise. Let us consider a single hypothetical household unit, embarking upon an innovative economic venture. Almost by definition, innovation and experimental individualism will induce economic stresses upon the household, perhaps owing to insecurity and scarcity during the early stages of change. Consequently, pursuit of rational self-interest may itself generate the need for social support or buffering mechanisms. Thus, individual intention may not translate directly to autonomy.

Marx (1990) has addressed this apparent dichotomy and, echoing Lancaster (1990), lays emphasis upon the security functions of traditional tribal organisation and economy. He describes strategies of economic modernisation among pastoral nomads as "*a balance between their wish to maximise money income and their wish to provide full security for their families*" (Marx 1990:15), in essence a compromise between two types of household needs.

Chatty's (1996) analysis of innovation and entrepreneurship follows a slightly different course than Meir's notion of general 'individualisation'. Chatty sees no inherent contradiction between economic modernisation and the traditional tribal structure. She instead sees widespread change being led by individuals who function as 'brokers' between the traditional socio-economy of the pastoral tribe and the wider economy. Certainly, these brokers at first behave as pioneers, but where novel economic activities are widely perceived as successful, they are quickly adopted by the majority. In this way, the novel behaviour of brokers may quickly become the 'norm' for the tribal society.

Developing her notion of 'brokerage', Chatty identifies a link between family lifecycles and innovating entrepreneurs. At certain stages in family cycles, a combination of young labour, the stabilising influence of older generations, and accumulated investment capital within households creates optimal conditions for the emergence of brokers, commonly (but not exclusively), from among young adult males. Thus, in agreement with researchers such as Rogers (1983) and Bebbington (1997), Chatty contends that pastoral modernisation is often led by households which fit a distinct socio-economic profile.

2.10 Conclusions: broadening theoretical horizons

In the earlier part of this chapter some of the existing theoretical perspectives pertaining to the function of livestock within pastoral societies were reviewed. On this issue a broad range of opinion exists, much based upon empirical data collected from geographically and culturally diverse pastoral societies. In addition to the pragmatic functions of animals as providers of basic household subsistence products and commodities for exchange, it has been hypothesised that this inherent value can, in many pastoral societies, be supplemented with a range of ritual and symbolic functions. As such, livestock become powerful cultural symbols in pastoral society and consequently may occupy an important position in the expression of pastoral identities. All who argue such positions clearly subscribe to institutionally-based theoretical approaches, explaining rational economic behaviour with reference to relevant cultural and institutional contexts.

Revised approaches to the study of modernising agricultural societies stress concepts such as heterogeneity, agency and complexity in production systems. Accordingly, economics in modernising society cannot be considered as either exclusively politically or socially structured, but as a dynamic and diverse blend of the two forms. Actors are recognised as skilled and knowledgeable individuals, capable of initiating, effecting (and, if necessary, halting) change and adaptation at a wide variety of social, political and economic levels. Furthermore, households and individuals are not perceived as merely the passive subjects of such change, a view that has formerly been pervasive. Household strategies are now understood to be subject to ongoing negotiation and revision by members.

These new insights into economic behaviour can contribute to contemporary understanding of developing pastoral systems in a number of ways. Importantly, they indicate that rather than considering livestock production as an economic activity occurring in isolation from other domestic and economic transactions, pastoral strategies are in fact inseparable from all other aspects of cultural, social and economic life. As a livelihood, animal husbandry can be considered inextricably meshed with other economic activities. Also, recognition of human agency and the complexities of individual production units further emphasise the importance of specific locality and context in understanding the rationale for household development trajectories. Doing so further 'humanises' and 'peoples' economic activities in a way that some theoretical approaches have conspicuously failed to do.

Significantly, identification of heterogeneity in production systems widens the focus of concern from investigation of similarities (with the purpose of establishing 'patterns' of behaviour), to an acceptance of diversity in which differences and ambiguities in economic behaviour are equally weighted. For these reasons, and in acknowledgement of the importance of locality and agency, contemporary theory implies dissatisfaction with the search for, and application of,

general (or universal) models for economic behaviour within a given activity. Essentially, the new approaches, if applied to pastoral livelihoods, do not constitute a rejection of contemporary empirically-based models of livestock utility, which may serve quite adequately in some, perhaps multiple, cases. Instead (given the institutional orientation of most of the existing literature), they build upon these existing foundations by facilitating a more actor-sensitive appreciation of the decision-making process.

It is of particular importance that the new approaches and insights developed in this chapter be adequately reflected in the design and conduct of the study (Chapter 3) and it is of further importance that the study as a whole be clearly contextualised in order to appreciate the wider institutional location(s) of contemporary livestock management decisions among pastoralists in the northern Jordanian Badia (Chapter 4).

Chapter 3: Study methods and fieldwork

3.1 Introduction

My review of contemporary theory in Chapter 2 reveals the importance of an institutional awareness in investigating the role of animals in pastoral systems. Furthermore, given that this study is principally concerned with pastoral livelihoods, it demonstrates that the household is the most important institutional level upon which research should be focused.

Chapter 2 also indicates that household research into pastoralist economic behaviour needs to be sensitive to the diversity of interests, both within and between households. It further highlights that the notion of 'rational' decision-making can be extended beyond the market sphere and indeed, may be the basis for a wide range of both social and economic behaviour.

Clearly, the theme of research is highly complex, encompassing micro-economic, social and cultural facets of human behaviour. As such, the study requires a multi-disciplinary approach and a combination of both quantitative and qualitative techniques of investigation. Perhaps my greatest challenge in developing this type of mixed methodology was finding a formula for integrating these two types of techniques into an overall research strategy, in such a way as to be complementary and mutually re-enforcing.

Ultimately, a methodology was designed in which case studies were investigated qualitatively with specific reference to the convergence of pastoral lifeways and economics. What these studies revealed about the practice of pastoralism at a domestic level was then used in the interpretation of a wider body of economic data describing pastoral production which had been collected over the course of a calendar year.

This chapter provides an overview of the research methodology that was used during the course of this study. After outlining the phasing of the study and describing how research was conducted in the field, the chapter points out some of the principal constraints that undoubtedly effected the conduct of the research. I begin the chapter with a brief background to my personal participation within the study.

3.2 Background information

In autumn 1994 when I first travelled to Jordan to join the Badia Programme, I had already been living and working in the Arab world for about five years. This time had been divided between Egypt, Sudan and Libya. I had earlier studied Arabic at The American University in Cairo and although my literacy was quite poor, I was able to communicate effectively in spoken

Arabic. However, following my arrival in the northern Badia it took a few months to attune to the dialect of the Bedouin and to begin to understand their specific vocabulary.

My interest in Bedouin communities had dated to my first encounter with Bedouin in Sudan in 1987 and had continued when I later returned to work in that country. Between 1990 and 1992 I spent approximately twelve months living and travelling with a community of Bedouin who lived in the southwest of Egypt and derived a livelihood from camel herding and carrying rock salt in caravans across the desert from Sudan to Egypt. Observations from this period contributed to a Master's degree dissertation, which was submitted to the University of Manchester.

Although I found the pastoralism of the Jordanian Badia very different to that of North Africa, clear cultural parallels existed between both areas[5]. My appointment to the Badia programme thus enabled me to pursue my interest in a culture for which I had developed a deep respect.

3.3 Study phasing

The research in the Badia was conducted in four different but complementary phases, with three distinct sets of outputs.

Phase 1

The first component of the research strategy, undertaken between autumn 1994 and spring 1995, was a wide reaching initial survey of livestock managers within the study area. At the outset of fieldwork in 1994, very little information was available about herding activities within the Badia study area. In view of this, it was necessary to establish a baseline of overall pastoral management practices and organisation from a statistically significant sample of the Badia livestock-owning population. This was accomplished using a structured questionnaire methodology. This stage of the research was planned and undertaken in collaboration with a British colleague (the livestock scientist of the JBRDP).

A sample group of 105 livestock-owning heads of household were interviewed. This sample group represents 4.2 % of all households in the study area and 19.3% of households who described their principal source of income as derived from livestock production (Findlay and Maani 1998). Interviews were conducted during a household survey which encompassed nearly all geographical localities within the Badia study area. Each day a different geographical area was selected from available maps, with an overall balance being maintained between

[5] While in the Badia I even encountered members of the same tribe that I had travelled with in Egypt, albeit separated by many generations and unaware of the existence of an African branch of the tribe.

village and remote rangeland areas[6]. Arriving at this area, households at which signs of livestock ownership could be observed were approached and interviews were made at those households where livestock herding was described as the principal economic activity, although many also had additional non-livestock sources of income.

The first questionnaire was kept deliberately brief and comprised thirteen questions related to the social, economic and technical organisation of livestock production (Appendix 2). Before commencing the survey, the questionnaire was piloted (five interviews) among livestock owners in the Safawi area, and refined on the basis of results. In addition to providing an overview of livestock production strategies in the study area, these 105 interviews provided a sampling frame for the selection of the twenty-five households for long-term monitoring during Phase 2 of the research programme.

The output of this preliminary phase of research was a technical report to the JBRDP (Campbell and Roe 1995), which was subsequently published in as part as a collection of JBRDP research papers[7].

Phase 2

The second phase of research was conducted between summer 1995 and summer 1996.This stage of the study comprised a more detailed investigation of contemporary livestock production economics, and employed a longitudinal study of herd structures, inputs and outputs, during the course of a full calendar year.

At this stage, it was intended to reduce the sample group to twenty-five households. However, this sample was later revised to twenty-three owing to the problems described in section 3.6.2. This reduced sample group was selected from the ranks of the 105 households surveyed the previous year according to two key criteria:

- The head of household had to express a willingness to participate in the continuing study and provide livestock related data over the forthcoming twelve-month study period.

- The study was restricted to households normally resident within the Badia study area, or alternatively linked through ties of kinship or property ownership to the study area.

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[6] During our first few months in Jordan, neither my colleague involved in livestock research nor I had our own means of transport and we were beholden to the JBRDP for transport support. Shortages of vehicles, drivers and recurring administrative problems meant that we were often compelled to combine our field visits with those of other researchers and our destinations were often dictated to us. For this reason, a more sophisticated sampling methodology was not possible in the available time.

[7] Dutton, R., Clarke J. and Battikhi, A. (eds.) 1998. *Arid Land Resources and their management: Jordan's desert margin.*

The aim of this stage of the investigation was to collect high accuracy data about herding and economic transactions. Concerns about the possible deterioration of informant recall over long periods of time (Casely and Lury 1987), had to be balanced by the logistical possibilities for sequentially locating 23 households, many of which were mobile around some 20,000 km^2 of desert. A methodology of monthly visits was settled upon as a workable compromise between the desirability for frequent contacts and the need to maintain a schedule of household visits over a twelve-month period. Following each Phase 2 household/herd-monitoring visit, a data sheet was completed. Data collection focused upon changing herd structures (births, deaths and sales), system inputs (water, feed, grazing and labour), system outputs (animal sales, meat and milk), herd and household mobility and overall production costs (Appendix 3). As a supplement to the other research conducted during this second phase, in autumn 1995 heads of households were questioned about their patterns of domestic consumption of livestock products and purchases of other foodstuffs. Subsequent to each interview, a data sheet was used to record this information (Appendix 3). A schedule of the Phase 2 household visits is located in Appendix 1.

The principal output of this phase of the research was a paper contributed to the JBRDP workshop on population and livestock related studies in the Eastern Badia of Jordan, (Roe 1996).

Phase 3

In Phase 2 of the research programme, quantitative data was collected describing livestock production economics within the sample group of households. Phase 3 of the study had two principal objectives. First, to re-evaluate at a household level some of the conclusions about pastoral economics that had emerged from the Phase 2 household/herd monitoring, and second, to continue to gather qualitative data on the broader relationship between households, their herds, and wider society. This stage of the study thus focused on exploring the institutional context of Badia livestock herding.

Since an in-depth qualitative study required longer periods of contact with individual households, this necessitated the selection of a few case study households from the previous sample group of 23. In view of Maxwell's (1986:156) warning that "*sharply diminishing returns*" occur from the selection of multiple case study sites, owing to "*less intensive or less frequent contact*", only four households were selected from the previous group for the third phase of the study. This seemed a reasonable selection, and would allow for approximately one week of every month to be spent with each of the households in turn. This pattern of residence would facilitate direct comparison between households across the four case study sites at roughly the same points in time.

The selection of households for case study was not undertaken using the same criteria as the selection of the 23 households for Phase 3. In the first place, these case studies were not necessarily intended to be representative of the wider population. Where generalisations about

pastoral behaviour were to be made, these could be based upon evidence elicited from the general survey (Phase 1) or the Phase 2 sample group. Instead, since this phase of research was investigating specific aspects of household/livestock interrelations, the selection of households was based upon those households where livestock seemed to constitute the focus of household activity (although all were also engaged in activities outside of herding). It was felt that these households constituted the best forums for gathering information related to pastoralism since nearly all regular conversation and action related to livestock. Thus, following the format of Burgess *et al.* (1994), those households which seemed best placed to provide the specific information required, were selected.

A second extremely important consideration in the selection of case study households was my personal relationship with them. Given that I was to spend protracted periods of time in their company, it was important that my hosts and I were on the very best of terms.

Phase 3 residential work was conducted during the important migration, lambing and milking period between autumn 1996 and spring 1997. The schedule of Phase 3 residential visits is outlined in Appendix 1.

Phase 4

The final phase of the research project was conducted at the end of 1997 and took the form of a single return visit to each of the Phase 2 sample group of households. This phase of the methodology had two distinct functions. First, in summer 1996, synchronous with the end of Phase 2 herd monitoring, a major change in the national economic policy on livestock had occurred. Although some data on initial management responses to this change had been recorded from the four case study households (and anecdotally from various informal visits and conversations with pastoralists), it seemed important to collect new data on pastoral strategies from the twenty-three sample households to facilitate useful 'before and after' comparisons. It was also judged important to test some conclusions drawn from the detailed Phase 3 case studies across a wider, more representative sample of households, to test to what extent they held true. While the greater part of Phase 4 meetings involved qualitative discussions about changing attitudes to livestock, a simple data sheet was completed after each interview for the purpose of compiling aggregate data (Appendix 4). The schedule of the Phase 4 visits is outlined in Appendix 1.

I had spent several of the intermediate months between Phase 3 and Phase 4 of the study undertaking similar research in a very different pastoral community in southern Jordan. New perspectives gained in the south did much to enhance my understanding of pastoralism in the northern Badia and also suggested new methods of enquiry. When I returned to the northern Badia for Phase 4 of the study, I did so armed with some new insights.

The principal output of Phases 3 and 4 of the research was a final report to the JBRDP (Roe 1998).

3.4 Overview of the research strategy

The design of the methodology was such that, for the first three phases, as the focus of the study was successively narrowed from 105, to 23, to 4 households, so the depth and quality of contacts between the households and myself increased. At each successive phase, when narrowing the study group, households were selected exclusively from within the previous group.

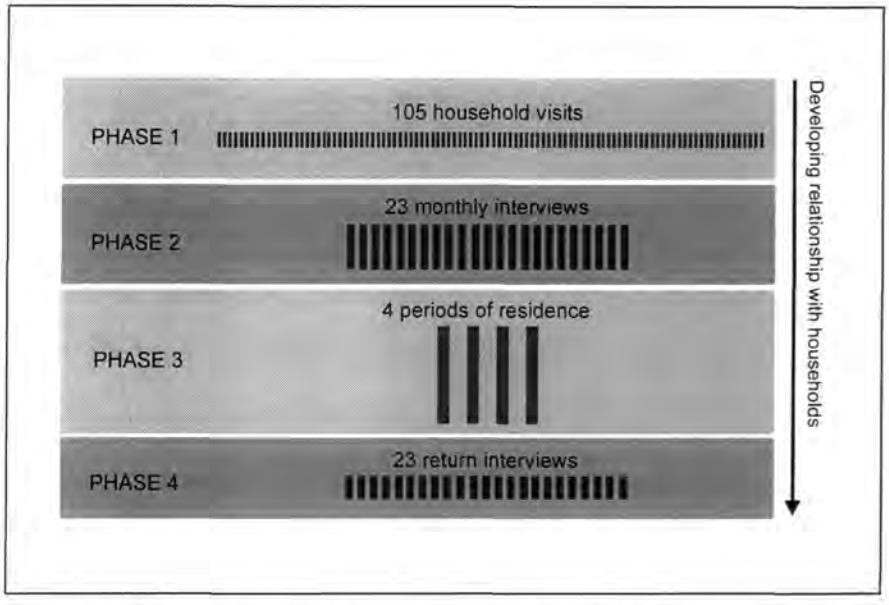

Figure 3.1: Diagrammatic representation of research methodology

Thus, the four case-study households with whom intensive residential study research was conducted can be traced back to the first phase of the study. In this way, the accuracy of some types of reported information collected during Phase 1 and Phase 2 could subsequently be gauged against accurate observations made within the household.

This successive focusing approach to fieldwork was developed as a mechanism for making best possible use of time and other resources. A tool employed throughout the study was the systematic comparison of data gathered from various levels of focus. Findings in the more focused phases of research could then be cautiously extrapolated back to the wider study-group and tested.

3.5 In the field

Foremost in my mind at all stages of fieldwork was sensitivity to the feelings of households. This was for both personal and ethical reasons, but also because it was upon the continuing consent of participating households (over a three-year period) that completion of the research depended. The need for sensitivity towards study-group households thus overrode some methodological considerations and, in part, structured the way in which fieldwork was conducted.

At the outset of each phase of fieldwork, the participating households were made fully aware of the research process, and were introduced to the objectives of that particular phase. On many

occasions I benefited from suggestions from householders on how best to meet these objectives. Except for Phase 1 of the study when a British colleague usually accompanied me on visits, all field visits to pastoral households were made alone, so as to disrupt routine as little as possible and to best fit in with household activities. As I became more familiar to households during Phase 2, these visits became first routine and then social in nature. As a matter of procedure, as little as possible was written down in the presence of interviewees, and discussions were held with the head of household[8] or rarely (by prior consent), with his deputy.

While the 'formal' participatory techniques of Participatory Rural Appraisal (see Chambers 1997) were not utilised during the study, the approach to learning from communities owed much to the underlying values of the participatory method; households helped to shape the research agenda through suggestions and by bringing points to my attention. Many informants took a special interest in 'educating' me on what they considered important aspects of pastoral practice and my education consequently followed the local 'curriculum'. Furthermore, late in the research, some of the initial conclusions and findings of the study were discussed with informants for their reactions, comments and further inputs (Yin 1994:144).

My participation began with domestic chores close to the household, such as pairing orphan lambs with lactating ewes to allow them to drink, but quickly went on to include deliveries of feed and water, assisting in the search for new pastures and lost animals, trips to other households for information, visits to market to help sell animals and assisting with the herding of livestock on two migratory journeys. By the Phase 3 of the study, I was enjoying considerable access to information and even a limited participatory role in decision-making. At that time it was widely known in the Badia that I myself managed a small herd of goats and a camel, which (if only superficially) identified me as a vested stakeholder, rather than a detached observer in discussions about herding, the problems of feed acquisition and economic change. As all could see as I waited my turn at supplementary feed distribution depots, I was also affected by rising feed prices and scarce pastures.

Furthermore, my extensive travels and programme of serial visits to widely spread households (from diverse tribes) made me an important informant to the very households I was simultaneously collecting information from. All households were eager for detailed information on where other households were and what grazing and other conditions were like in remote areas, as well as the normal news, gossip and tribal intrigues. Because the Badia information network ultimately depends upon these types of information exchanges, householders were uniformly enthusiastic to contribute what they knew (about their own or other households) as long as it fell within the 'public' domain of knowledge.

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[8] In Phases 2, 3 and 4 of the research, all heads of household were the senior adult males within family groups. However, within the wider Phase 1 survey, 3 widowed female heads of household were encountered. The constitution of study group households is described in section 6.2.

Consequently, during my programme of visits I was usually myself interviewed in considerable detail about what I had seen and heard on earlier visits. Some heads of household even had a professional interest in the very economic data I was collecting from other pastoralist households (which, for ethical reasons I refused to divulge, even though this type of information is common knowledge and well within the 'public' domain in Badia society). Sometimes I was given specific messages to relay between households and the back of my truck was rarely empty as I ferried commodities, bits of equipment and occasionally animals around the Badia.

During residential fieldwork, a set of notebooks were kept, in which, at the suggestion of Okely (1994), all observations and information gathered was recorded on the left side pages of the open book, while the facing (right side) pages opposite this text were reserved for relevant questions, comments, and interpretations arising from the data. These were made both at the time of writing and also added to subsequently in the light of further information. Over four months of residential fieldwork, four notebooks were filled with comments and observations regarding almost every aspect of pastoral life in the contemporary Badia.

Most information was gathered in the evenings when household members commonly gathered over a fire or hearth to discuss the day's activities and plan the following day. These sessions were often the medium of instruction for younger members of the household who were instructed by analogy, through story telling or reminiscence; as such, they provided a fruitful arena for collecting oral histories and historical information. Additionally, sketch maps were discreetly made of pastoral encampments and settlements, and interrelationships (both socially and in terms of livestock and other economic activities) were explored between households.

3.5.1 Direct quotation of individuals

Some chapters of this study directly quote the statements of Bedouin decision-makers. Direct statements of informants were selectively noted during the latter half of Phase 2, Phase 3 and Phase 4. Statements were roughly scribbled on the back of data record sheets or in journals directly after they were made.

While direct quotation was considered useful in that it allowed individuals to speak with their own voices, the use of quotations was (of course) selective, based upon what I considered important and worthy of note at the time, or what I subsequently selected from my notes for inclusion in this thesis. Given this screening process, the true value of quotation is somewhat diminished, but I believe them still useful in the emphasis of points.

3.6 Problems with implementation of research strategy

Of course, very little field-based research (particularly in the social sciences) is error free, and in recognition of this, possible sources of error should be identified and acknowledged within the research design. Several categories of error have been identified in the implementation of this research strategy. These include practical and logistical problems encountered in the field and some problems of methodological design. These sets of problems are summarised below.

3.6.1 Logistical problems

Perhaps the greatest practical difficulty in undertaking research described above were the logistical problems (particularly during Phase 2) of first locating, and then reaching, diffusely distributed pastoral households over a large expanse often trackless desert. Mobile households were generally located by driving out to possible areas where they had previously indicated they might visit and asking around the encampments of that area for specific directions. Since most pastoral households in the Badia were known to each other, this system worked reasonably well, although finding an individual household might take several days. By contrast, several households were fairly static and accessible by surfaced roads; these sites could be reached in a few hours. However, if on arrival the head of household was unavailable or busy, the visit might need to be rescheduled for another day and the journey again repeated.

I was able to make these journeys with a small but well equipped 4 x 4 truck and (when time permitted) a riding camel. However, the need for frequent vehicle maintenance resulted in unavoidable loss of time.

In view of these considerations, the (Phase 2) schedule of 23 visits completed per month proved very tight, and sometimes during the year, owing to breakdowns, bad weather and time lost owing to local political unrest, scheduled visits were missed. However, these missed visits are distributed through the data (Appendix 1) and it is unlikely that they will affect the overall validity of the findings.

3.6.2 Response problems

Another problem encountered at the start of Phase 2 was that of households choosing to withdraw from the study. Originally, in selecting the Phase 2 sample group, twenty-eight households were selected from the previously group. While only twenty-five households were required for Phase 2, it was anticipated that some might choose to withdraw from the study and so, in order to cover this contingency, three additional households were recruited at the outset. However, the start of Phase 2 of the study had been institutionally linked to a herd-monitoring programme which required the extraction of serum samples, and although herd-owners had previously given consent for this procedure, at the sight of blood in collection tubes, six heads

of household (who's herds had been gathered at one site), simultaneously announced their withdrawal from the study.

Over the following couple of months two additional households agreed to participate in the study, but after the second round of visits, one of these withdrew from the sample group. At this stage, the number of households in the sample group stood at twenty-three and some households had already provided three sets of monthly data. I decided, given the advanced stage of the monitoring, to continue with this reduced sample group.

As the year continued, I (and my research) became increasingly familiar to the respondent households. It is notable that after the first three visits no further withdrawals occurred from the sample group, even when two elderly heads of household died during the year.

3.6.3 Cultural problems

For reasons of cultural sensitivity, a majority of the information gathered during the course of research was collected from male members of the household (almost invariably from the head). In only two of the Phase 3 case study households was I on sufficiently familiar terms with the families to raise issues with senior married women directly. As the private family areas of households remained beyond my ability to observe, much of the real work of the household may have escaped my notice. For these reasons, it must be accepted that the following investigation has been conducted from a largely male perspective and information may be subject to male biases. Where necessary, gender issues are discussed based upon limited female reporting as well as direct observation and inference.

3.6.4 Methodological problems

The principal methodological problems relate to the selection of households and sample group composition at the various stages of the study. For the research to be possible at all, perhaps the principal criterion for the selection of households has been a willingness to participate in the research programme. It is recognised that the selection of the Phase 2 group from the Phase 1 respondents perhaps favours more progressive households who perceived possible benefit from association with a research programme , or who maybe better understood the long-term benefits of the research.

The four case-study households in Phase 3 were further selected on the grounds that they appeared to offer the best opportunity for studying the social and economic relationship between contemporary herding households and their herds. These households were all highly dependent on animal husbandry and consequently, the herds they managed were somewhat larger than average. This needs to be recognised, although this is not to say that case study households were otherwise unrepresentative of the range of herding/livelihood strategies found in the Badia.

3.7 Institutional context of the study

As stated in section 1.4, this study was undertaken as an element of the livestock research programme of the JBRDP, which held several implications for the conduct of the study. In one respect, the research undoubtedly benefited from the exchange of information between, and the disparate perspectives of, the various livestock research activities at the Programme (described in section 1.4.3).

However, principally in the early phases of research, the study was heavily influenced by the institutional philosophy of the JBRDP, both with regard to which data to collect and also the methods of collection. It was only in phases 3 and 4 that the study was disengaged from other JBRDP research initiatives and successfully broadened. In doing so, I was able to help in the establishment of a new agenda for the JBRDP livestock research.

In more practical terms, the study was bound into other aspects of JBRDP livestock research, including lactation studies, vaccine trials and the blood serum investigation described in section 3.6.2. The study was sometimes adversely affected by problems which arose in these other areas of research (the withdrawal of the six households described in 3.6.2 being but one example), or when expectations raised by researchers related projects were not achieved. In the third and fourth phases of the study this was no longer a problem as the target populations for research had at that point diverged.

3.8 Conclusion

This chapter has described how the field research for this study was planned and organised and has identified some ways in which the implementation of research was constrained.

Chapter 4: Development and change in the Jordanian Badia

4.1 Introduction

As evident from its etymology, *bdw* (Enc. Islam. 1960), the Arabic term 'Badia' is synonymous with the occupation of *al bedu*, the Bedouins. Furthermore, the idea of the Badia in common Arabic usage describes less a geographic zone of marginal resources but rather a way of life, encompassing a range of social, cultural, political and economic values. Helms (1990) perceptively describes the Badia as "*a form of consciousness or an outlook peculiar to... tribal Arabia*," which "*roots lie in nomadic pastoralism*" (1990:29).

The preliminary part of this chapter thus introduces the Badia as both a place to live and a way of life, adopting a holistic approach in describing the physical character of the Badia and the special social and economic organisation of the human society using this environment. In doing so, the chapter identifies the importance of the study area as a venue for interaction between the desert and the neighbouring fertile lands. Drawing upon new research, the discussion highlights the opportunistic character of animal based livelihoods in the transitional zone. It highlights historical flexibility in the strategies of both agricultural and livestock producers, suggesting the possibility for overlap and even transition between modes. In this way, the chapter describes the prevalent patterns of Badia use prior to the establishment of the Hashemite Kingdom of Jordan in 1948 and relates this to the social configuration of the predominant tribes within the area.

The latter part of the chapter gives special attention to various political, environmental, demographic and economic changes that have affected the livestock herding population of the Badia in recent decades. Using this general framework, contemporary Bedouin livestock production is placed within its macro-economic environment and set within the wider context of the modern agricultural sector in Jordan.

4.2 The physical environment: geography, climate, and vegetation

The pastoralists of northeastern Jordan utilise a wide area which extends fully across the northern part of the Kingdom, from the fertile heights above the Jordan Valley in the west to the desert *wadi* systems and gravel plains straddling the border with Iraq in the east. However, this study is principally (but not exclusively) focused upon the region of the northeastern Badia covered by the JBRDP (Figure 1.2), an area delineated in the west by the Azraq basin and in the east by the eastern extent of the basalt lava flows and the Hammad basin.

As it falls within the North Arabian Volcanic Province, the study area has a striking geology. It encompasses a zone of basalts and tuffs, which have been categorised as the *Harrat as Shaa*m supergroup (Ibrahim 1992). This comprises five major flows dating from approximately 8.9 to 0.1 million years. Most of the ground surface within the basalt zone is boulder strewn, with the largest and most angular boulders being the youngest (Allison *et.al.* 1998). Tracts of gently undulating hills (local elevations of about 20m) dominate basalt zone surfaces. This rolling plain of basalt is known locally as *al harra* and covers an area of 11,000km^2 in Jordan alone.

The southern extent of *al harra* is bounded by a series of basalt-capped limestone hills in the Qitafi and ash-Sham'a areas. To the far southwest, at the northern end of the *wadi* Sirhan, Cretaceous and Tertiary limestones are overlain with plains of flint, known as *al suwan*. Further east, along the Saudi Arabian border, wind blown drifts of sand encroach into the study area at *Jebel* al Dherwa and again at the hills of Shmeisaniat. Beyond the eastern edge of the basalt, limestone is covered by a deflated crust of chert gravels and known locally as *al hammad*.

Topographically, elevations within the study area demonstrate a variation of about 750m, with the highest elevation of 1150m a.s.l. occurring on the foothills and southern slopes of the Jebel al Arab in the northwest, close to the Syrian border. Conversely, the lowest ground at about 400m a.s.l. lies in the south of the area. In general, gradients are shallow and run from northwest to southeast.

The basalt *harra* is dissected by a series of drainage *wadis* flowing out of the central Ashaqif area westwards towards Azraq, or east into the southeasterly draining *wadiyan* of the *hammad*. The major exception to this drainage pattern is the *wadi* Rajil, which flows off the *Jebel* al Arab to the north, skirts the western extent of the basalt flows and enters the southern collection basin of the Azraq oasis. Elsewhere, floodwater collects in shallow seasonal lakes, known locally as *qa'a*, from which water evaporates to leave the deposits characteristic of playa (Allison et al 1998).

Climatic conditions in the Badia area are subject to great variation seasonally, annually and spatially. Absolute temperatures can fluctuate from between approximately 45° C to -10° C (Nelson 1973), although temperatures are generally milder. The mean daily temperatures for the three years in which this study was undertaken were 26° C in August and 6° C in December (Kirk 1998).

Wind direction is a very important element affecting the bioclimate of the Badia area. To the northwest, the Badia is bordered by cool highlands, which are subject to Mediterranean influences, while to the east and south the Badia plains run into arid desert plains. Kirk's (1998) investigations have identified two seasonal patterns of prevailing winds. The summer months between June and August are characterised by northwest winds by daytime, which shift around to the northeast by night. During the winter months winds blow from the southeast, owing to

depressions that commonly form in the eastern Mediterranean coastline. Changes in daytime wind direction, common throughout the year, are related to katabatic airflows descending from the Jebel al Arab due to differential in air pressure. Rainfall events in the Badia are most commonly associated with northwest winds blowing down from the Mediterranean.

Precipitation across the area of study is generally low with most areas receiving less than 100mm annually. Data collection over a ten-year period suggests a mean annual rainfall of 69.3mm for Safawi, 77.3mm for Ruwaished, and 56.9mm for South Azraq (Meteorological Department, 1988). Rainfall generally occurs during erratic storms and cloudbursts during the winter months, and the highest precipitation levels are recorded in the elevated northwestern part of the study area (Figure 4.1) The southern foothills of the Jebel al Arab, receiving somewhere between 150-200mm rainfall mark the easternmost extent of viable dry cereal cultivation and the only locality within the study area where dry agriculture is possible (other than on an opportunistic basis).

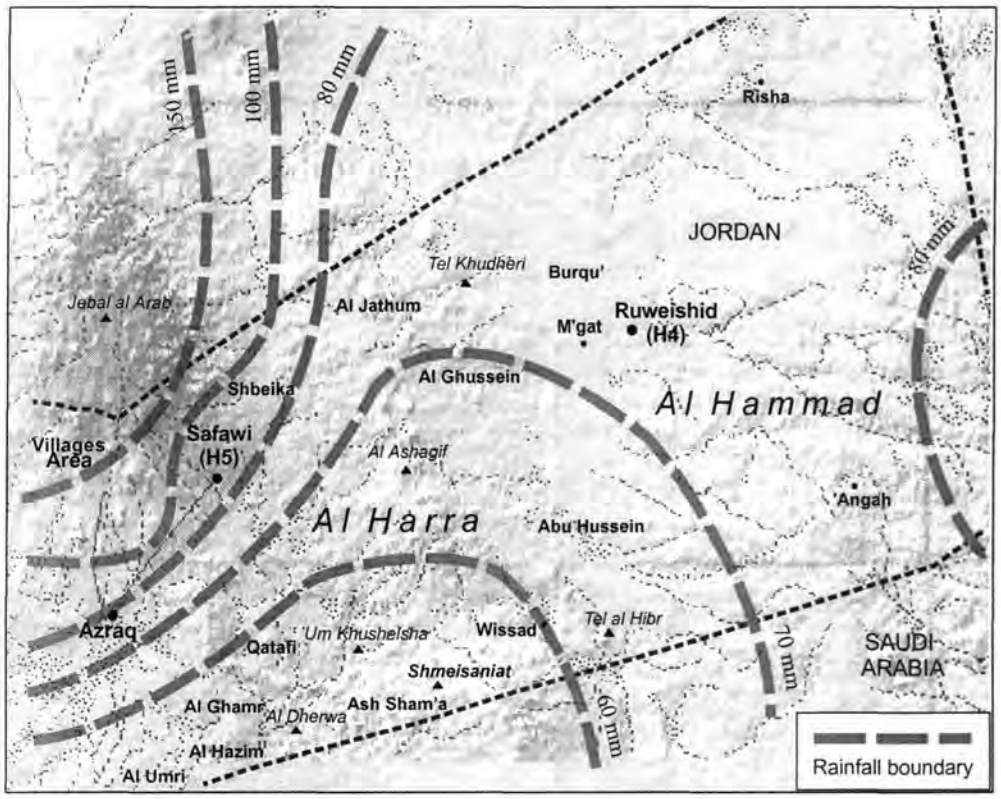


Figure 4.1: Approximate distribution of rainfall over the Eastern Badia (Source: Hammad Basin Project, 1983)

While data suggests that mean precipitation levels diminish towards the south and east (Kirk 1998), in any individual year, southern and eastern areas may be recipients of the heaviest rains (Lancaster and Lancaster 1991).

Details of rainfall quantity and distribution at three locations during the period of study (Meteorological Department, 1997) reflect the wide variations that may occur annually (Figure 4.2)

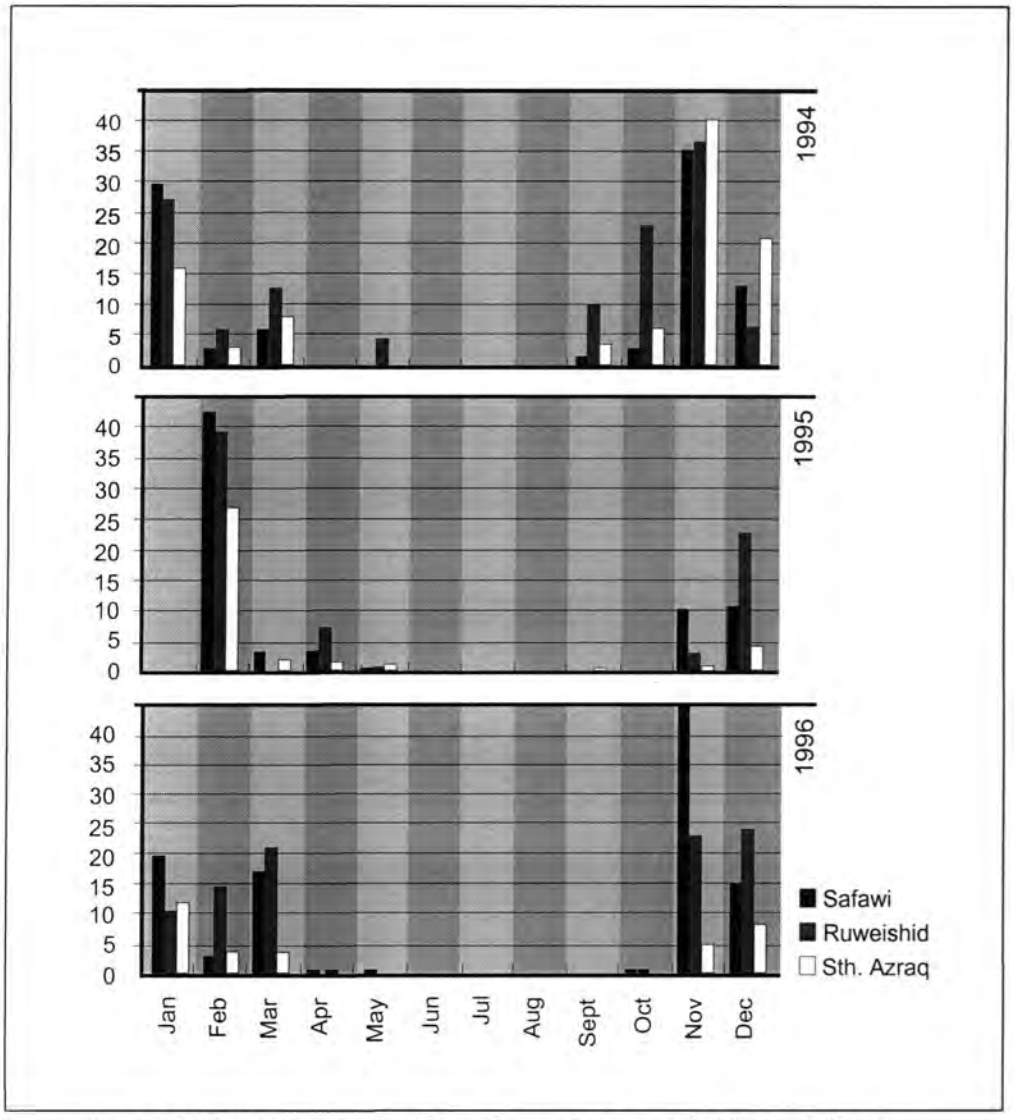


Figure 4.2: Precipitation levels within study area during period of fieldwork (Source: Meteorological Department, Jordan)

Permanent water supplies do naturally occur in the study area, notably springs in the Azraq basin and others in the area of al Ghussein in the eastern *harra*. These sources are supplemented by semi-permanent *ghudran* pools where water naturally collects, such as the lake at Burqu' and *ghadir* Wissad. Old wells are also found in several locations such as Mahdath, al Khuderi and al Ghussain in the *harra* and al 'Umri in the *suwan*.

The bioclimate of the elevated southern slopes of the Jebel al Arab in the north west has been characterised as arid Mediterranean, while that of the areas lying east of Azraq in the Syrian desert (of which the Jordanian Badia is a part), is described as Saharan Mediterranean (Long 1957). Consequently, two floral associations predominate in the study area: the Irano-Turanian and the Saharan-Sindian (Zohary 1966). The former is typical of the higher and cooler

northwestern area and includes *Artemesia sp., Haloxyletum articulate, Achillaea sp., Prosopis farcta* and annuals such as *Poa sinaica* and *Carex stenopphylla.* In Saharan-Sindian communities, *Haloxylon persicum, Haloxylon salicorinium, Salsola sp., Rhantherietum sp., Artemesia sp., Lycium.sp.* and *Archillaea sp.* are annually supplemented with several species of legumes and grasses.

It is annuals rather than perennials that constitute the most significant grazing resource in the Badia. The principal season of growth is the spring following winter rains. However, grazing availability fluctuates across the area owing to rainfall distribution and timings, soil types and other factors which may result in the appearance of ephemeral 'islands' of vegetation in the midst of less productive areas. As temperatures rise in early summer, ungrazed annuals burn off. Perennial vegetation is largely confined to *wadi* beds and around *ghudran.*

Today, the condition of the Badia rangelands is generally poor. The value of forage production has been estimated at about 4 FU/D for most parts of the study area, although in some of the more inaccessible parts of the *harra*, range productivity rises to 10 FU/D (Juneidi and *Abu* Zanat, 1993). This latter figure may be closer to the productive potential of Badia rangelands, as it existed prior to current high levels of grazing.

The contemporary fauna of the Badia is greatly diminished both in variety of species and numbers of animals in comparison with even the recent past (Betts, 1998). However, over 100 species of animals and birds have been identified in recent studies (Dutton, 1998), including gazelle and carnivores such as the Asiatic wolf, red fox and striped hyena.

4.2.1 Pastoralism, agriculture and exchange; dynamic livelihood strategies

Traditionally, herders of goats and sheep in the Badia follow a common pattern of employing a summer base where the group has access to water, grain or date supplies and market exchange. During the winter and spring months, the pastoralists relocate to distant ephemeral pastures on the ranges (locally known as *al-rabi'a*), where water is only seasonally available.

Badia users themselves recognise the two constituent elements within their annual cycle and describe these as *al tashr*eeq and *al taghreeb*, which translate literally as 'the easting' and 'the westing' respectively. Associated with these terms is a third, *at-tarheel*, meaning the act of journeying or migration. If the traditional Badia annual cycle can be said to have a distinct starting point, then this is probably at the end of the *taghreeb*, at the beginning of autumn and the onset of colder weather (Figure 4.3).

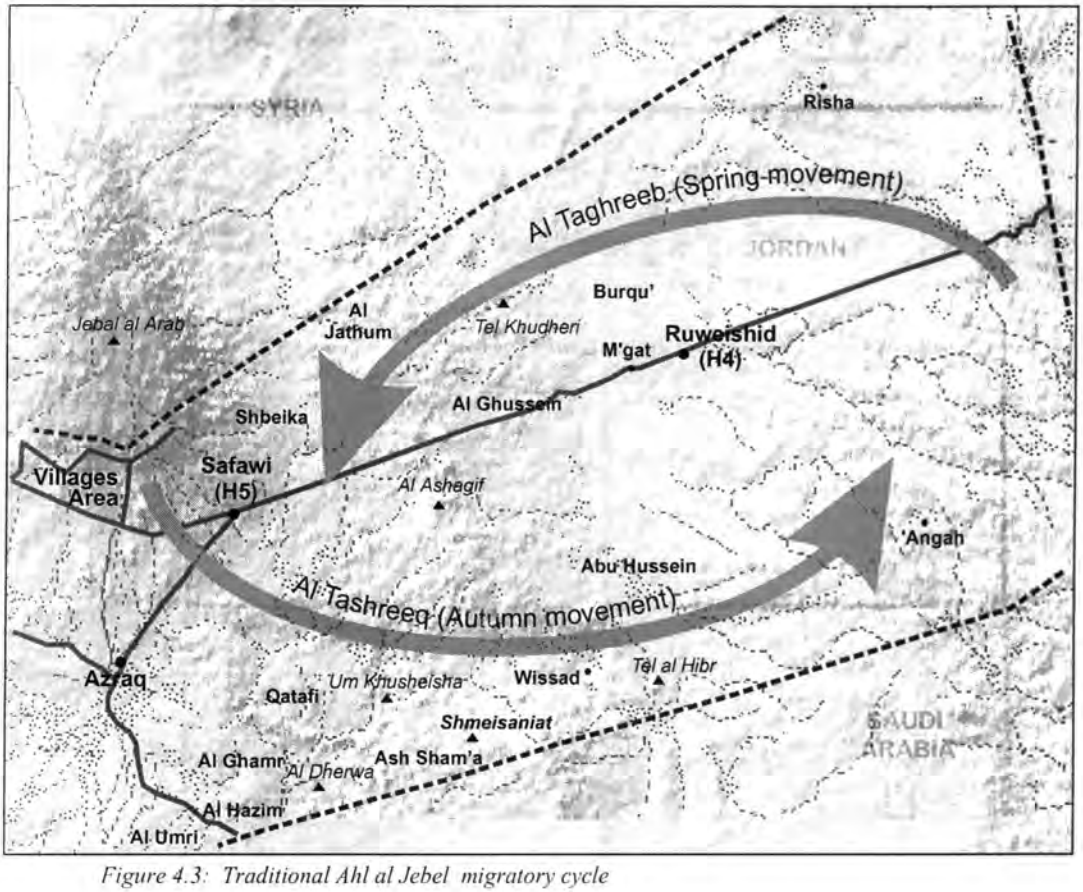


Figure 4.3: Traditional Ahl al Jebel migratory cycle

4.2.2 *Al tashreeq*

Traditional summer residence sites in the Badia include the Azraq oasis and its outlying springs, and of particular importance to the Ahl al Jebel tribes[9], the southern foothills of the Jebel al Arab. In late October and early November, just prior to the first winter rains, the lambing and kidding season begins, marking the start of the busiest time of year for herding households.

Herds had to be moved quickly off the cold highlands to avoid mortality among the new kids and lambs and to provide the lactating ewes with fresh pasturage to improve milk quality and enhance the growth of their offspring. Under traditional management, this journey was undertaken with the camels carrying household chattels (or in the poorest households, donkeys), driven by women under the supervision of the head of household. Younger member of the household drove the small stock behind the caravan. Movement out to *al rabi'a* on the *hammad* could take several weeks, the household being slowed by the feeding and drinking requirements of the smallstock, the difficulty of traversing terrain in the *harra*, and the necessity to take

[9] The Ahl al Jebel tribes constitute the principal community of the study area. The social organisation of the tribes is discussed in section 4.3.1

adequate care of newly born lambs and kids *en route*. Those too young to walk were commonly loaded upon the backs of pack animals[10].

Historically, Badia households migrated in kinship-based groups, principally for reasons of security (Harris 1958). This was practical during the periods of unrest and inter-tribal raiding which occurred throughout many periods of history but most recently during the century prior to the founding of the Hashemite State in 1921 (Jabbur 1995, Mussel 1928, Hiatt 1984, Lewis 1987).

Although subject to infinite variation, the general pattern of the *tashreeq* was one of rapid eastern movement onto the Hammad plains to utilise *al rabi'a*. After a period of weeks or months, as these pastures were subsequently burnt off or depleted by grazing pressure, the Ahl al Jebel would commence a slow westerly retreat, back into the Harra, where, owing to the shading of boulder cover and general inaccessibility, annuals are more durable (Roe 1999) and perennial browse makes specialist goat husbandry possible year round (Lancaster and Lancaster 1991). It was characteristic of herders to delay return to their summer residence sites for as long as possible, thus reserving the over-exploited grazing around water sources until their use was absolutely necessary in late summer.

By January or early February, households would be established far into the rangelands. As the number of lamb and kid births began to decline, household labour switched from nursing young lambs and kids to milk-production related activities. Under traditional management, all milk surplus to immediate consumption requirements had to be quickly converted into the form of durable food products for storage and subsequent use. Milking and milk-products production would continue while the household moved in short stages back through the *harra* towards sites of summer residence.

4.2.3 *Al taghreeb*

While westward movement might have begun as early as late February (depending on forage conditions), arrival in summer residence areas was often delayed as long as May (again depending on conditions of range and water availability).

Early summer arrival back at the western fringe of the Badia coincided with two important events in the pastoral calendar. First, the season's lambs and kids had been weaned and to some extent fortified on the last of *al rabi'a*. Second, early summer was the season of cereal harvesting in the agricultural settlements along the desert's edge. Pastoralists utilised this period of co-residence with sedentary agrarian communities to exchange pastoral products, mainly lambs and fibres for the commodities they required; principally barley, wheat, dates and other

[10] Much of the recent historical description given in this chapter is based upon the youthful recollections of herd manager *H*, who was 61 years old in 1995. Collaborative evidence was provided from manager *S*, who although younger than *H*, had spent his whole life herding (H had served some years in Glubb's Arab Legion).

dietary staples but also 'luxury' and manufactured items. Other transactions included the hire of labour for harvesting, shepherding and hire of camels for transporting local agricultural products (Lewis 1987, *Abu* Jaber 1987).

The coincidence of arriving herds from the Badia and summer harvests in village areas commonly resulted in some form of stubble or residue grazing arrangements between herder and farmer (Nesheiwat 1991, IFAD 1995). This relationship was to the benefit of both parties. It provided herders with a essential feed source close to water supplies in the difficult summer months after the *rabi'a* had burnt off. The return benefit to the farmers took the form of manuring of fields by livestock, but perhaps more importantly, a secure relationship of exchange between their agricultural surplus and the pastoralists' meat and milk products. Indeed, if the Ahl al Jebel herds were denied authorised access to agricultural residues, then they might have gone ahead and used them anyway, without the owners consent.

Several reports suggest that some Badia herders traditionally took herds as far west as the agricultural lands of Balqa and Ajlun in northwest Jordan (Palmer 1998, Campbell and Roe 1998, Lancaster and Lancaster 1995).

In contrast to the frantic activity of *al tashreeq,* the period of *al taghreeb* was markedly less labour intensive. Herds, grazing either on fields or on natural forage, were never far from the residential site and water. Consequently, they did not require as much shepherding. After shearing of the herds, women would engage in the production of animal fibre products such as tent fabrics, while men negotiated with agriculturists for use of land and oversaw the sales of lambs, kids, and animal products.

Under natural conditions, ewes and nannies came into oestrus between June and September and were tupped by rams and bucks thereafter (Blench 1995, Redding 1981), thus initiating the annual cycle of pastoral activity.

4.2.4 Agriculture

Historically, the study area within the north east Badia lies in a 'transitional zone' between areas in which cereal agriculture and mobile pastoralism are the dominant economic forms of production (Lewis 1987, Bocco and Tell 1995). While access to post harvest residues has long been a key element in the success of pastoral production, there exists a long standing tradition of opportunistic cereal agriculture among the Ahl al Jebel themselves, a practice noted by early European travellers (Burckhardt 1822).

Sowing is attempted only in carefully selected sites. Owing to the prerequisite soil conditions, most cultivation is confined to the northwestern highlands, close to the borderline between areas of 'desert' and 'sown'. However, at some points within the Harra and Hammad, laterally spread *wadis*, known as *marab's,* also offer excellent possibilities for cereal cultivation after suitable rainfall. At a number of such areas within the study area, notably *marab* Shbeika and al

Majella, both lying along the *wadi* Rajil, the Ahl al Jebel have cultivated for as long as anybody can remember.

Usually, land was prepared for sowing only after the first rain had fallen and only then if the rains seemed viable for agriculture. This often entailed one or two members of a household remaining behind at the site of cultivation for a few days, after the main part of the household together with the livestock, had departed on migration. Barley was the most common crop, although, in well-watered localities or in good years, an attempt might be made to grow wheat.

Cultivated land would then receive no further attention until the return of the household to the site of cultivation in May or June. Crops of this kind would not normally be harvested; instead, the (dry) immature shoots would be grazed when the herd returned to the area in summer.

According to elderly informants, in even an average year, about half of pastoral households would attempt to sow something, somewhere. Attempts at barley cultivation were generally restricted to areas of between 10-20 dunnams (1-2 hectares), only exceeding the latter in favourable agricultural areas such as Shbeika, and by households with a special interest in agriculture. Large-scale agriculture would have required additional labour and management inputs during the year, and thus might have precluded migration.

4.2.5 Exchange

As Marx (1992) points out, apart from their tents, almost the entire material culture of nomads originates in sedentary communities. Lancaster and Lancaster (1999) have insisted that historically, exchange in the Badia was not restricted to transactions between herders and farmers. Instead, they argue that Badia-based pastoral producers participated within a regional market economy with its main focus at Damascus.

This position is somewhat strengthened by documentary evidence compiled by Jabbur (1995): During the mid-nineteenth century, the British Consul in Damascus filed an official dispatch commenting on the continuing tribal unrest in the desert surrounding Damascus and the Hauran. He expressed concern for the security of British trade, commenting that "*Britain imports much wool from Bedouin sheep*" (F.O. 195/595, cited in Jabbur 1995:583).

Until the mid-twentieth century, the principal exchange products from the Badia were kids and lambs, animal fibres and, to a much lesser extent, durable dairy products. Production of the latter was restricted by the small sizes of herds and limited labour availability. Furthermore, households would only sell that which was surplus to their own subsistence requirements.

Animal traction and household labour was commonly exchanged (sometimes for cash but often for access to crop residues). Indeed, in the 1940's, Zakariya (1948) characterised the Ahl al Jebel as a semi-nomadic tribe who, in addition to herding their own sheep, hired out their labour as shepherds around southern Syria and Jordan.

4.2.6 Dynamic strategies within the transitional zone

As hitherto described, traditional livelihoods within the Badia study area comprised a range of complementary activities; predominant among these were small ruminant herding and some speculative farming. Given the scarcity and variable distribution of resources around the Badia, mobility generally constituted an important strategy since no single Badia landscape could, in a normal year, provide all the necessities for life.

However, contemporary research stresses that past use of the Badia was not necessarily restricted to subsistence production and that pastoralists may have long participated within a wider economy based upon the exchange of available surpluses with agrarian and manufacturing communities. Consequently, the Badia has been widely characterised as an area of interface (or forum for interaction) between pastoral and sedentary populations (see for example, Lewis 1987, Helms 1990, Levy 1992, Finkelstein 1995). Recent historical and archaeological theory, asserting the interdependence of communities along the desert edge, indicates the unbounded nature of political, economic and environmental change between and within these two populations.

Looking at the archaeological record of the 'transitional zone', Finkelstein (1995:37-49) hypothesises the action of competing forces of 'sedentarisation' and 'nomadisation' upon food producing societies on the periphery of cultivable lands. Drawing upon the studies of LaBianca (1990), and Levy (1992), Finkelstein demonstrates how under certain circumstances, changing conditions along the desert's edge have encouraged pastoralists to settle and engage in dry farming and other sedentary activities.

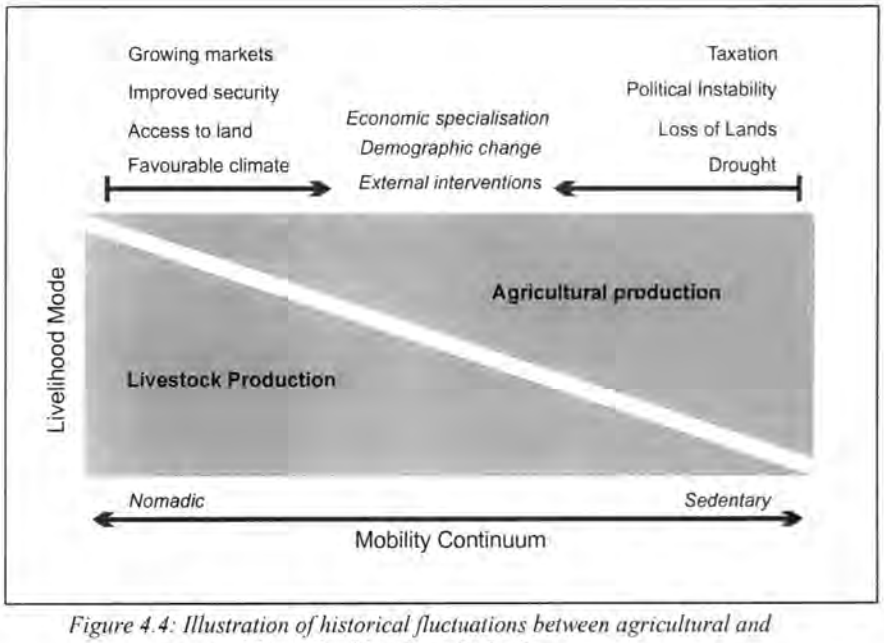


Figure 4.4: Illustration of historical fluctuations between agricultural and animal-based livelihoods in the Badia

At other times, economic, political or environmental conditions have favoured mobile pastoral production which results in individual households or larger groups returning to a predominantly

livestock based livelihood. Indeed, it is postulated that populations within the transitional zone must necessarily demonstrate flexibility in adopting appropriate and advantageous combinations of livelihood strategies and production activities. Consequently, households and larger groups may, over time, fluctuate between a broad spectrum of positions within a hypothetical sedentary-nomadic livelihoods 'continuum' (Finkelstein 1995, Johns 1992), (Figure 4.4).

On the basis of this new approach, it has been argued that major changes in the settlement history of the Levantine periphery can be analysed in terms of subtle shifts between diverse socio-economic modes (Dever 1992). Lewis (1987) offers a useful illustration of this phenomenon. He argues that the 'desert line' of transition between mobile pastoral production and sedentary agriculture in north eastern Jordan lay very much further west in the early nineteenth century than it has done subsequently (Figure 4.5).

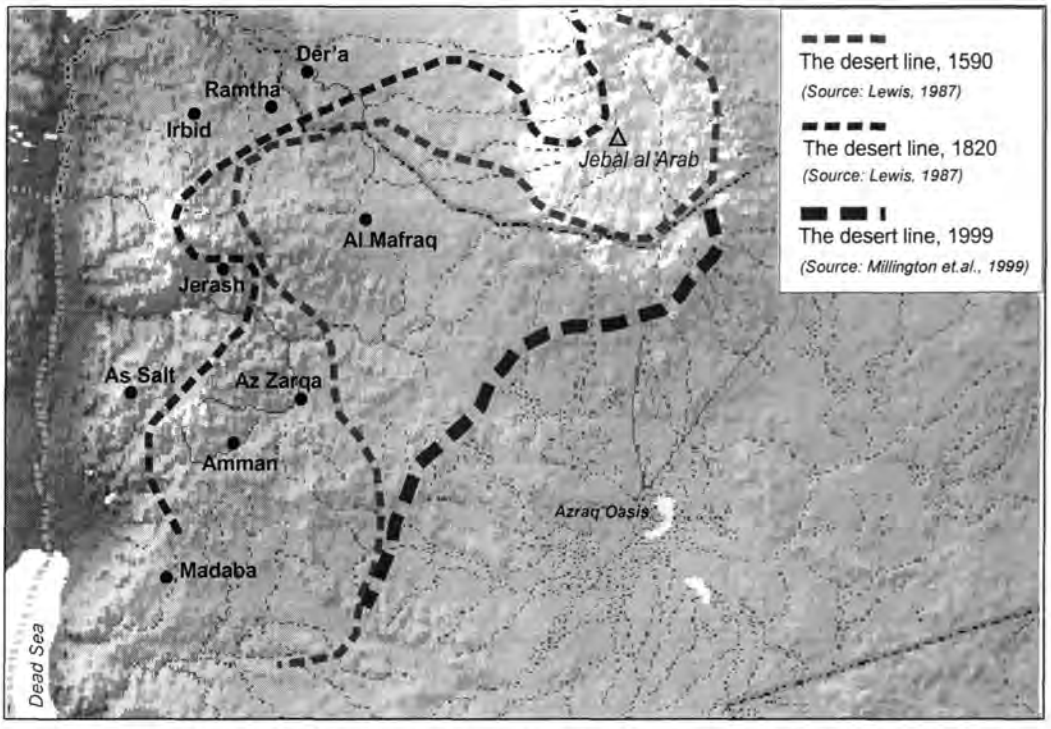


Figure 4.5: Historical changes in the line of transition between areas of predominantly sedentary agricultural and pastoral livelihoods in the northern Jordanian Badia.

Lewis' historical documentary evidence implies that the principal reasons for the abandonment of agriculture and settled livelihoods during this period were political and economic; namely the repeated incursions of Bedouin tribes, the weakness and bad administration of Ottoman rule and the rapacious demands of tax gatherers (1987:12-14).

Reports from among the Ahl al Jebel tribes produces considerable supporting evidence for similar flexibility in livelihood strategies. In the recent past, excellent early rains and the prospect of a reasonable harvest from cultivation may have encouraged some households to forego annual migration entirely in order to cultivate larger areas. A sequence of such years

may have resulted in reduced herd sizes or transfer of animals to the care of migrant kinsmen. Conversely, it is evident that when the viability of agriculture is reduced, households have moved back towards a dominant pastoral system of production. A number of Ahl al Jebel farms along the *wadi* Rajil, close to the prehistoric site of Jawa were abandoned in the 1960's and 1970's following the damming of the *wadi* further north in Syria. As pointed out by Lancaster and Lancaster;

> *"Settlement [in the Badia] is nothing new; the archaeological remains which are scattered throughout the more favourable areas show that it is a process which has happened before. The oscillation between settled agriculture and nomadic pastoralism seems perfectly normal and appears to be age-old, whether the* Ahl al Jebel *were utilising the area or whether it was in the hands of other unknown tribes" (in Betts, 1998:226).*

4.3 The Social Environment

Historically, the size and constitution of the study area population has undergone fluctuations, related to changing settlement and intensity of land-use. One recorded period of population growth in the northeastern Badia occurred during the Ayyubid dynasty (1171-1260 AD). This occurred due to the extension of agricultural villages and trading routes southeastwards from the slopes of the Jebel al Arab (Svend Helms pers. comm.), a pattern seemingly repeated during the sixteenth-century (Hutteroth and Abdulfattah 1977).

4.3.1 The Social organisation of the Ahl al Jebal

The current permanent population of the Badia study area are almost exclusively[11] affiliates of the Ahl al Jebel, a generic term meaning 'people of the mountain' and both oral history and available documentary evidence support the contention that the tribe have resided on the southwestern slopes of the Jebel al Arab and within the area of *al Harra* for a long time.

Burckhardt, (1822) describes the Ahl al Jebel during his passage through the southern Syrian Hauran. Fifty years later, when Charles Wood, British Consul to Damascus, prepared an inventory of the Bedouin tribes of the Hauran in 1869, he numbered the Ahl al Jebel tribes at 550 tents (F.O.195/927, cited in Jabbur 1995:614). A further fifty years later, French sources indicate that the Ahl al Jebel tribes numbered 750 tents (Direction Du Service Des Reseignements Du Levant, 1930), while sources cited by Lewis (1987:206), suggest that by the late 1940's the population of the Ahl al Jebel had exceeded 1500 tents. Unfortunately this historical data cannot be considered accurate, not only because of imperfect methods of census

[11] In addition to the Ahl al Jebel a very small Druze population has resides in the village of Umm al Quttayn and at some of the outlying springs around the Azraq Oasis. The Druze settled in this area during the nineteenth century (Lewis 1987). However, the study area is also (seasonally) used by tribes neighbouring the Ahl al Jebel to the west and south, namely the Sardieh, the Sirhan, the Bani Sakhr, Howeitat and Shararat (Campbell and Roe 1998)

but because it is difficult to ascertain exactly what was being counted and how the Ahl al Jebel tribes were being defined.

Today the Ahl al Jebel consists of a loose confederation of tribes, principally the Masa'id, the Sharafat and the Adhamat, each which shares a common area of origin (in the southern Hauran) and recognise a senior *Sheikh.* The Ahl al Jebel consider themselves to be and are considered by others to be Bedouin, of *al Bedu,* and it is this basic premise which structures their worldview and social organisation. While the Ahl al Jebel as a whole is principally recognised as a territorial group (evident by their name), the individual tribes are locally defined by genealogy. This is expressed through the tribal names (Masa'id, Sharaf, etc. being the names of the individuals from whom common descent is traced).

Ahl al Jebel society is structured by kinship, which, as in most Arab tribes, is followed through the male line. This patrilineal system has the political and social consequence of creating distinct segregated units and sub units within the larger group. Individual identity and interests are perceived as lying closest to the smaller of these units and it this reality which lies at the heart of the segmentary system practised by the Ahl al Jebel tribes.

The Bedouin ideology of descent traces individual identities through successive generations to a position within the lateral spread of tribal segments. Thus, every tribal member has a distinct genealogical position relative to every other member, the proximity of which is largely determined by the number of generations since the divergence of his or her respective lineages.

For Lancaster and Lancaster (1988), the descent system codifies the individual's moral and practical commitment to the larger group by structuring mutual links and obligations and establishing norms of behaviour.

Behnke (1980) has made the astute observation that the Bedouin descent system is basically a system of names. Traditionally, tribes like the Ahl al Jebel may describe kinship relations in two types of ways. First, they may draw upon an extensive vocabulary to describe any individual's specific relationship to any other (Figure 4.6), or second, they may make reference to the smallest kinship unit inclusive of both individuals. While most Arab tribes employ similar systems of terminology to describe descent units, there do exist some local differences in terminology describing social aggregates.

The Ahl al Jebel commonly use four different terms referring to levels of inclusion in their genealogical system. However, none can be defined with any real accuracy. The smallest of these, the minimal lineage, is described as the *beit,* (literally, 'house'), and generally extends from about three generations to five generations in depth. Consequently, an individual *beit* may be inclusive of only a single household or multiple households, whose heads are brothers, fathers and sons, cousins or similar combinations. The minimal lineage is significant in that it

usually represents historical fact (i.e. blood kinship) rather than a fictive genealogy, and traditionally formed an important unit of residence and economic organisation (Chatty 1986).

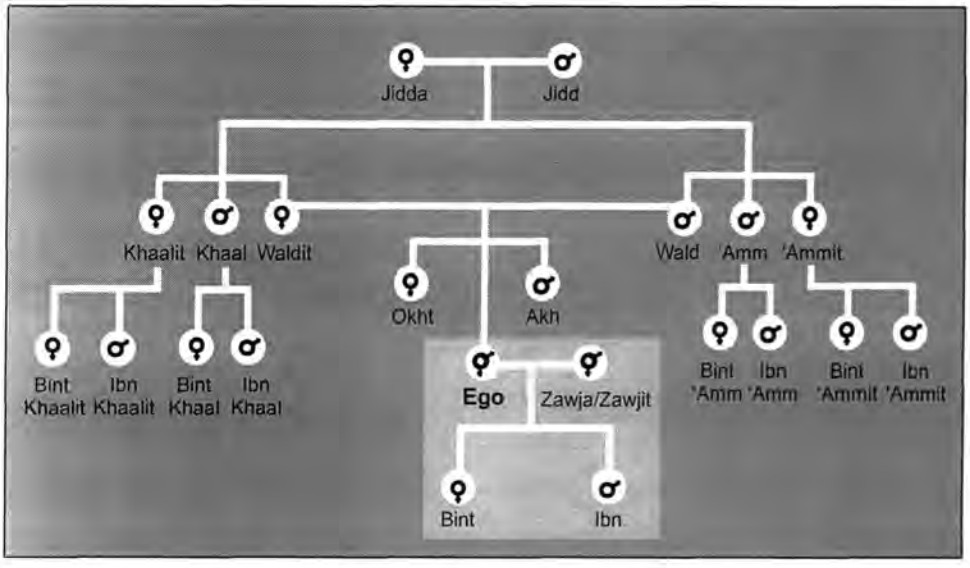


Figure 4.6: Kinship terminology as employed by the Ahl al Jebel Tribes

The *fakhad* (literally, 'thigh') describes the maximal lineage or tribal section, while the term *'ashirah* corresponds to the individual tribal groups such as the Masa'id and Sharafat. While the Ahl al Jebel as a whole are rarely described as a corporate entity, the term *qabila* would probably be employed for this purpose.

Traditionally, the descent group inclusive to the level of the *ibn 'amm* is awarded particular importance, being one of blood relatives directly concerned with the day-to-day interests of the extended family. Protection of these interests in part explains the practice of patrilateral parallel cousin (*ibn/bint 'amm*) marriage (Gubser 1983, Milne 1971), which is prevalent throughout the Badia study area. This *ibn 'amm* group may correspond to the minimal lineage group.

The traditional basis for authority within the Ahl al Jebel and other Bedouin tribes is difficult to define, indeed, some commentators insist that it is entirely absent (see Salzman, 1999 for a contemporary review of this position). However, members of the Jebel tribes within the study area certainly themselves identify with a number of *sheikhs* and senior figures.

The Ahl al Jebel themselves insist the higher office of *sheikh* is not hereditary, but linked to the individual's skills in mediating disputes between lineages or tribal sections, and managing the corporate tribe's relations with actors external to the tribe (through raids, wars and political representations). According to this idealised model, the basis for a *sheikh's* authority is popular consensus. The *sheikh* naturally possesses the political acumen and social prestige to resolve problems to the general satisfaction of all concerned, and only his continuing satisfactory performance guarantees his reputation amongst his fellow tribesmen. In practice however, the system is not fully meritocratic. *Sheikhs* must be wealthy in order to acquire reputations for generosity and hospitality amongst their peers and *sheikh's* sons have a natural advantage in

succeeding their fathers, in that they may call upon their father's social and political networks and benefit from his reputation.

At lower levels of association the senior head of household commonly heads individual lineages and *beiyut* although sometimes, particularly between brothers, reputation and skill rather than age may again determine headship. While personal reputation may be slowly acquired through the 'honourable' conduct of day-to-day transactions with other members of the community, a 'fast lane' to reputation or status exists through demonstrations of skill or expertise in a specific field. Historically, success in livestock raiding credited an individual with an enviable reputation, while more recently, specialist knowledge and rank or status in institutions external to tribal society (for example the military, formal employment or education) do likewise. Lancaster and Lancaster (1981) argue that an important right of passage for any male Bedouin youth is his cultivation of a personal reputation which will determine his marriage prospects and the subsequent standing of his own *beit* (as most competent young males can reasonably expect to head their own *beit* minimal lineage one day).

Among the Ahl al Jebel, kin-based social organisation serves a number of pragmatic functions, adding weight to academic conclusions about environment and culture in pastoral Bedouin societies (Hobbs 1989, Lancaster 1981, Behnke 1980, Marx 1978). Kinship is exploited as an asset in making a living and the segmentary system of descent offers flexibility and security in residence and migration arrangements. Certain types of resources are collectively managed at a lineage level and preferential access to privately owned resources is secure for most members of the owner's lineage. Kinsmen support (and are dependent upon) each other both politically and (where necessary) militarily. The careful management of kinship relations in Ahl al Jebel society may secure additional labour and capital at important points in the pastoral calendar, and households are commonly bound together in networks of reciprocity, mutual obligations and non-commercial transactions.

Descent largely mediates the distribution of resources within Ahl al Jebel society and kinship relations are recognised as units of storage and buffers against an unpredictable environment. Consequently, as concluded by Behnke in Cyrenaica (1980:185), to behave wisely as herders, Bedouin must simultaneously behave properly as kinsmen. Lancaster's (1981) discourse on the Rwala Bedouin of the Badia adopts a similar perspective; Jordanian Bedouin manage kinship relations as assets to create additional options in their daily political and economic transactions. In the unpredictable natural and political environment of the Badia, skilful management of kinship relations is essential.

4.3.2 Traditional land tenure

Until recent decades, tribal ideology was given spatial expression through the notion of the *dirah*. Tribal *dirahs* extended over areas across which individual tribes frequently migrated and could include key resources such as pasture, water and sites of cultivation. The area of the JBRDP in the north eastern Badia of Jordan falls largely within the traditional *dirah* of the Ahl

al Jebel. However, this does not mean that the Jebel tribes have exclusive rights of access to the area's vegetal resources. In common with other Bedouin tribes (Fabietti 1986, Lancaster and Lancaster 1986) the *dirah* was considered open for grazing use by other tribes, as long as sufficient grazing remained for all. In this way, Bedouin herders recognised the possibility that if one day their own pastures failed, they may need to access the *dirah* of neighbouring tribes to ensure the survival of their herds.

'Urf (customary or traditional law) constituted the basis for the communal management of pasture resources known as the *Hima* (reserve) system (Shoup 1990). Through regulations on the seasons of grazing and species of livestock allowed to graze, areas of pasture could be effectively managed at a tribal level by tribal councils and sanctioned societally through the tribal structure.

Under the traditional system of land rights, temporary pastoral usage of an area confers no long-term tenure to the user since he leaves the land unimproved. However, according to the same system, long-term development involving significant investment (of labour or capital) can confer exclusive or priority rights of access to areas of land or resources. In the Badia area, this type of development was most commonly manifest as the clearing and maintenance of cereal fields, the construction of simple *mahafir* water cisterns and the excavation and lining of stone lined wells. Where, for example, an individual household has consistently cleared, ploughed and sowed a particular field over a period of many years, this land area, while under cultivation, would be respected as their own 'property'. However, it is worth stressing that under this traditional system of tenure, the developer is not viewed as 'owner' of the land but rather the entitled beneficiary of the products of his own labours (Lancaster and Lancaster 1986).

The validity of traditional claims to land tenure and access at tribal, lineage and individual levels stems from the actual recognition of these rights by other individuals or corporate groups. The whole basis of the traditional system of land-rights depends on the mutually reciprocated recognition of claims. The group or individual actor who fails to uphold the claims of another or seriously challenges the *status quo* stands to risk losing recognition of his own traditional claims of tenure. Prior to the twentieth century, the last major threat to existing tribe-*dirah* relationships in the northern Badia followed the northward movement of the powerful 'Anazah and Shammar tribes from the Arabian peninsula (Lewis 1987). At that time, during the early nineteenth-century several smaller tribes were displaced along the fringes of the Syrian desert, but, according to their own testimony, the territorial behaviour of the Ahl al Jebel was not affected.

4.4 The Hashemite state

The Hashemite Kingdom of Jordan was formally established in 1950, uniting the former state of Transjordan with adjacent areas of Palestine on the West Bank of the river Jordan. The eastern boundaries of the state had been demarcated at the 1920 San Remo conference, when the former Ottoman provinces were divided between two mandated powers, Britain and France. British negotiators arrived at St. Remo with the diplomatic objective of establishing an unbroken corridor of territory between Egypt and the Persian Gulf, the result of which was the artificial 'panhandle' shaped borders of north east Jordan.

The new international boundaries divided the Arabian Peninsula from Syria and dissected the northern Badia with little consideration for the distribution of tribal populations, or the existing patterns of land-use and tenure. The artificial northeastern borders of Jordan thus served to dislocate important elements of desert society and economy.

The creation of borders heralded the concept of the nation state; a concept not easily accommodated within the prevailing Bedouin ideology of kinship and tribal identification. Under Ottoman rule, the tribes of the Transjordan were never encapsulated into the administrative system, but this was to change under the new political entity. Early steps to integrate Bedouin into the national structure, such as the creation of a 'Bedouin Control Board' and Bedouin representation in the new 'National Assembly', were notably unsuccessful (Hiatt 1984).

Perhaps the most active mechanism in the eventual assimilation of tribesmen into the state was the Jordanian national army, which recruited Bedouin into a Desert Patrol Force under the leadership of John Bagot Glubb. Glubb adopted the strategy of using the Bedouin to police the desert and the Desert Patrol Force proved enormously successful in catching marauding raiders and confiscating their camels. The prestige and reputations of the men serving with Glubb rose rapidly during the troubled years of the 1920's and early 1930's. Military service thus became highly desirable to young tribesmen, particularly as traditional options for quickly acquiring personal reputations (namely raiding and tribal warfare) were being closed off to them

Large numbers of Bedouin were enlisted into the armed forces during the 1940's and by the beginning of the 1950's some five infantry regiments (2,500 men) and two armoured car units (1,500 men) were staffed exclusively by Bedouin (Lewis 1987). Widespread military service acted as a catalyst for a fundamental change in the relationship between tribes and the state during the 1940's and 1950's: The army was providing salaries to one generation of tribesmen while continuing pensions to another. In consequence, for many pastoral households, the stresses of severe droughts during the middle years of the twentieth-century were tempered by secure incomes. During these droughts, further support came from the government via the army, in the form of grain and food assistance to nomads. By the 1970's, a major survey

indicated that more than one-third of responding heads of Bedouin households were in the military (Gubser 1983:229).

Shortly after the establishment of state boundaries, a process of land survey and title reform began in Transjordan, with the purpose of clarifying land-tenure issues. Despite some initial opposition, most tribes acceded to the government's wish to survey their lands. The principal results of this early work were formal recognition by the state of existing *dirah*'s of the major tribes and codification of the existing system of land-tenure. However, some traditional tribal areas were given over, in trust, to individual *sheikhs*. This prompted some tribesmen to register individual pieces of land in their own names. This process of individual property registration and subdivision continues today, and as pointed out by Hiatt (1984), has acted to erode the corporate principal underlying the relationship between tribe and *dirah*.

The military too, worked to influence Bedouin attitudes towards land and their economic behaviour. The armed forces established the first schools in desert areas (at first mobile but later in a fixed position) and encouraged Bedouin to cultivate or at least rent out their lands as alternative sources of income (Hiatt 1984). Only 27 years after the establishment of a Transjordanian state, Glubb claimed that ownership of agricultural land by individual Bedouin households had become almost universal (Glubb, 1948:169).

As part of a policy aimed at extending its influence into tribal areas, the state began the payment of subventions to major sheikhs. Even today, senior *sheikhs* continue to receive nominal payments from the Royal court; although the real value of this marginal income lies in the prestige it confers on the recipient.

While the new state attempted to establish indirect control over tribal lands using existing authority structures, it also established a bureaucracy of direct administration. Overall, the governor (*Muhafedh*) of Mafraq region today oversees administration of the northeast Badia (with the exception of Azraq). Smaller districts are each headed by a local administrator (*Mutaseraf*), while the smallest administrative units have their own manager (*Mudir).* The state provision of public services is mediated at local level by the Municipality, the head of whom (*Rayis al Baladiyya)* is a locally selected public servant. At an individual settlement and village level, traditional leader figures are paralleled by a locally appointed *Mokhtar* who acts as a state representative and maintains official records of births, deaths, and facilitates local access to higher levels of administration.

In the mid-1990's, the Bedouin tribes of the contemporary Badia were active in the political process of the state. As in many other parts of the Kingdom, political representation was determined through tribally aligned block voting. In largely tribally homogeneous areas such as the northeastern Badia, representation is not determined by the civic process of elections, but by internal tribal negotiations, consensus and alliances struck between tribes. At the time of this study, the Ahl al Jebel tribes had risen to a position of unprecedented political influence within

the Jordanian State. Sa'ad Hail Sirour, son of the senior *sheikh* of the Ahl al Jebel confederation had risen to the position of Speaker of the House of Representatives.

Today most Ahl al Jebel identify strongly with their kinship and tribal groups while attitudes to the less tangible concept of the state remain ambivalent. Many tribesmen, even holders of office or those in public service speak ill of the *dowla* (state), while simultaneously engaging in the political process, or serving in the armed forces in defence of the new borders. The answer to this dichotomy seems to lie in the way that Bedouin have redefined the state political process as a tribal activity aimed at the acquisition of resources and benefits for their own tribal groupings. Equally, while expressing indifference to the apparatus of government itself (which they view as being dominated by non-Bedouins and foreigners), tribesmen express immense loyalty to the Hashemite monarchy and by extension, to the nation. This loyalty is not defined in civic terms, but in traditional and genealogical terms. The Ahl al Jebel and other Jordanian Bedouin choose to place the Hashemites within their own universe of genealogy, honouring their unbroken descent from the family of the Prophet Mohammed. The Hashemites are today popularly regarded as Bedouin themselves and as the armed forces swear allegiance directly to the monarch himself, tribesmen are able to negotiate a path separating traditional allegiances from loyalty to the apparatus of state (Layne 1994).

In consequence, despite nearly eighty years of state administration, issues of tribe, state and individual loyalties remain complex in the study area. Brandenburg's study in the northeastern Badia (1998) suggests similar conclusions to the work of Hiatt (1984) and Layne (1989): namely that parallel authority structures have perpetuated in tribal areas, rather than the new state constructs wholly replacing traditional roles and institutions.

4.4.1 Infrastructural development

Infrastructural development within the study area commenced shortly after the establishment of the state of Transjordan and continues to the present day. Early development within the northeast 'panhandle' of the Badia was related to the area's function as a corridor linking British administered territories from the Mediterranean Sea to the Persian Gulf. In the late 1920's and early 1930's the Iraq Petroleum Company (IPC) built an oil pipeline through northern Jordan. The necessity for pumping stations along the length of this pipeline resulted in the establishment of the first settlements in the panhandle, the stations of H4 (Ruweishid) and H5 (Safawi). The first paved road to Baghdad was constructed in the same period, replacing the old desert track used by the Nairn Transport Company. Security concerns led to the establishment of Desert Patrol Force border forts at a number of locations along the Borders with Syria and particularly, Saudi Arabia.

Over the last twenty years, accompanying the continuing process of settlement, a range of public services have been extended into the northwestern part of the study area. These include education (primary schools are today located in many of the major villages), health (four full-time health clinics operate within the study area - Spicer 1999) and the provision of water and

electricity supplies to many permanent households. According to a 1993 survey, approximately 82% of households within the area have a domestic water supply, although access to the electricity grid is more limited (JBRDP 1993). Since the late 1970's many of the smaller villages on the slopes of the Jebel al Arab have been connected to the national road network with tarmac roads, reducing travel time from the village areas of the Badia study area to Mafraq (60 to 90 minutes).

State sponsored infrastructural development in the Badia has not been restricted to population centres and higher rainfall areas. During the early 1970's, the Jordanian authorities began digging deep wells equipped with diesel pumps in rangeland areas as a service to nomadic livestock herders. Seven of these wells were sunk in the JBRDP area and the Water Authority currently administers these. The provision of reliable water supplies to remote parts of the Badia area constitutes a significant development in the use of this landscape. Not only do sufficient supplies exist to meet the requirements of all comers, but the desert water supplies are now fully de-tribalised and under the management of non-partisan officials.

4.5 Change and the natural environment

In recent decades, the relationship between the Badia population and their natural environment has undergone important changes. Under traditional systems of land-use, Bedouin pastoralists were able to balance their immediate survival requirements with the long-term security of range resources through the strategy of mobility (Meir and Tsoar 1996), or alternatively, through traditional socio-political mechanisms such as the *Hima* system. Following their encapsulation into the state, this traditional equilibrium has been disturbed and the fragile Badia environment has been subject to greater pressures. In consequence, the rangelands of the Badia have become *"extremely degraded"* over the last 30 years (Juneidi and *Abu* Zanat 1993:9).

Contemporary 'dis-equilibrium' theories of rangeland ecology (for example see Behnke and Scones 1993) have highlighted the spatial flexibility of mobile pastoralists and their innate sensitivity to the condition of rangelands. Where mobility is constrained by political boundaries pastoralists are compelled to exert intensified pressure upon local resources. In the northern Badia, these pressures have been compounded by the attempts of the government to detribalise the desert ranges during the post-war period.

A key instrument of this process was Chapter 11 of the Agricultural Law, commonly known as 1973/20, which defined all land areas receiving below 200mm annual rainfall in eastern Jordan (other than those already in agricultural or residential use) as rangelands, and as such, state owned. Not only did state intervention of this type undermine the territorial integrity of the tribes by weakening traditional controls and regulatory mechanisms (Jaubert and Bocco 1994) but, in the absence of effective authority over rangelands, the resources have been exploited without responsibility by users originating from both within and without the Badia.

A rapidly growing livestock population in the Badia has also contributed to environmental change (see section 4.7.4). It has been calculated that by the mid-1980's, the number of livestock being managed on Jordanian rangelands exceeded sustainable carrying capacity by a factor of four (Barham and Mensching 1988:38).

Environmental stresses resulting from intensified grazing may have been further compounded by changes in the spatial and temporal distribution of foraging herds. Newly-sunk wells, the replacement of camels by motorised transport for carrying water and the extension of road networks into the Badia means that large herds can now be shepherded for long periods in previously inaccessible areas (IFAD 1995). While the traditional transhumant pattern of spring gazing in desert rangelands was linked to the reproductive cycle of rangeland flora, the possibility of year round sustained grazing may now disrupt this balance.

Transitions in land-use, particularly in the northwestern part of the study area, are perhaps the most visible manifestation of the changing interactions between population and environment. During the second half of the twentieth-century, the southern foothills of the Jebel al Arab have been subject to significant intensification of use, principally through the gradual east-ward expansion of agriculture. Furthermore, former rangelands have been increasingly ruralised by the process of settlement and the appearance of the scattered housing and infrastructure that has accompanied the agricultural expansion.

Recent research has indicated that this extension of cultivation into the Badia is the product of complex socio-economic factors, including demographic changes in the population of the area, a changing policy environment, growing markets for products, growing access to investment capital, and the breakdown of traditional systems of land-tenure (Millington *et al* 1999). One consequence of the last four decades of settlement and land colonisation in the northeastern Badia, coincident with the emergence of the modern state, has been a shift towards a system of farming dominated by cultivation with ancillary stock raising, as opposed to the former system of mobile herding with ancillary cultivation.

Two forms of cultivation predominate within the current pattern of agricultural development in the Badia. These are the unirrigated summer harvested barley and wheat fields, which claim by far the most extensive tracts of land (Millington *et al* 1999), and the irrigated fields producing winter harvested vegetables and forage crops as well as fruit and olive trees. All types of cultivation necessitate the clearing of basalt rocks from fields and ploughing prior to sowing. In consequence, cultivation has spread at the expense of some of the best pasturelands. It has been estimated that the regeneration of natural vegetation in similar areas of Syria would take up to 15 years (Vaan der Veen, 1964).

Millington *et al* 's (1999) study of land colonisation within the project area suggests that it is the original Bedouin population who have been responsible for the majority of agricultural development within the area and who are almost exclusively responsible for the clearing of the

extensive rain-fed barley fields. The smaller and more recently developed areas of irrigated agriculture further west are commonly (but not exclusively) the result of outside investment, owing to the greater capital inputs required to establish such farms. However, many sedentarised Bedouin households irrigate small groves of olive trees from the domestic water supply.

In section 4.2.6, Norman Lewis's (1987) conceptualisation of a 'desert line' was used to illustrate the historical oscillations of the frontier between settled agricultural lands and those areas in which mobile pastoral livelihoods predominated. Data generated through processing of Landsat Multi-Spectral Scanner (MSS) and Thematic Mapper (TM) imagery acquired during the early 1990's (Millington *et al* 1999) has demonstrated the far eastward advance of this line across the southern foothills of the Jebel al Arab (Figure 4.5). In the contemporary example, this eastward retreat of the desert rangelands also represents major changes in local demography and livelihood orientations.

4.6 Demographic change and settlement

Since its establishment, the state of Jordan has undergone extremely rapid population growth, with an estimated average annual increase of approx. 4.3% between 1952 and 1990 (National Population Commission of Jordan, 1990). This has been the result of high fertility rates combined with the influx of Palestinian refugees (following the establishment of the state of Israel in 1948, Israel's occupation of the West Bank in 1967 and again during the 1991 Gulf conflict).

Table 4.1 : Population in the Badia study area

Year	Population
1976	5161
1979	5497
1987	9509
1993	14014
1994	16267

(Source: Maani et al 1998)

Within the study area of the northeastern Badia, data indicate that population growth has been even more dramatic than elsewhere in the country. Although no accurate demographic data exists prior to 1976, it can be seen that in the 20 years prior to the commencement of fieldwork, the population trebled (Table 4.1).

Alternative sources of employment, independent of the natural resource base, have supported this increased population growth. Linkages to national and regional economies have facilitated a reduction in the proportion of the Badia population who must sustain themselves by primary production, using traditional arid-land food-producing systems such as nomadic pastoralism (Findlay and Maani 1999). Consequently, economic diversification, coupled with population growth has been identified an important element in the process of sedentarisation.

The current wave of settlement among the Ahl al Jebel tribes began during the early 1960's after the senior sheikh of the tribes built his house at Umm Al Jimal (Mamdouh Sirour pers.

comm.) The rationale for the construction of housing and the development of agriculture during the late 1960's, 1970's and early 1980's seems to have been complex. At first, some years prior to the extension of state services into the area, individuals and small kinship groups were motivated to build stone or concrete houses and sow surrounding fields as a way of expressing individual or collective land rights over areas following the breakdown of the traditional tribal *dirah*. Even today, most settlements within the study area remain homogeneous to the level of *beit* or *fakhad*.

At first, these settlers and their herds continued to migrate seasonally to desert pastures, but the need for this declined during the 1980's when the use of subsidised supplementary feeds increased. During the same period, the Badia benefited indirectly from oil revenues in neighbouring countries as state funded services and infrastructure began to extend into desert areas. Just as these incentives for settlement increased, so too did the local availability of capital from remittance incomes and the proceeds of sales to the growing market for livestock products.

This widespread transformation to a predominantly sedentary way of life was hastened during the late 1970's and 1980's by the emergence of new patterns of production linked to national labour and commodities markets. Many Ahl al Jebel households that diversified livelihoods away from livestock and took up alternative (or additional) economic activities such as commercial farming or waged labour found that seasonal mobility was not compatible with these new enterprises. Households opting to engage in alternative, non-livestock methods of income generation were either compelled to liquidate their livestock assets entirely or, more commonly, to reduce herd sizes to levels suitable for management in a sedentary village. A third possibility was to split households between mobile (or seasonally mobile) herding components and sedentary components (Roe 1999).

By the early 1990's, waged employment, including military service, had superseded primary production as the declared major source of household income in the Badia study area (Findlay and Maani 1998). Another common form of employment in the Badia was entrepreneurship, notably in trade and the transport of commodities (Lancaster and Lancaster 1998). Consequently, by the period in which this study was undertaken the domestic economies of most Ahl al Jebel households were largely monetarised.

Table 4.2: Major sources of household income in the Badia in 1993

Income Source	No.	%
Livestock production	534	22.3
Agriculture	189	7.9
Self employment	259	10.8
Waged employment	920	38.4
Remittance income	113	4.7
No response	24	1

(Source: Findlay and Maani 1998)

However, evidence suggests that the economic organisation of Badia households in recent decades may be more complex than simply direct engagement with, and encapsulation by, formal market institutions. Nearly all Ahl al Jebel

households continue to practice some form of primary production alongside other economic activities; notably cereal agriculture and small scale production of fruit and vegetables, and (or in combination with) small scale livestock production. These multiple resources are not reflected in the data described in Table 4.2.

Settlement within the Badia study area has been largely restricted to the northwestern highlands on the foothills of the Jebel al Arab, and has taken the form of kinship-based villages. The most rapid population growth within the villages area has been recorded around Umm al Quttayn whilst further south and east in more arid areas, growth and development has been less rapid (Figure 4.7). This might imply higher levels of out-migration owing to fewer income and employment opportunities (Maani *et al* 1998).

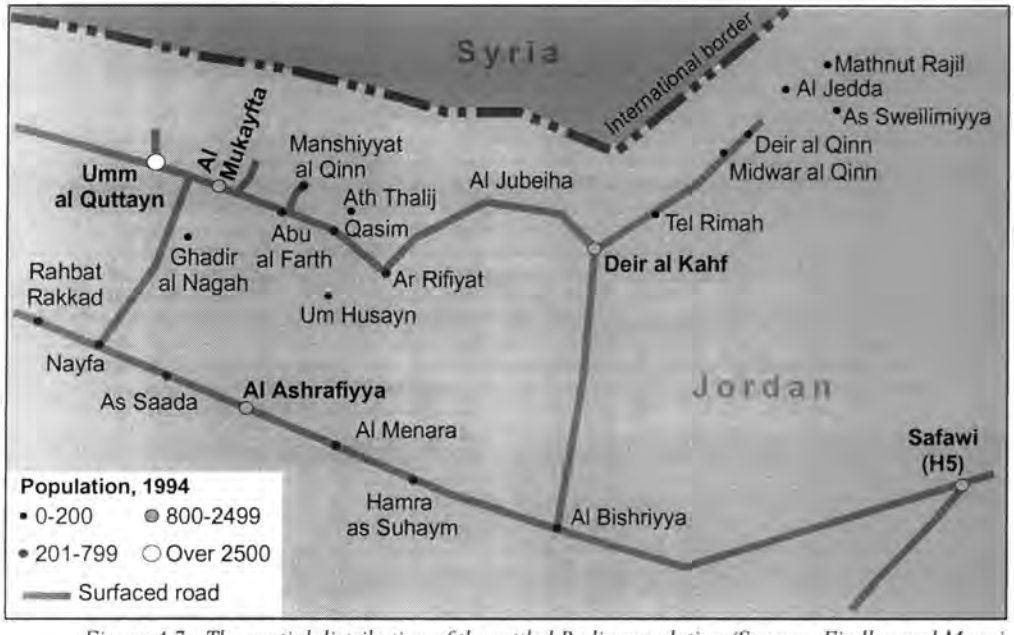


Figure 4.7: The spatial distribution of the settled Badia population (Source: Findlay and Maani 1999)

4.7 The livestock production environment

Since the mid-1960's, the livestock production environment in the Badia has been profoundly affected by fluctuating macro-economic factors. One of these has been the state subsidy on supplementary animal feeds, while another has been the changing demand for pastoral products at both domestic and regional markets. Together with a range of technical innovations (notably the introduction of motorised transport), these factors have catalysed important changes in the traditional organisation of livestock.

4.7.1 Subsidised livestock feed supplements

The Ministry of Agriculture introduced subsidies on supplementary livestock feeds in 1981. The subsidy was initially introduced to assist herders to maintain their animals through the difficult summer months, when natural forage was scarce. The subsidy took the form of a quota (0.5kg/head/day) of barley and wheatbran; both subsidised to 30-40% below free market prices.

However, difficulties faced by the MoA in accurately quantifying livestock ownership (particularly illustrated during the 1991 livestock census) may have enabled many Badia herd managers to obtain in excess of their correct quotas. Through the 1980's and early 1990's many livestock managers were using subsidised concentrate feeds year-round almost to the exclusion of natural feed sources. Ahl al Jebel livestock owners recall this decade as a 'boom' period when many of the former risks of animal production were reduced. It was widely believed that only a very unlucky or incompetent manager could incur major losses at this time. Livestock became perceived as relatively secure investments at a time when availability of capital in Badia society was increasing.

Pressure to rationalise agricultural policy and remove subsidies came from the World Bank and International Monetary Fund during the late 1980's and early 1990's, but for social and political reasons the Jordanian government resisted the complete removal of subsidies for six years (Oakeley 1997). It was probably the rising cost of maintaining subsidies which led to their removal. In 1991 alone over 1.25 million tonnes of barley and wheatbran were subsidised to the small ruminant sector at a cost of over 11 million JD (FAO 1994).

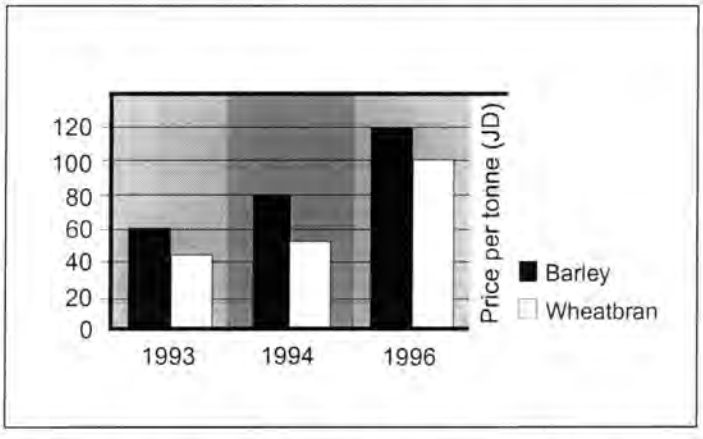


Figure 4.8: Feed prices during the 1990's

The downscaling and ultimate removal of livestock feed subsidies occurred as part of a Structural Adjustment Programme which was implemented during the course of this research. Feed price increases occurred in three major stages during the 1990's (Figure 4.8). The economic impact of the removal of feed subsidies, with reference to Badia livestock managers, is discussed in Chapter 8.

4.7.2 The growth of markets for pastoral products

Markets for pastoral products began to expand rapidly during the 1960's and 1970's. This first phase of demand was associated principally with the rapid rate of population growth that occurred in the developing urban areas of Jordan (UNESCWA/FAO 1996). However, by the mid-1980's demand in the domestic market was tempered by changing consumer preferences for cheaper white and imported meats (Oakeley 1997) and production became increasingly oriented towards export, particularly to oil rich Gulf markets. By 1991, over 40% of Jordan's lamb production went to the Gulf (Wattenbach and Stroebel, 1992) where prices were 15% higher than in Jordan (Oakeley 1997).

Table 4.3: Red meat production and sheep/goat exports 1976-1992

Year	Local meat production (tonnes)	Red meat imported (tonnes)	Red meat consumption (tonnes)	Self-sufficiency (tonnes)	Sheep/Goat exports (head)	Wool exports (tonnes)
1976	6464	5687	122151	53	-	-
1977	7805	9718	17523	45	-	-
1978	7578	22542	30120	25	-	-
1979	7110	17362	24472	29	-	-
1980	7947	10802	18749	42	-	-
1981	8545	27500	36045	24	-	-
1982	8711	29927	38638	23	120200	-
1983	10199	32637	42836	24	324300	-
1984	9930	31432	41362	24	236300	-
1985	10907	34159	45066	24	200000	-
1986	6559	29245	35804	18	214900	-
1987	7964	299923	37887	21	203800	-
1988	8339	31138	39477	21	47504	307
1989	9372	30977	40349	23	42313	2573
1990	10127	30206	40333	25	61303	113
1991	16851	22649	39500	43	279956	265
1992	-	-	-	-	552092	2584

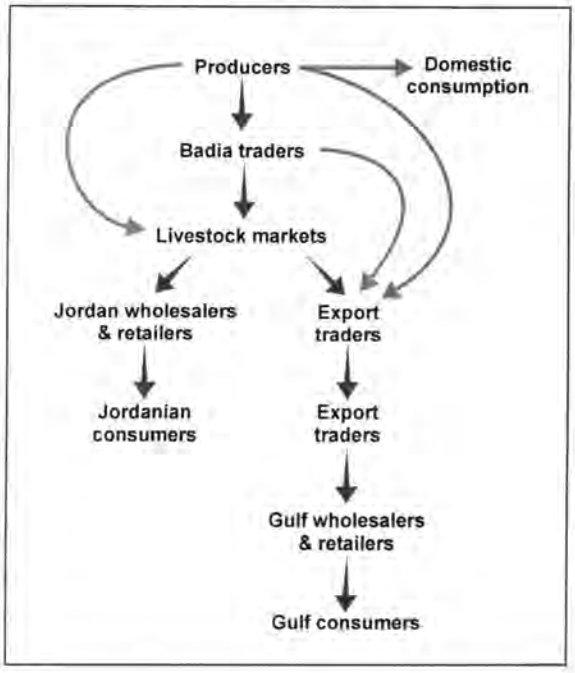
(Source: IFAD 1993)

In the north eastern Badia, the Ahl al Jebel Bedouin were ideally placed, both geographically and through economic and information networks, to exploit these markets (Lancaster and Lancaster 1995:5), particularly following the cessation of direct exports from Iraq to Saudi Arabia in 1991. From Mafraq governorate alone, the 1994 value of official lamb exports to Saudi Arabia has been officially estimated at over 4 million JD (DOS, 1995)

However, the domination of official export channels by a small number of major companies, which extracted a considerable proportion of the profits from the export trade, resulted in the widespread emergence of unofficial cross-border traffic. In 1996, Roger Oakeley found that livestock prices at Ruweishid (close to relatively permeable borders with Saudi Arabia) were about 10% higher than at Mafraq (the principal market for official exports from the Badia area). He concluded that this was "*a direct reflection of the impact of unofficial trade*" (1997:41).

While the magnitude of unofficial cross border livestock exports from the Badia is not known, it has been speculated that these exports may equal the volume of official trade (Oakeley 1997). For many Ahl al Jebel livestock producers during the 1990's, this unofficial trade came to be viewed as a high risk, high return activity, of comparable social and moral legitimacy to the traditional practice of livestock raiding. Equally, growing markets for red meat, both domestically and regionally, have encouraged some Badia producers to engage in the speculative purchase and resale of animals (Al Oun 1998), making them both suppliers and market operators in the flow of livestock out of the study area (Figure 4.9).

Figure 4.9: Flow of livestock out of the study area



The Gulf Crisis of 1991 severely interrupted export markets, and taken collectively, the early 1990's proved to be the watershed in Gulf demand for Jordanian livestock. From the 1993 peak of nearly 800,000 head, statistics reveal a subsequent overall decline in livestock exports from Jordan.

While Jordan's neutrality during the 1991 conflict damaged political and trade relations with the Gulf states, increasing competition on the international market place has also had a role in undercutting Jordanian exports.

Table 4.4: Live sheep exports 1993-995

	1993	1994	1995
Saudi Arabia	700,856	377,630	282,302
Qatar	84,731	9,181	12,225
Bahrain	3,068	1,114	760
UAE	1,135	404	0
Syria	388	0	0

(Source: DoS external trade statistics 1994-96)

Over the last three decades, a local market has emerged in the Badia for fresh sheep milk. Production of milk was formerly limited by the perishable nature of this commodity and the need for female labour to convert it into durable products. However, with the widespread utilisation of motor vehicles, fresh milk could be returned to urban factories for bulk processing within hours of its collection. Furthermore, during the 1970's and 1980's urban demand for local cheeses prompted some dairy merchants to commence small scale milk processing activities in rangeland areas during the grazing and milking season. As a consequence, by the mid-1990's the production of fresh milk from Badia herds had expanded to a point approaching saturation of this local market. (Papadopulos 1996:7)

4.7.3 Motorised transportation

The Ahl al Jebel tribes have always been predominantly sheep and goat herding Bedouin, and most households report having owned only a few draught and load bearing animals. According to informants, many owners sold their camels to raise funds for the motor vehicles (mainly light trucks) which succeeded them.

In close approximation of the transition from camel to truck by Bedouin in the Beqaa Valley described by Chatty (1974), the change from camels to motor vehicles occurred rapidly within the area of the current study. However, in Jordan this transition largely occurred between the

years of 1975 and 1980, some ten years after the switch to trucks described by Chatty in Lebanon/Syria.

There is a clear reason for the time lapse between the introduction of vehicles in Lebanon/Syria and in the area of the JBRDP. During the early 1970's petroleum exploration teams forced their way into the basalt lava fields of the *al harra* to conduct a seismic survey. The legacy of this survey is an extensive network of bulldozed tracks through the basalt, which until today remain the only way for motor vehicles to access *al harra.* Prior to the clearance of these tracks, motor vehicles would have been useless to the Ahl al Jebel on their normal seasonal migrations.

The widespread conversion to motorised transportation also coincided with the introduction of the livestock feed subsidies in Jordan. The availability of cheap concentrate feeds for livestock led to major changes in the management of animals on the range and led to a growing demand for fast and efficient transport (not only to carry the feed itself, but also to transport large volumes of water to maintain the sheep, which now could be herded far out on the range, almost independent of grazing).

A further consequence of the widespread use of purchased feed supplements was the growing monetarisation of livestock production. Rising costs of production (including those of vehicle fuel and maintenance) required that producers were compelled to become more efficient in their production and entrepreneurial in their marketing to secure the highest prices for their products. As described by Chatty (1974:140-195) the use of motor vehicles helped to facilitate this. Thus, the introduction of motor transport clearly contributed to the intensification of livestock production in the study area.

4.7.4 Changes in Livestock population

Perhaps as a result of the state subsidy on feeds, combined with growing market demand for meat and dairy products through the 1970's and 1980's, the livestock population of Jordan rose rapidly during this period (Figure 4.10) Increasing livestock numbers have been particularly marked within the Mafraq governorate (Figure 4.11) which by the early 1990's had the highest livestock population of any governorate in Jordan (IFAD 1993). The most conservative estimate of the livestock population within the BRDP study area in 1991 was 107,000 (MoA 1991), although estimates based upon subsequent research suggest a much higher figure (Campbell and Roe 1998).

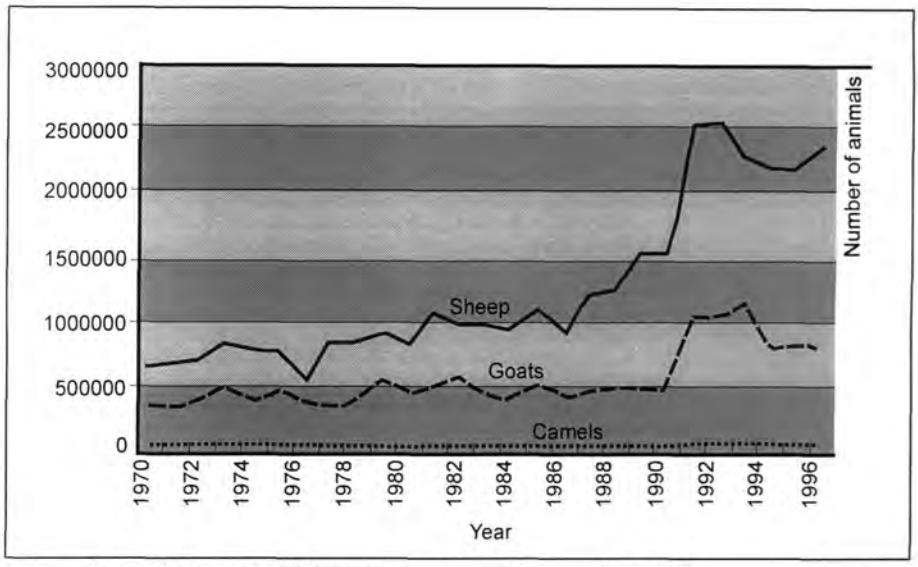


Figure 4.10: National livestock population (Source: MoA 1997)

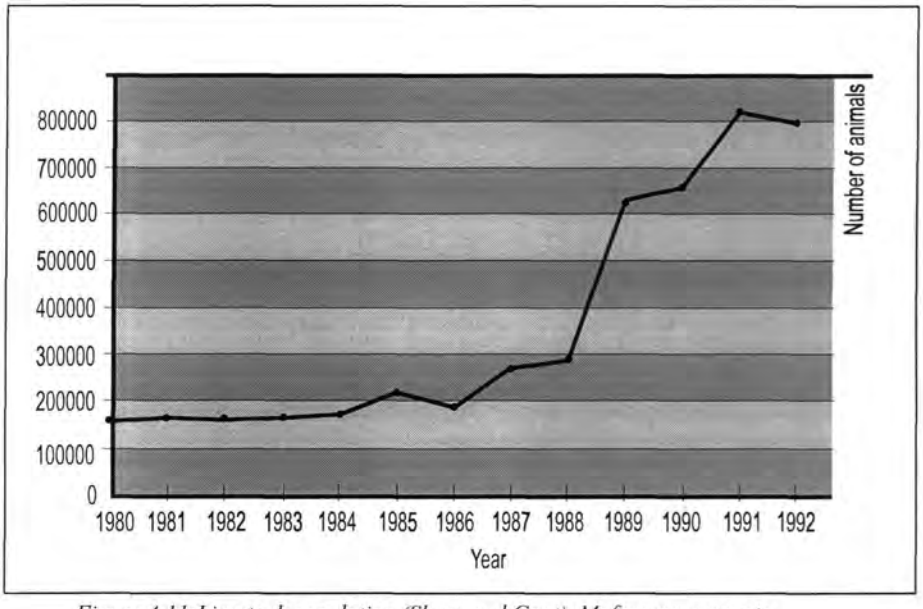


Figure 4.11:Livestock population (Sheep and Goat), Mafraq governorate (Source:IFAD 1993)

4.8 Conclusions

This chapter has introduced the Badia as an area of variable resources that, historically, has required Badia residents to be highly flexible in their livelihood strategies. Given these environmental constraints, the dominant type of production for most of the Badia population has been the herding of sheep and goats mixed with some opportunistic cultivation of cereal crops. This mixed agro-pastoral system probably developed primarily as subsistence in orientation, although certainly from even early historical periods surpluses have been

exchanged with sedentary populations for agricultural commodities and necessary manufactured goods.

However, despite the variable distribution of resources, the Badia is an environment that has long proffered a viable livelihood for its residents, even allowing for some periods of population expansion and intensification of use within the delicate balance between resource availability and human requirements. Historically, this process of change in the Badia region has been the product of both indigenous and exogenous stimuli, the adaptive responses to the latter being mediated by local cultural configuration and by economic opportunity.

Change and development in the Badia during the twentieth-century has been rapid and differs from earlier episodes in both the extent and degree to which the Badia political economy now integrates with the wider national and regional economies, creating intricate local dependencies.

This process of integration has visibly modified the Badia landscape. Not only is it now significantly smaller, owing to land colonisation and the extension of agriculture, but it is also overgrazed and is visited by growing numbers of small ruminants. It also supports a comparatively large (and growing) human population, which now almost certainly exceeds the productive potential of traditional economic activities.

Political change in the Badia has been related to the emergence of a powerful centralised state and the efforts of this entity to extend its authority into previously peripheral areas. While encapsulation into the state domain has undermined some aspects of the traditional organisation of Badia society (notably the tribal management of land and grazing resources), it has not fully replaced indigenous authority structures and indeed, has created some new channels for the expression of traditional loyalties. Changes in the political economy of the Badia area have had a more direct impact on Ahl al Jebel households, which have on the whole responded purposefully to new economic markets and opportunities. The principal outcomes of complex economic change in Bedouin communities has been income diversification and sedentarisation.

By the final decade of the twentieth-century, only about a quarter of the Badia population remained engaged in livestock herding as their principal livelihood activity. New systems of livestock production among the Ahl al Jebel have become increasingly market oriented and, in consequence, subject to the fluctuations of the national and regional political economy. The recent rapid socio-economic development of Badia pastoral households must be viewed within this context.

The following chapter builds directly upon the information presented in the latter part of this chapter, exploring the role of livestock within Badia pastoral households with an emphasis upon their market values.

Part Two (Chapters 5 – 7)

Plate 2: *A commercial livestock producer arrives to inspect his flock in the Badia (owner is third from the left with his two young sons beside him, his hired Sudanese truck-driver is on the far right).*

Chapter 5: The monetary values of Bedouin livestock

5.1 Introduction

In this chapter I review the monetary values of livestock and consider some ways in which these values are related to wider Badia livelihoods. This chapter builds upon the previous chapter by presenting an overview of the organisation of the formal livestock economy during the middle of the 1990's. It describes the general pattern of market oriented livestock production as I observed and recorded it during the years of my fieldwork prior to the removal of subsidies on livestock feeds.

The first part of the chapter briefly introduces the principal livestock species herded by Bedouin households in the Badia and describes the processes of management and production associated with each species. On the basis of the results of the first phase of fieldwork, the discussion then goes on to describe how, in practice, herds were being structured and managed.

The second part of the chapter draws upon data collected during the second phase of the study, and offers a more detailed economic analysis of animal productivity calculated as an annual gross margin of incomes over expenditures. The dynamic and seasonal nature of costs and expenditures through the pastoral calendar are considered. The chapter aims to provide an evaluation of the monetarised livestock economy and the ways in which Bedouin manage cash incomes from their herds.

5.2 The herd species

The main two species currently herded by the Ahl al Jebel tribes of the northern Badia are sheep and goats. The Ahl al Jebel commonly refer to their small ruminants collectively as *al aghnam* (sheep) or more specifically *ghanam eswad* and *ghanam beidha* (black sheep and white sheep).

5.2.1 Sheep

The principal breed of sheep managed in the northeastern Badia is the fat-tailed Awassi. The Awassi is characterised by a pure white fleece, although in the Badia it is also found with brown and mottled colouring. A more detailed physiological description of the Awassi is given by Epstein (1985).

The Ahl al Jebel historically considered the principal marketable surplus of sheep to be meat and wool, and to a more variable extent, dairy products.

Sheep feed principally by grazing and particularly favour annual grasses, leading Ahl al Jebel herders to adopt the migratory pattern that has been described in section 4.3. However, as subsidised supplementary feeds became widely available during the 1980's, sheep owners became more independent of traditional feed sources and the old migratory systems have begun to change[12].

The herding instinct of sheep makes them relatively easy to manage. The Ahl al Jebel consider that a capable shepherd can control a flock of up to 500 sheep. The most common strategy for driving sheep is through use of a specially reared castrate fitted with bells. Known as the *mar'iyya,* this animal acts as lead sheep and follows the shepherd's donkey. However, owing to the relatively slow grazing movement of flocks, it is also common practice in the Badia to introduce a few goats into flocks to keep them moving. When supplied and watered by trucks, flocks of sheep may be maintained for long periods out on the rangelands without reference back to home villages or encampments.

5.2.2 Goats

The goat populations herded by the Ahl al Jebel tribes are almost exclusively of the Syrian Mountain breed. They are, however, sometimes referred to in the literature as the black Bedouin or *baladi* goat. Although predominantly black, a minority of goats have hair of other colours, ranging from off-white to grey and brown. The breed's distribution and characteristics are described by Hirsch (1933).

In the northern Badia, goats are particularly valued for their dairy products, although meat and fibre products are also important.

Unlike sheep, goats favour browsing perennials and are able to utilise a much wider variety of plants, including dry woody shrubs. This enables goats to successfully utilise areas that would not support sheep and makes them less in need of seasonal grazing migrations. The grazing migrations of mixed herds in the Badia are principally shaped by the needs of sheep. The few specialist goat-herding households in the Badia are mainly resident in remote rangeland locations near major *wadis* where perennial shrubs occur, and relocate only when local forage supplies are exhausted. Goat herds managed in these conditions were observed to need relatively little feed supplementation.

The dietary spectrum of goats is sufficiently broad to allow them to be successfully raised on household scraps (food and agricultural waste) with only limited use of purchased supplementary feeds. This characteristic has not been overlooked by the Bedouin, and so many households manage small numbers of non-migratory goats in enclosures adjacent to a village residence.

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[12] Changes to migratory systems in Jordan have been noted by Nesheiwat 1991 and FAO 1995. Leybourne (1994) has described changes in Bedouin migratory behaviour in Syria.

Goats are more difficult to shepherd than sheep and herds are inclined to scatter unless they are well managed. Consequently, they require much more intensive shepherding. However, goats are widely believed to have a wider daily grazing radius than sheep and this belief, combined with the goat's capacity to consume some domestic waste, means that goats are considered suitable for sedentary management.

Sheep and goats vary in their responses to climatic stress. On the whole, goats are better able to withstand the effects of heat and drought although they are much worse affected by cold and wet than sheep are. The intolerance of goats to cold and wet means that goat populations resident in the villages on the slopes of the Jebel al Arab need good shelter in winter or else must migrate to lower, warmer elevations.

Goats and sheep also demonstrate important differences in productive capabilities.

5.2.3 Differences in productivity between Sheep and Goats

Not only do Syrian Mountain goats reach reproductive maturity several months before Awassi sheep under similar management conditions (Redding 1981:99-100), but the goats also demonstrate a subsequent kidding rate (1.20) which is higher than the lambing rate of sheep (0.80). Although goat and sheep species demonstrate similar breeding frequencies, the principal reason for this discrepancy in productivity lies with the higher incidence of multiple births (twins and triplets) in goats (1981:104).

Table 5.1: Frequencies of multiple births among sheep and goats in the Badia 1993-95

	Total births	Twins	%	Triplets	%
Sheep	366	26	7.1	0	0
Goats	463	119	25.7	15	3.2

(Source IFAD 1995)

The normal period of lactation for Awassi sheep extends for about three months, following lambing in late winter. By contrast, the lactation period of Syrian Mountain goats may extend longer than six months following kidding (Hirsch 1933:57). Studies conducted by the JBRDP of milk yields from commercially producing Awassi ewes estimated an output of about 77kg per ewe annually (Garnet 1995).

Table 5.2: Constitution of sheep and goat milk

Source of milk	Protein %	Fat %	Carbohydrate %
Sheep	6.1	6.8	5.7
Goat	3.3	4.0	4.4

(Source Redding 1981)

No corresponding research was conducted with goats. However, it is widely thought that goats provide, on average, a 50% higher milk yield than sheep over their longer period of lactation (Knoess 1984:7). While the milk of both species is drunk fresh and processed into yoghurt (*laban*), dried yoghurt (*jamidh*) and cheese, sheep milk is favoured for the preparation

of durable clarified butter known as *samn*. This is partly a consequence of the higher fat content of sheep's milk. The nutritional value of sheep and goat milk is summarised in Table. 5.2.

While there exists a considerable market demand for sheep milk in the northern Badia, the same is not true of goat milk. If it is sold at all, goat milk is usually processed first into durable products such as *jamidh* but even so, it commands a lower price than sheep products. Today, while a few flock owners specialise in meat production only, commercial sales of sheep milk have become integral to the production economics of many pastoral households.

In quantitative terms, meat production from sheep and goats is similar. Although Awassi lambs, yearlings and adults tend to be bigger than goats of the same ages (Table 5.3), there seems to be no major difference in dressing percentages (i.e. the meat yield given as a percentage of liveweight).

Table 5.3: Average meat productivity in Awassi sheep and Syrian Mountain goats under extensive management

Age	Male liveweight (kg)	Female Liveweight (kg)	Dressing % (meat yield)
	Sheep		
Birth	4.3	4.0	40.71
1 year	41	30	40.92
2 years	68	40	43.23
	Goat		
Birth	2.1	1.9	40.36
1 year	40	26	41.33
2 years	65	35	43.01

(Source Redding 1981)

However, the meat of the two species can be distinguished in qualitative terms. Differences can in part be attributed to the distribution of fat in the respective animals. While sheep have considerably more fat than goats overall (Redding 1981:159), it tends to be stored discretely in the tail or the rump, while in goats fat is distributed more evenly throughout the body, particularly among the muscle tissues. The two meat products therefore have different flavours and textures. Although both sheep and goats of all ages can be sold commercially, in the mid-1990's the demand for sheep and lamb meat was higher than for goat and this was reflected in market prices.

Sheep and goat species are also distinct in terms of production of animal fibres. In the northern Badia, sheep are sheared annually and, although some wool is used domestically for making blankets or cushions, most fleeces are sold to specialist wool traders. In contrast, no formal markets exist locally for goat hair and this commodity is used almost entirely within the household. The most important domestic product of goat hair are the woven strips (*ashqaq)* required to maintain pastoral tents (*beit sha'ar).*

In summary, meat, milk and fibre production from Badia sheep is more marketable than that from goats. Simultaneously, owing to the specialised feed requirements of the species, sheep producers are relatively more dependent upon the purchase of supplementary feed concentrates

and are thus bound into a monetised system of purchase, production and sales. By contrast, the dietary range of goats gives owners of the species slightly greater flexibility in the purchase of feeds.

Although goat milk has only limited market value, the length of the lactation period means that goat owners are guaranteed access to milk over a considerable part of the year. This can either be drunk fresh or (time and labour allowing) can be processed into durable products for storage. Sheep lactate over a much shorter time period and for their milk to be utilised over a longer period it must be quickly processed, before it spoils, into durable products. This can either be done at a household level or after sale to dairy traders and cheesemakers.

Goats have a higher kidding rate than sheep. Under the same management conditions, goat herds can reasonably be expected to have a higher rate of natural growth than sheep herds (Redding 1981:124). This fact, considered with the versatility of the goat's diet and its general hardiness and tolerance of drought, leads to the conclusion that goat herds are less vulnerable to environmental stresses (or at any rate recover more swiftly after them).

Thus, while goats are generally considered to generate a lower cash income than sheep, they are considered an important source of products for Bedouin household consumption. Furthermore, the practice of keeping mixed sheep/goat herds is also to some extent an insurance policy against extreme conditions and possible heavy livestock losses (Lancaster and Lancaster 1991:130) and an effective way of utilising available forage resources. As such, goats have been described as improving the overall security of mixed herds (Behnke 1980:30).

In the following sections of this chapter, and in the subsequent two chapters, the discussion of the respective roles of sheep and goats will be further developed. The discussion now turns to the structure, organisation and management of contemporary Bedouin herds.

5.3 Badia herd characteristics

An initial wide ranging survey of livestock of owners (n=105) within the JBRDP area recorded 40,749 animals. 37,780 sheep and 2,969 goats (Campbell and Roe 1995). The mean recorded herd size was 388 (std dev 415), with the modal value being 100. The frequency of herd sizes within this sample is illustrated in Figure 5.1.

According to informants, animals were shepherded in herds averaging 325 animals. Most owners of large livestock holdings broke down their herds into smaller units for ease of management. This was particularly true when more than 500 animals were owned. While the average size of herds under sedentary management was 169, mobile herds were larger, averaging 528 animals ($P<0.01$).

While nearly all herds (98%) within the sample group included sheep, only 72% of herds included goats.

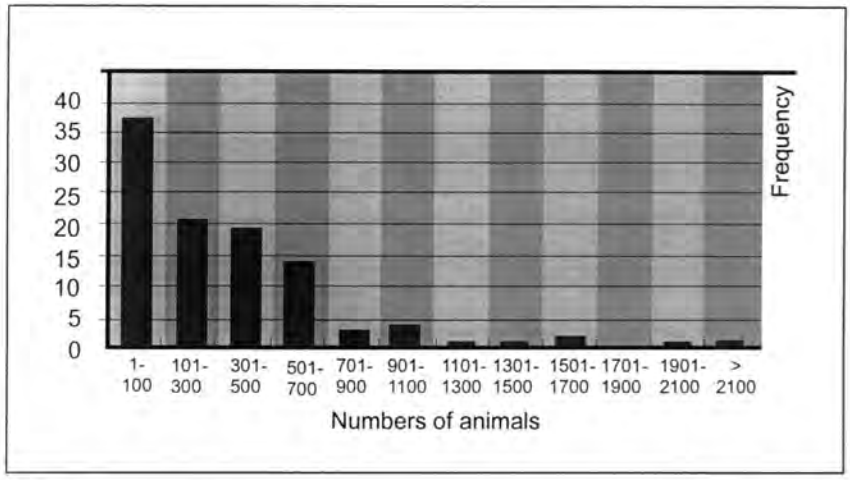

Figure 5.1: Frequency of herd sizes within sample (Source: Campbell and Roe 1995)

The sheep to goat ratio observed within this sample group was approximately 13:1. However, among the larger, mobile herds, this ratio increased to 25:1. The ratio of sheep to goats decreased to 7:1 in sedentary herds.

For practical reasons, investigations of market oriented Badia livestock production was continued with a reduced sample group (n=23)[13], drawn from within the original sample group. It should, however, be recognised that this reduced sample group did not exactly reflect the same distribution of herds by size as the original (larger) sample.

The mean herd size of the n=23 group was 419 animals against the mean of 388 recorded in the wider survey. However, this difference was not significant (P>0.05) and the subsequent use of the smaller group can be justified[14].

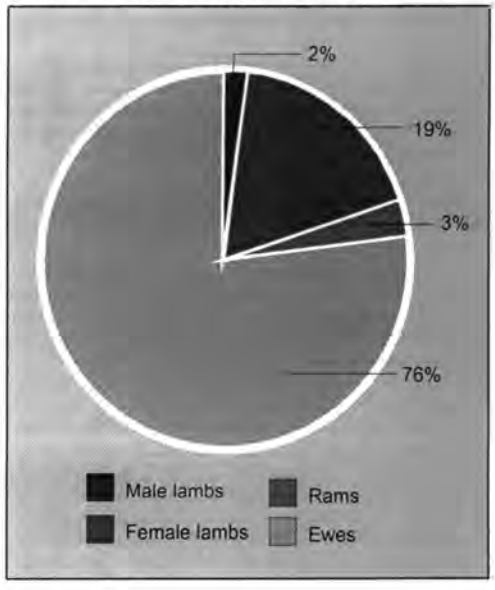

Figure 5.2: Average structure of sheep herds

[13] A description of the selection of this group is given in section 3.3.

[14] Although the original survey encompassed a much larger sample group, this sample group was not itself randomly selected. Consequently, it cannot be considered to provide an entirely accurate baseline. Indeed, a subsequent major survey of livestock production in the northern Badia (IFAD 1995), with a wide sample group[14] (n=313) recorded a mean herd size of 461. It is therefore possible that the true mean herd size for the area falls somewhere between 388 and 461. Moreover, the sheep to goat ratio of the second phase sample group (15:1) is close to the mean of 13:1 recorded in for the (n=105) sample. Finally, the proportion of herds under transhumant or mobile management was identical in both sample groups (61%).

Flock structures (sheep only) were recorded prior to lambing. Flocks demonstrated a ratio of 1 ram to every 29 breeding ewes.

This is very close to the minimum required for herd security under extensive management systems (Redding 1981:288) and is perhaps a reflection of the availability and use of feed supplements, which characterised herd management at this time. A low ratio of rams to ewes may also indicate flocks configured for maximum profitability.

An inventory of animals (Table 5.4) was maintained between July 1995 and July 1996 to follow the evolution of herds over this period. The inventory of sheep was updated monthly and thus only records observable changes from month to month. Animals which were born and died before being recorded or were bought and quickly sold again (several herd-owners traded in sheep) have not been taken into account. The goat population was only enumerated at the start and conclusion of the study period.

Table 5.4: Herd inventories July 1995 - July 1996

Herd	Inv 7/95 Sheep	Inv 7/95 Goats	Births Sheep	Sales Sheep	Deaths Sheep	Inv 7/96 Sheep	Inv 7/96 Goats	Changes
A	264	10	152	150	34	232	13	-29
B	1345	8	711	501	60	1495	11	153
C	295	10	142	388	49	0	0	-305
D	566	12	396	150	73	739	3	164
E	402	3	260	238	46	378	5	-22
F	512	40	474	370	100	516	32	-4
G	353	23	246	84	41	474	29	127
H	170	22	105	59	14	202	16	26
I	451	35	422	313	28	532	3	49
J	45	2	32	21	25	31	5	-11
K	311	20	185	158	28	310	18	-3
L	41	40	28	14	7	48	22	-11
M	348	14	207	64	42	449	37	124
N	414	23	330	217	53	474	28	65
O	132	26	52	143	41	0	16	-142
P	360	20	270	83	57	490	17	127
Q	119	30	75	35	34	125	46	22
R	532	12	347	138	35	706	18	180
S	978	140	568	494	107	945	60	-113
T	460	47	343	320	62	421	53	-33
U	515	0	333	67	49	732	2	219
V	250	12	157	42	103	262	14	14
W	188	28	105	166	22	105	31	-80
Total	9051	577	5940	4215	1110	9666	479	517
Mean (std.dev.)	394 (291)	25 (28)	258 (177)	183 147)	48 (26)	420 (350)	20 (17)	22 (118)
Mode	-	12	105	150	134	-	3	127

The overall dynamic displayed by herds during the period of monitoring was marginally positive (5%). However, this figure was largely the result of two herd-owners abandoning livestock production during the final month of the study. Herd owners *C* and *O* sold their flocks in July 1996, on the strength of rumours circulating that the price of supplementary feeds would rise the following month. Herd owner *O* decided to keep a small herd of goats for household use while *C* sold all his animals.

If these two herds are excluded, the overall trend displayed by the remaining 21 herds is a growth of about 11%.

The lambing period (including second lambings) extended over several months from October to July, although the peak of births occurred during February. The lambing rate for the herds in the sample group was recorded at 0.86 per ewe. Production of lambs to the point of sale was 0.6 per ewe.

Herd Dynamics

On one occasion, owner *A*, sensing my growing confusion and frustration in attempts to ennumerate his complex sheep production system, tried to simplify things for me by explaining:

"Look I don't know about other people but I can tell you about my herd. I sell 150 head annually to buy feeds, and average 200 births. Half of these are male and I sell them all, while of the other hundred females I sell half, leaving me with 50 additional animals a year".

In view of the production data I subsequently recorded from his flock, this evaluation may have been a little optimistic, but it reflects the ideology of capital growth that underlies herd management.

Milking of sheep flocks for sale of milk began in late March or early April, after the majority of lambs had been weaned, and continued until early July, by which time yields had depreciated.

Producers aimed to sell all male lambs except for a limited number of replacement rams and *mar'iyya* castrates. Furthermore, owners considered it desirable to keep all female lambs in order to increase the overall flock size with each successive generation. However, in reality a proportion of females were nearly always sold in order to meet various production costs and domestic expenses.

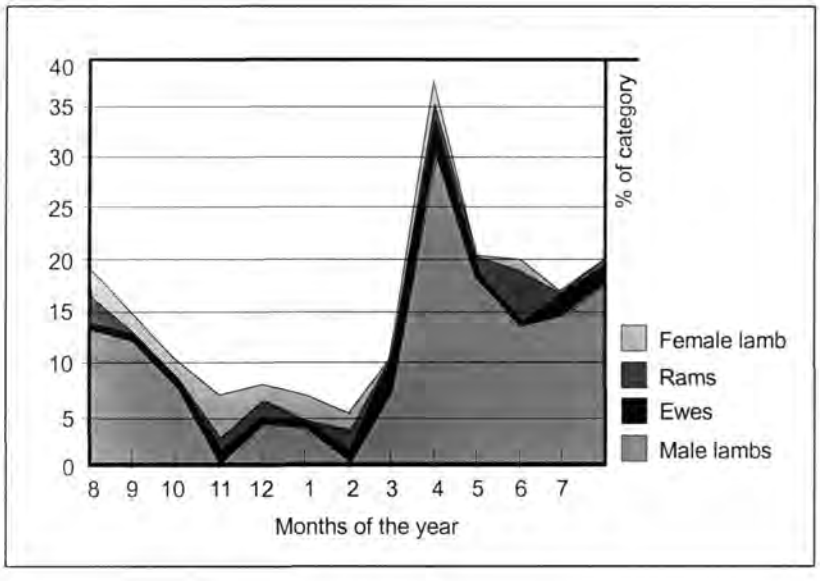

Figure 5.3: Monthly sales from herds. (Source: Campbell 1996)

Ewes, rams and young females had consistently low levels of sale out of flocks. However, it may be observed from Figure 5.3 that the highest levels of sales from these categories coincided with the lowest levels of sales of young males. It might be speculated that herd-owners were compelled to sell from the former categories when there were insufficient young males remaining to sell. Sales of young males peak in April coinciding with weaning, although after a further two months sales begin to rise again. The sale of lambs immediately upon weaning is both a response to the market demand for lambs of this size, but may also be a strategy to minimise flock feed expenditures. However, it was common for owners to hold back some lambs for several weeks for further fattening in order to secure the highest prices at sale. A programme of lamb weighings established the average rate of growth for lambs among Badia flocks (Figure 5.4).

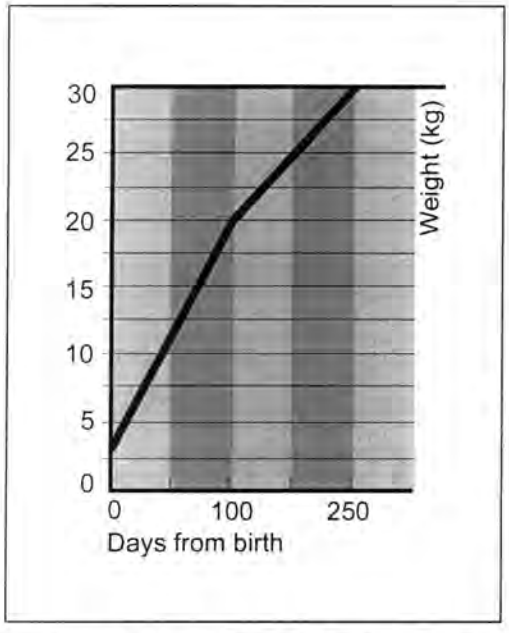

Figure 5.4: Rate of growth in lambs in Badia herds until 30 kg (Source: Campbell 1996)

Lambs fattened to 25-30 kg are favoured for profitable sale *Qaym* ('standing' i.e. by liveweight). To reach this weight requires, on average, a further 2-3 months feeding after weaning. Consequently, it is likely that rising sales of animals in the latter two months of the 12-month study (and recorded sales in the first two months) was aimed at supplying this market for fattened lambs. During the autumn and early winter, the number of male lambs available for sale decreases and it is during this period that sales of animals in other categories become important as sources of income.

5.4 Livestock production economics

Principal investigations into the economics of livestock production were conducted during the year 1995-1996. While the data describes expenditures upon a mixed population of sheep (94%) and goats (6%), the value of outputs have been calculated for sheep alone[15]. Total flock output has been quantified at point of sale, i.e. after domestic consumption, which is described in the following chapter.

[15] The exclusion of goats at this stage of research was dictated by the JBRDP research focus upon livestock production for market supply. However, in practice the higher productivity that might be expected from goats (section 5.2.3) would not be translated into higher cash values owing to the lower prices of goat products and the more limited extent to which these commodities are sold at markets.

5.4.1 Production inputs

The average production cost/head/year among the 23 households during the period July 1995-August 1996 was 48.49JD. These production costs were broken down as described in Table 5.5.

Table 5.5: Recorded annual management expenditures per head[16]

Expenditures	Value (JD)
Feeds	32.77
Grazing contracts	6.27
Transport expenses	5.11
Labour costs	3.62
Veterinary expenses	0.36
Water costs	0.36
Total	48.49

These production expenditures did not occur uniformly throughout the year, but showed considerable variation over the period of the study, as illustrated in Figure 5.5.

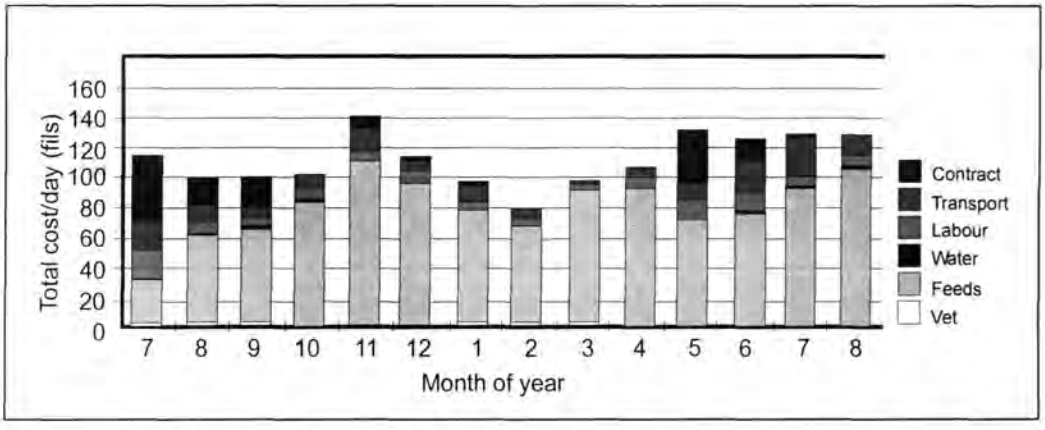

Figure 5.5: Livestock management expenditures upon 23 mixed sheep/goat herds (1995-1996)

Feed purchases

According to the results described in Figure 5.5, the purchase of supplementary feeds accounts for the largest portion of expenditure in livestock production (approximately 70% of the total). The principal feed-types employed by Bedouin herd owners were whole barley, wheatbran, and straw. These were also supplemented by range of other feeds, including *berseem* (Egyptian clover), dry bread and various agricultural by-products (Figure 5.6). Both barley and wheatbran were state subsidised (at this time they were available at 82 and 45 JD/tonne respectively - about 15% below free market prices) and distributed from special centres managed by the MoS (Ministry of Supply). Livestock owners within the study area most commonly used three distribution centres. These were sited at Azraq, Safawi (H5) and Ruweishid (H4).

[16] Figures 'per head' include costings for lambs at 0.5 the rates given for mature animals

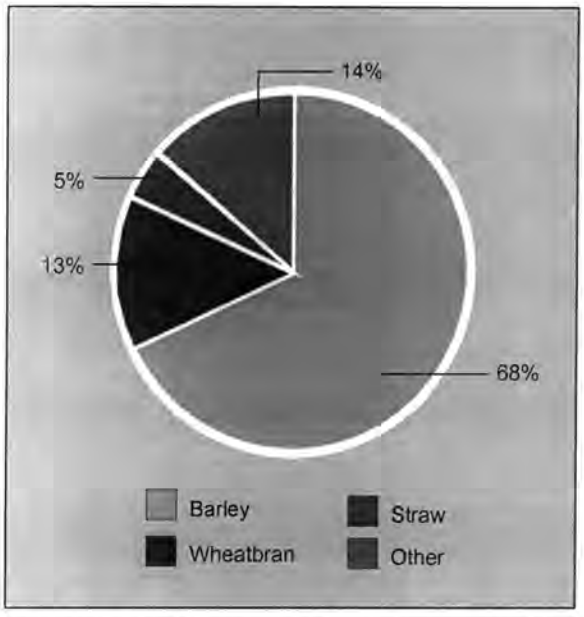

Figure 5.6: Breakdown of expenditures upon feeds for 23 mixed sheep/goat herds (1995-1996)

Each livestock owner was required to register his (or her) feed ration book with a distribution centre, although it was possible for herd-owners to temporarily re-register at an alternative distribution centre if they chose to migrate away from their usual area of residence. These distribution depots were generally open two mornings each week when supplies of barley and wheatbran arrived. On delivery mornings, the forecourts of these depots were filled with waiting Bedouin vehicles, some of which had arrived the previous evening. After livestock owners had secured the necessary stamp from the MoS official, their quota of feeds was loaded from the delivery lorry directly onto their trucks.

Two or three times during the year shortages in subsidised barley and wheatbran feeds occurred nationally for several weeks at a time. The possibility of these shortages encouraged stockpiling by individual owners and kindled a black market supplied by individuals who had access to quantities of feed surplus to their own herd requirements.

The official MoA quota amounted to 0.5kg/head/animal/day for each small ruminant owned. However, many livestock owners seemed to be offering their animals more than this quantity daily. Investigation into supplementary feed use in 1995 among 105 sample herds revealed a rate of 1.22 kg/head/day. Barley and wheatbran was used at an average ratio of 3:1 (Campbell and Roe 1995). Continuing studies of supplementary feed use conducted between July 1995 and August 1996 revised earlier calculations to indicate use at a daily rate of 1.02 kg/head/daily. Calculations have suggested that this level of 'supplementary' feeding would meet a large part of the nutritional requirements of a ewe at maintenance, i.e. other than during pregnancy or lactation (Campbell and Roe 1995).

The purchase of alternative feeds on the free market was relatively expensive for herders and thus were mainly restricted to feeds of special nutritional importance (such as green *berseem* as a supplement for pregnant and lactating ewes), or else were purchased at advantageous prices as a result of a special socio-economic relationship between herd-owners and supplier[17]. However, during periods of feed shortages many livestock owners (Table 5.6) were compelled to buy feeds at free market prices.

Figure 5.5 illustrates that only at one point, right at the start of the study period did feed account for less than half of total livestock expenditure (at approximately 30 fils/head/day). This can be in part explained by the excellent rains[18] which fell over much of the northern Badia area during the winter of 1994-1995 and by the abundant grazing that followed in spring 1995. Some livestock managers were able to continue exploiting pockets of grazing until mid summer.

It was not only rangeland areas that benefited from excellent rains over the previous winter season. 1995 proved a very successful year for unirrigated barley agriculture throughout northern Jordan and after the harvest in June, many plots of land became available for grazing under contractual arrangement with the owner. Consequently, the return to full use of the relatively costly supplementary feeds was in some cases delayed until late September 1995. Steadily increasing feed expenditure through the autumn peaked in November at over 100 fils/head/day (Figure 5.5).

From November 1995 to February 1996, feeds expenditure decreased, reflecting some growth of annual grasses following early rainfall over Safawi (H5) and Ruweishid (H4), or perhaps reflecting expectation of such a growth. However, Badia pastures were generally poor during 1996 and any grazing short-lived. March and April, usually peak grazing months, saw feed expenditures rising back to 90 fils/head/day (Figure 5.5).

The subsequent reduction in feed expenditures during May and June can be explained by the seasonal availability of agricultural residues for grazing by herds, but it also coincides with a period of feed shortages when many owners were turned away from distribution depots with less than their usual quotas. In July 1996, feed expenditure was almost double what it had been in the same month of the previous year. This is probably in part due to the paucity of natural forage compared with 1995, although the circulation of rumours about the imminent increase in feed prices might also have prompted stockpiling.

Agricultural residue grazing

The traditional Ahl al Jebel practice of agricultural residue grazing remains an important part of the contemporary production system during the summer months (Table 5.6), although this transaction between agriculturists and herders has, like many other aspects of the pastoral economy, become largely monetarised.

Herd owners generally favour cultivating long-term relationships with land-owners in order to return to the same grazing areas regularly. The benefits of establishing long-term relationships may include lower rental rates, credit or delayed payment and possibly favourable terms for access to farm water sources. However, a certain amount of 'shopping around' does occur annually as livestock owners seek the best grazing deals.

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[17] See section 7.10 for discussion of the role of social relationships in provisioning herds
[18] See Figure 4.2

Grazing contracts between herd-owners and land-owners grant the former grazing access to a specified area of land. The negotiated rental fee for an area will reflect the quality of the residues remaining upon it. Thus, during spring and summer 1996 the cost of contracted grazing of barley residues varied between 2.90 JD/*dunnam* for residues at Umm al Quttayn to 5.77 JD/*dunnam* for much better residues in the Irbid area of northwestern Jordan.

While some grazing contracts are negotiated between sedentary herd-owners and neighbours within the same village, most residue grazing involves a migration of herds (and often households) to a new area.

The incidence of residue grazing is clearly linked to the annual harvest in June, and the duration of this resource is linked to the quality of the harvest. However, following poor winter rains (such as 1995-1996), land-owners may decide to rent out fields for the grazing of immature barley rather than see the crop desiccated by the sun. For this reason, expenditure upon grazing contracts during 1996 peaked early in May and did not endure long (Figure 5.5). The frequency of grazing contracts negotiated by the 23 households of the *A-W* study group is described in Figure 5.7.

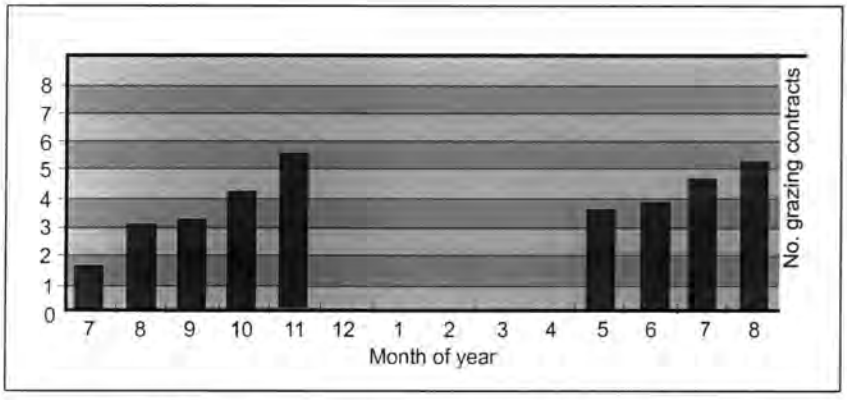

Figure 5.7: The frequency of grazing contracts July 1995 -August 1996

Opportunistic barley cultivation

There exists a strong historical precedent for barley cultivation among Ahl al Jebel pastoralists (section 4.2.4). In 1995, approximately a third of herd-owning households within the *A-W* study group reported sowing barley for the purpose of providing livestock grazing (Table 5.6).

While two or three of the fully sedentary households in the study group reported sowing barley annually, others explained that they did not sow every year and instead waited to see what the first autumn rains were like before making the decision to sow or not. While the act of sowing itself required little effort (this was generally done by hand broadcasting), inputs into land preparation were much higher (including the cost of tractor hire). Hire of a tractor to plough an

area of 20 dunnams[19] would cost a household between 30-50 JD depending on the distance the tractor would have to travel and difficulty of the ploughing.

Table 5.6: Reported strategies for the feeding of livestock (1995-996)

Herd	Straw & other feeds	Crop residue hire	Barley cultivation
A			
B			
C		✓	
D	✓	✓	✓
E			✓
F		✓	
G	✓		✓
H			
I	✓	✓	
J		✓	✓
K	✓		
L			✓
M	✓	✓	
N			
O	✓	✓	
P			
Q		✓	✓
R	✓		
S	✓		
T	✓		
U		✓	
V		✓	
W	✓	✓	✓
Total	10	11	7

The seed used in broadcasting was ordinary (livestock feed) barley grain. Several informants among the Ahl al Jebel reported that a 50kg sack of grain would suffice for sowing 5 dunnams. This estimate is consistent with other available data (Palmer 1998).

Consequently, the total monetary cost of sowing 20 dunnams would be (7 JD x 4 + 30) = 58 JD. Given that in 1995 barley residues could be rented at Umm al Quttayn for 2.9 JD/dunnam (i.e. 58 JD for 20 dunnams), the monetary incentives for self-cultivation rather than hire were clearly marginal[20].

As yet, there exists no accurate data on dry barley yields in the JBRDP area. However, research has been undertaken by ICARDA (International Centre for Agricultural Research in Dry Areas) of Bedouin farming in comparable low rainfall areas of the Syrian Badia. Studies indicate average yields of about 50kg/*dunnam* (Thompson *et al* 1988:37). This data is also consistent with findings of research in northern Jordan (Palmer1998). My own informants among the Ahl al Jebel indicated a good yield for the area would be about a sack of grain (50kg) per *dunnam*.

Consequently, in a season of high yield, one sack of livestock feed could be multiplied fivefold[21] through barley agriculture.

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[19] Although no data on the area of barley cultivated was collected in 1995-1996, 20-35 *dunnams* appeared to be a typical plot for livestock managing households in the study area. Nesheiwat (1991) provides supporting evidence for this estimate. Contemporary opportunistic cultivation among the Ahl al Jebel is more extensive than in previous generations owing to the introduction of tractors and mechanized ploughing .

[20] This estimate does not take account of the value of any barley grain harvested because small plots are rarely harvested.

[21] Including the cost of tractor hire means that each sack of barley sown will yield about four and a half sacks worth in return.

Given the marginal conditions of the study area, the Ahl al Jebel report that a 'good crop' occurs, on average, one year in every five, with the crop failing to cover costs three years out of the five. Thus, it is only the household's experience and good judgement in knowing which years to sow that keeps barley cultivation a worthwhile activity.

Pastoral households in the Badia almost never harvested barley but grazed it where it stood. For this reason, livestock herders tend to view opportunistic barley cultivation as an extension of livestock production activities rather than as a diversification into cereal agriculture.

Transport

Ownership of motor vehicles has been widespread among livestock producers in the northeastern Badia since the late 1970's. However, herd-owners C, H, I, J and V from the sample group of 23 herd-owners were without privately owned vehicles during the period of the study. Details of vehicle ownership among the study group is given in (Table 5.7)

Table 5.7: Vehicle ownership among herd managers 1995-1996

Type of vehicle	Households
Half tonne truck	B, D, F, G, K, L, M, N, O, T, U, W
Ten tonne truck	A, B, E, N, P, Q, R, S, U
Water tanker	B, F, M, T
Tractor	D, G

The most widespread type of motor vehicle associated with contemporary Bedouin herding in the Badia is the half tonne capacity truck. Larger ten tonne capacity trucks are also common and much more useful owing to their greater load capacity. Some of the owners of the largest herds have separate tanker trucks. All vehicles are generally very old and in mixed states of repair (Plate 6)

Trucks have become essential to the livestock production systems of the Badia. They are principally used to supply herds with feed and water and also to liase between rangeland herding camps and markets for the purchase and sale of commodities.

Herd managers face considerable logistical problems of supply. Under contemporary management, each head of livestock receives about a kilogram of feed daily. If the herd is not within walking distance of a water source, approximately 3kg of water must be added daily. Consequently, a herd of 400 animals managed at a rangeland encampment may require 48 tonnes of supplies a month, involving regular (and frequently multi-purpose) journeys between various locations (village house, tent, feed supply depot, well, market place and herd). For this reason, the truck is the focal point of many of the daily activities of the Badia household and it is almost in constant daily operation. The breakdown of a truck and the subsequent disruption to a tight schedule of supply may have very adverse results for a herd managed in a remote locality.

Most herd-owners who do not have their own vehicle are sedentary and have access to secure water sources. Even so, these owners arranged for the delivery of their supplementary feeds by a hired truck.

The production costs of transport (considered in Figure 5.5) are the direct costs of fuel, vehicle maintenance and vehicle hire. These costs were found to amount to 11% of total annual management expenditure. Little variation was found in the transport budget through the year owing to the herd's fairly constant requirement for feed and water deliveries. However, the small increase in expenditure during the summer of 1996 probably reflects the growing water requirements of the herd in the summer heat.

Water

Most herd managers acquire water from government wells in rangeland areas where it is freely available. However, some sedentary livestock owners choose instead to water their livestock using the domestic household water supply.

The expenditures recorded in Figure 5.5 are confined to privately purchased water (most commonly from agricultural wells) and thus the graphical representation of costs is misleading, since it takes no account of costs incurred on domestic water bills. Although water from state-owned wells is freely available for livestock producers, some choose to pay for water from agricultural wells, if these are conveniently located. Figure 5.5 demonstrates that coincident with the 1995-1996 rains and accumulations of surface water in pools, expenditure on the purchase of water from private sources decreased to nil.

Labour

Expenditure on hired labour remained fairly constant throughout the year. All herd-owners except *C, J, L, R, Q,* and *S* used hired shepherds to manage their sheep on a daily basis. These shepherds were mostly Syrian in origin and usually hired on a six-month renewable contract. Remuneration for services was made in the form of daily meals, a small clothing allowance and a salary of 90-130 JD/month.

Hired shepherds generally remained in remote rangeland areas with their large herds for the entire period of their service, receiving daily visits from the herd-owner who delivered feed and water supplies to the herd (as well as the shepherd's own provisions) by truck.

Additionally, most herd-owners hired wool shearers some time during the months of April or May, leading to a slight increase in labour expenditure (0.3 JD/sheep). Livestock-owner *B* also hired a driver.

Veterinary treatments

Veterinary medicines were widely, but not universally, employed among livestock-owners of the study group. While disease and illness in herds were perceived as major problems by livestock-owners, confidence in the government veterinary services was low and logistical problems existed in securing diagnosis and treatment (which generally entailed transporting animals to the veterinary clinic). Consequently, active attempts to secure veterinary treatment were generally only made when particularly valuable animals, such as adult rams or pregnant ewes, had life threatening conditions.

Figure 5.5 demonstrates that owner expenditure on veterinary treatments and drugs remained low throughout the year. However, the data on veterinary expenditures during 1995-1996 may not be representative, since owner expenditures were probably influenced by the activities of JBRDP livestock programme, which included a veterinary advisory service.

5.4.2 Production outputs

The average income per head for flocks under Bedouin management during the period July 1995 - August 1996 amounted to 61.99 JD. This total is the sum of the components listed in Table 5.8.

Table 5.8: Output per head

Output	Value (JD)
Sale of lambs	42.00
Milk production	19.64
Sale of ewes	16.10
Sale of Rams	0.33
Sale of yearlings	4.73
Wool sales from ewes	1.90
Wool sales from rams and yearlings	0.55
Total output per ewe	85.25
Total output per head	61.99.

(Source: Oakeley 1997)

These calculations indicate that, broadly speaking; meat production accounts for about three-quarters of the cash income from flocks, while milk and wool production accounts for the remaining quarter (Figure 5.8).

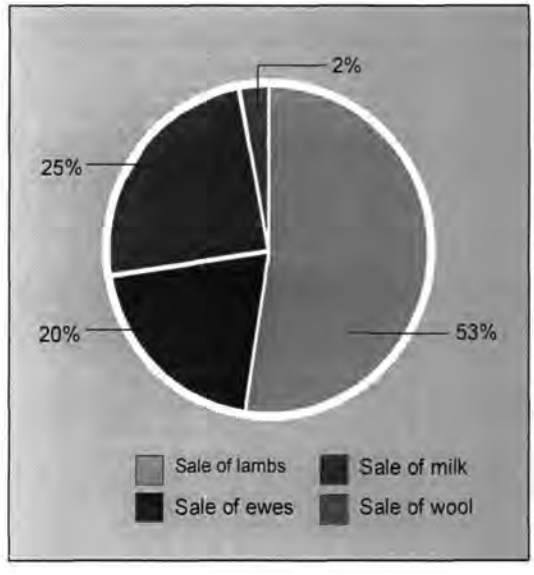

Figure 5.8: Individual sheep products as a proportion of total flock income

Sales of lambs, yearlings and adults

As illustrated in Figure 5.3, sales of animals occurred throughout the year, with distinct peaks of sales coinciding with the weaning of lambs and the fattening of lambs to 20-30 kg. Sales of animals of other categories were fairly constant throughout the year.

Sales generally occurred in one of two distinct ways. During periods of peak lamb sales or at times of high market demand (such as prior to the Islamic *Eid al Adha)*, livestock traders visited producer villages and encampments in order to negotiate bulk sales with owners. Alternatively, owners sometimes carried their own animals to markets[22] and sought to sell them there. Of the two marketing methods, owners generally prefer the former, as it usually gave sellers a better negotiating position on price and transfered the cost and risk of transporting animals to the buyer (Al-Oun 1997).

Sales of ewes, rams and female yearlings were generally prompted by immediate cash needs, which often only required the sale of individual or small numbers of animals. Thus, sales in these categories were nearly always undertaken by livestock producers themselves (Al-Oun, pers. comm). When owners took their animals to market, they did so only after lengthy inquiries to establish where the best market prices were to be found. Even so, they sometimes chose not to sell their animals on the first visit if they did not find market conditions favourable for the sale.

Milk sales

While the practice of commercial milking was widespread among livestock-owning households in the eastern Badia, it was not universal. Of the *A-W* herds, households *F*, *J* and *L* did not sell milk commercially although *J* did sell a small quantity of valued added milk products locally. The principal reasons given for not milking commercially were (in the case of small herds) the insufficiency of the milk supply remaining after domestic demand had been met and the unwillingness of traders to deal with very small quantities of milk. In the case of large herds such as *F*, the insufficiency of domestic female labour was thought to make commercial milking impracticable and it was considered more cost effective to allow lambs to suckle so as to enhance lamb production.

In the northern Badia, milk was most frequently sold fresh, owing to the existence of markets for unprocessed milk and the high labour demands of processing (Papadopulos 1999). The processing of milk products domestically usually occured for household consumption and will be discussed in the Chapter 6.

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[22] The most commonly used markets by producers from within the area of the JBRDP are those at Mafraq, Azraq and Ruweishid (H4).

The principal commercial product of sheep's milk is white cheese. This is sold both on the national market and exported to neighbouring Arab countries (Oakeley 1997:49).

Sales of fresh milk from Bedouin herds were processed into this cheese by specialist cheesemakers. Milk needed to be processed quickly before it spoiled, and was done in one of two ways. First, the milk could be sold to milk merchants representing dairy companies based in the towns of Irbid, Zarqa or Khaldieh. These merchants then transported milk back daily to the company for central processing. This system was prevalent in the villages of the northwest and areas well connected by roads.

Alternatively, cheesemakers and their hired labourers could themselves migrate out to the rangelands for the duration of the milking season, living in tents close to the Bedouin encampments. Milk was then processed on-site into durable products. This system was more common in the remote rangeland areas of the eastern Badia, where large herds gather during the milking season. Each cheesemaker had the productive capacity to accept the output of a certain number of ewes daily, perhaps equal to the population of five or six medium sized herds. The very largest herding encampments (such as that surrounding the household of herd owner *T*) alone commanded the full-time services of an attendant cheesemaker who migrated with the rest of the encampment. This put the producers in a strong negotiating position with the cheesemaker.

Milking Sheep

When sheep flocks were to be milked, ewes were separated out and formed into two parallel lines with the sheep facing each other. The two lines were then bound together by a *rabel* (specially looped rope) which looped around the alternately heads of the ewes in the two facing lines.

When the sheep had been secured in this manner, women milkers crouched behind the ewes and milked into a bucket or plastic vessel. After each ewe had been milked, the woman moved down the line to the next sheep. Milk was finally collected into large churns for storage until arrival of the milk merchant or some part of it may have been carried to the household for immediate processing.

In most cases, producers had a fairly loose relationship with cheesemakers, as they were not contractually bound and could sell as much or as little milk as was available each day. It is reported by Papadopulos (1999) that although payments were normally made weekly, sometimes producers borrowed money in advance of sales. This credit service was offered by cheesemakers to ensure producer loyalty, particularly as competition for milk could become quite fierce.

Bedouin producers also seemed to favour establishing long-term relationships with cheesemakers and return to the same cheesemaker annually (unless dissatisfied with some aspect of the relationship). Sometimes a necessary migratory move could compel a household to change their cheesemaker mid-way through the milking season, which could be disadvantageous.

Prices for milk were fairly flexible and were open to limited negotiation between producers and cheesemakers. During the mid-1990's, prices varied between 0.27 JD and 0.36 JD/kg.

Generally, prices were highest at the start of the milking season and then decreased as the immediate demand for milk diminished. The price offered for milk was also determined by the geographic locality of the herds, as inaccessible locations increased the overheads of cheesemakers.

Fibre sales

The majority of livestock producers, except those with very small herds, engaged professional shearers to shear their flocks. This usually happend during the month of May.

Wool products fall into two categories: the fleeces of adult ewes and the *qisab* of female yearlings. While fleeces of adults have commercial value, the *qisab* of yearlings was used mainly domestically.

Herd-owners favoured a secure, long-term relationship with wool traders. In such a relationship, it was common for traders to visit flocks some weeks prior to shearing to inspect the condition of the flock and offer a price to the owner for his fleeces. The owner then accepted or rejected the offer (although rejection could damage his future relationship with the trader). Prices were, however, fairly standard and it is unusual for a trader to alienate his supplier with too low an offer.

As an alternative marketing option or if a prior offer from a trader has been rejected, producers could personally deliver their fleeces by truck to markets for sale. However, this was a high-risk option, as it put the owner in a poor negotiating position with the traders. It was known that owners only had a limited period in which to secure their sales before the shearing (and marketing) season ended.

Apart from the quality of fleeces, the quantity that a producer could offer also influenced the sale price. Fleeces are sold *per capita* rather than by weight and in the mid-1990's fetched an average of 1.9 JD (Al Tabini 1996). Wool production from the Badia supplies an export market to Turkey.

Table 5.9: Gross margin calculations for a north east Badia flock (July 1995- August 1996)

	Value (JD)
Total production cost per head	48.49
Total income per head	61.99
Gross margin per head	13.50

The gross margin calculation (Table 5.9) provides a useful indicator of annual household income from flocks on a per-sheep basis. However, it should be remembered that the above figure represents an average and encompasses a wide range of individual household level-livestock management systems, some of which are more profitable than the average, others less.

5.5 Domestic cashflows and seasonality

Discussions with heads of household among the *A-W* study group indicated that cash availability in Bedouin households fluctuated widely through the annual cycle. All herd-owners described the winter months as a period of financial hardship. Figure 5.9 illustrates cash availability on a monthly basis[23] from the four case study households that were selected for residential work in Phase 3 of the research.

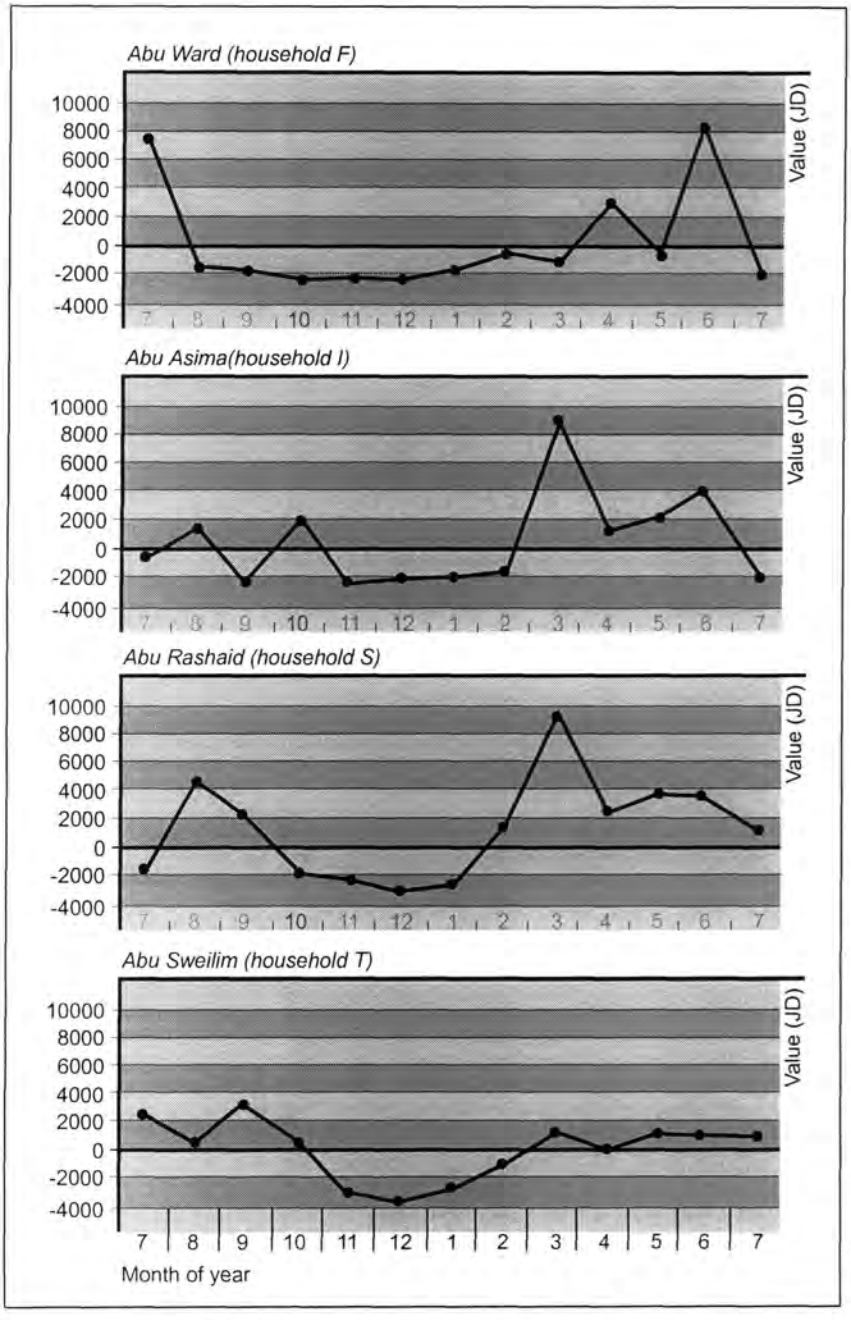

Figure 5.9: Domestic cashflows from households F, I,S and T (1995-1996)

The distinctive shape of each of the four cash flows demonstrates an acute problem of pastoral households in the Badia, namely that during the winter months, when sheep herds were particularly expensive to maintain (Figure 5.5), the households received comparatively little livestock income. Although households had the option of saving cash against the period of winter deficit, most herd-owners expressed a preference for spending revenues as soon as they received them, to buy and stockpile feeds.

[23] The model used to project household cashflows takes account of all livestock revenues and expenditures on a monthly basis as well as household expenditure on purchased foodstuffs. It also takes account of stable non-livestock incomes such as monthly salaries, but not seasonal incomes such as agricultural harvests since no data is available on the distribution of these incomes through the year.

The principal explanation offered for this was the concern about the possibility of future feed shortages, or a rise in prices.

For this reason, even though herds were generally managed at an overall profit, many pastoral households annually underwent considerable austerity for several months.

It is also for this reason that households with profitable herds often still needed to borrow money or accept credit from kinsmen, milk merchants or livestock traders. Not only does this distinctive annual cashflow contribute to our understanding of subsistence production in contemporary pastoral households (section 6.6) but it also provides insights into the complex social and economic interdependencies which may exist between Bedouin households and kinship groups (section 7.2). In many households, supplementary non-livestock incomes are of particular importance in helping to smooth domestic cashflows.

5.6 Livestock and non-livestock incomes

Table 5.10: Non-livestock incomes among the A-W group of households (1995-1996)

Herd	Residence system	A (JD)	W (JD)	T (JD)	R (JD)	P (JD)	Total monthly value (JD)	Herd size (7/95)
A	M	0	0	55	0	0	55	274
B	M	0	0	90	0	84	174	1353
C	S	0	95	0	0	27	122	305
D	M	0	264	0	62	0	326	578
E	M	0	0	0	0	0	0	405
F	M	41	0	0	0	86	127	552
G	S	46	0	33	88	0	167	376
H	S	25	0	0	0	65	90	192
I	S	25	85	0	0	0	110	486
J	S	22	0	0	0	65	87	47
K	S	11	205	0	0	0	216	331
L	S	0	340	0	0	0	340	81
M	S	0	138	0	0	0	138	362
N	M	0	0	25	0	0	25	437
O	M	28	0	0	25	0	53	158
P	M	0	0	0	0	0	0	380
Q	M	0	0	0	0	0	0	149
R	M	0	0	0	0	0	0	544
S	M	25	130	0	0	0	155	1118
T	M	35	0	0	0	0	35	507
U	M	0	130	40	0	0	170	515
V	M	0	0	0	0	0	0	262
W	S	35	110	0	0	75	220	216
Total	0	293	1497	243	175	402	2610	0
Mean (std. dev)	0	29.3 (10)	166 (86)	48 (25.6)	58 (31)	67 (21.5)	113 (99)	0

A=Agricultural W=Waged incomes *T=Trading (mainly livestock)* *R=Rent (land or property)* *P=Pension M=Mobile* *S=Sedentary*

Of the 23 livestock-herding households in the *A-W* study group, 19 reported receiving incomes from sources other than livestock. These income sources have been tabulated along with their respective monthly values in Table 5.10. However, livestock constituted the largest source of income for the group as a whole (Figure 5.10), which reflects the selection criteria of the *A-W* group.

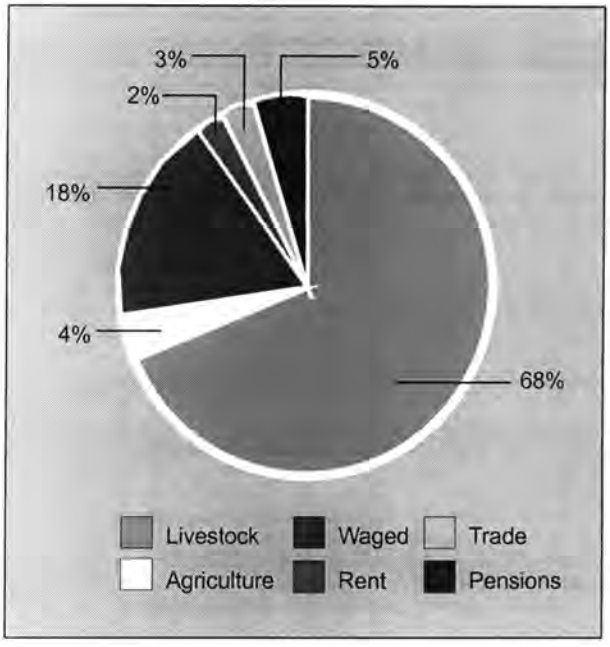

Figure 5.10: Breakdown of total household income (1995-1996) among the A-W households

While non-livestock incomes to mobile households averaged 80JD/month, those to sedentary households averaged 165J/D month ($P<0.05$). However, testing the relationship between herd size and the value of non-livestock incomes did not reveal a strong correlation ($r=0.13$).

The higher value of non-livestock incomes amongst sedentary households indicates greater diversity in livelihoods than among mobile households. However, as Table 5.10 makes clear, pastoral mobility does not exclude the possibility of additional non-livestock incomes. Individual households may develop distinctive forms of residential organisation (section 6.2) or soco-economic relationships (7.2.1) to overcome the problems of combining non-livestock economic activities with mobile livestock herding. However, the five households from the *A-W* group which were solely dependent upon livestock incomes were all mobile.

The absence of a strong correlation between livestock ownership and non-livestock incomes suggests complexity in the way that livelihoods were constructed. Large herds were not necessarily the result of productive specialisation, nor do relatively small livestock holdings indicate access to large non-livestock incomes. The data of Table 5.10 further indicates that some households in receipt of relatively high non-livestock incomes chose to simultaneously maintain herds. These multiple-income strategies of Badia households may reflect livelihood security concerns and attempts to avert risk through economic diversification. However, before attributing the economic behaviour of livestock managers to security, it is important to consider that the herds of the of the *A-W* sheep population were not structured for security but rather for productivity (section 5.3).

The seasonal importance of additional sources of income to herding households during the winter months has already been noted (section 5.6). To further investigate the role of livestock in Badia household economies it is useful to contextualise the relative value of livestock incomes.

5.6.1 Livestock incomes in context

During the early to mid-1990's, the raising and sale of sheep under normal management conditions brought livestock-owners and investors an income in addition to serving domestic consumption and subsistence functions (section 6.5). Based on the gross margin calculation given in Table 5.9, Table 5.11 translates sheep herd sizes into approximate monthly income, although no account is taken of production economies of scale or the value of domestically consumed livestock products.

No. sheep	Monthly income (JD)
50	56.25
100	112.05
150	168.75
200	225.00
250	281.25
300	337.05
350	393.75
500	562.05

Table 5.11: Estimated monthly net income from a sheep herd under typical management (1995-1996)

Very little accurate information (other than that provided in Table 5.10) is currently available about the level of domestic incomes in the northeastern Badia. However, a rough comparison can be drawn between the estimated income of a sheep herd under typical management and the levels of income associated with other forms of employment and sources of income during the same period (Table 5.12). In making the comparison to ascribe relative value to livestock incomes, it should be remembered that many Badia households are recipients of more than one income.

Source of income/employment	Income (JD/month)
Hired Shepherd	90-130
Agricultural labour	90
School teacher	140-160
Military salary	110-150
Military pension	45-145
Municipality worker	70-100
Graduate Pharmacist	160
Graduate at JBRDP	180-230

Table 5.12: Comparative levels of income in the Badia 1995-1996

The potential income from even a relatively small commercial flock of sheep (<150) compared favourably with all but the best paid forms of employment. Medium sized herd ownership (>200) offers similar economic returns to graduate employment or two unskilled wages, while the management of larger herds had the potential to exceed almost all other sources of income in the Badia. Furthermore, for these larger herds, the economics of production included hire of a professional shepherd as full-time manager. This potentially left the owner time to simultaneously pursue other economic activities.

5.6.2 Livestock incomes and investment

When I first arrived in the Badia, sheep herding was viewed as a relatively secure source of income. As long as owners could afford to feed their animals a kilogram of mixed grain daily, there was little likelihood of herds being decimated by starvation, as had occurred in the 1950's and 1960's (Lancaster 1981, Lewis 1987). Profit margins certainly fluctuated and in some cases (of poor management, epidemic disease or in years of very poor forage), losses were made. However, as a general trend, while it remained underpinned by subsidised feeds and secure markets, the livestock sector 'boomed' in the Badia during the 1980's and early 1990's (pers. comm. William Lancaster).

In illustration of this trend, two herd-owners in the sample group, *O* and *G* both purchased sheep flocks as capital growth investments during the late 1980's. Owner *O* had been an international truck driver by profession, and for 7 years had driven trucks between the United Arab Emirates and Turkey. Similarly, *G* had been an officer in the immigration section of the military police in Oman. Both had returned to their communities of origin on the foothills of the Jebel al Arab, and used their respective savings to marry, build houses, acquire *beit sha'ar* and purchase flocks. Both *O* and *G* explained their decision to put their savings into sheep in terms of financial security, steady income and that such a course offered the best overall investment prospects at the time.

In 1995, *G* stated that *"a dinar not invested in sheep is a dinar lost"*[24]. He further explained that from his original savings he had also bought some agricultural land and a tractor (both of which he rented out). He managed these interests in parallel to his flock and also engaged in a little speculative sheep-trading. However, he argued that while both land and tractor were secure investments, under the contemporary economic conditions of the Badia, neither held the same growth potential as sheep herding. Consequently, in managing his mixed portfolio of economic activities he chose to transfer the profits of his other business ventures across to his sheep herd. In October 1994, *G* owned approximately 300 sheep of all categories. By July 1995 his herd had grown to 353 and the closing inventory of 1996 enumerated 474 sheep, indicating a 58% increase in herd size over a 22 month period.

5.7 Monetarised Pastoralism

As has been described, exchange relations during the period of the study were widely monetarised. The production of livestock was (at least in medium or larger herds) predominantly oriented towards markets. This could be observed both in the structure of larger herds and in the range of management strategies employed by some herd-owners. These included specialisation in lamb production without commercial milking (owner *F*), and a high-

[24] Herd owner *G*, Qasim village, December 1995

cost/high return strategy to induce biannual lambing and high incidence of twinning (owners *N* and *F*). Other managers adopted labour intensive strategies, separating their herds into distinct groups for optimal management (owners *S* and *T*). There was also some evidence of growing interest in synchronisation of oestrus (Campbell and Roe 1995, IFAD 1995) to enhance herd productivity.

Incentives for investment in sheep existed both in the form of relatively high incomes from off-take and from the capital growth potential of the original investment. However, to maintain profitable levels of output from commercially managed herds demanded high levels of expenditure on intensive management. Consequently livestock production systems were characterised by the circulation of large quantities of cash, frequently more than 1000 JD/month for larger herds. With a wide range commercial transactions based upon exchanges of money, the continuing function of the herd as a source of income depended on the owner's careful 'balancing of the books', both in terms of inputs, outputs and the continuing reproductive viability of the herd.

Within this monetarised system, success in negotiating markets became of increasing importance, as income from flocks could be raised as much by successful marketing strategies as by improved herd productivity. In consequence, the Badia livestock producers were closely bound (both at an individual and at a system level) into national and regional markets.

Given the management environment of the 1980's and early 1990's, it may be argued that traditional notions of herd maximisation for risk aversion purposes have only limited validity. By 1995, nobody of my own generation could remember a drought or other stochastic event that had threatened pastoralist survival through animal losses. A more formative experience for many heads of household (especially the younger ones) had been the precipitous decline of the livestock economy as a result of the 1991 Gulf crisis (section 4.7.2). At that time, animal prices had first risen then fallen as export markets had closed and national markets became saturated.

Distinct from the traditional threats of animal loss such as theft, disease and famine, the new perceived threats to pastoral livelihood security (namely the collapse of markets or diminishing gross margins of production) effected herds on a *per capita* basis (i.e. each animal in the herd lost value equally). In these conditions, the rationale for building up large herds to ensure livelihood security becomes less compelling, and the rationale for diversification into other economic activities becomes more so.

However, what made livestock virtually unique as an economic activity during the 1980's and early 1990's, was the exceptional capital growth potential of sheep herds. With growing markets (during the 1980's) and feed subsidies, livestock was widely perceived as a secure, and lucrative investment. With poor access to other legitimate economic opportunities, sheep production was the only activity in which an Ahl al Jebel household could reasonably expect to create additional wealth and improve its economic status. With the livestock economy

structured as described in this chapter, strong monetary incentives existed for households to manage their herds for capital growth values. Therefore, even in households characterised by multiple incomes, commercially productive herds held special status among the portfolio of economic activities. With reference to available data on the Mafraq governorate livestock population (Figure 4.11), it is difficult to pinpoint of any other domestically managed economic activity in the Badia which underwent comparable levels of growth during the 1980's and early 1990's.

5.8 Conclusions

This chapter has described the organisation of Badia livestock production in the mid-1990's. The chapter began by differentiating between the characteristics of goat and sheep production and went on to focus principally upon the latter activity[25]. In describing the sheep production system of that period, the chapter has highlighted the extent to which pastoral production in the Badia had become integrated into markets, while remaining subject to the influence of non-market factors, such as annual climatic variation and seasonality.

Evidence has indicated that pastoralists in the Badia responded to economic change purposefully and employed diverse combinations of livestock and non-livestock economic activities to create monetary incomes. Evidence suggests that under the circumstances of the time, livestock were regarded as of particular value to households owing to their capital growth potential. This shows some congruency with theories that have emphasised the capital value of herds.

In the Ahl al Jebel livestock system of the mid-1990's, it is apparent that capital growth and commodity values were inextricably linked. While it has been have posited that some African pastoralists necessarily dislocate from markets in order to maximise the capital growth of their herds by reducing off-take this model is not easily applicable to Badia herds, since Ahl al Jebel herders depended upon the circulation of large amounts of cash through the pastoral economy. Put simply, feeds, transport and labour needed to be paid for and therefore herds could not be extricated from markets to stimulate growth.

Herders in the Badia engaged with markets in highly complex ways. With respect to the monetary value of their herds, households pursued rational economic objectives, yet in order to achieve these, they needed to delicately balance the capital growth values against income values (requiring both for household provisioning and herd management). What further differentiated this model of economic behaviour from those described by East African pastoral theorists was the availability of additional non-livestock incomes to some (not all) households. Additional incomes clearly gave households far greater flexibility in pursuit of their herding objectives

[25] Goat production will be further discussed in chapter 6.

(indeed they may have facilitated limited reduction in herd off-take) as well as improved livelihood security.

Given the extent to which livestock production was embedded within markets and the monetary system, livestock strategies and objectives would undoubtedly have been influenced by exogenous economic change, such as the political crisis, currency fluctuation or indeed at the micro-economic level, changes in the availability of resources at a household level. Furthermore, it is clear that endogenous change in the herd itself, such as in structure or sizes, (which might occur as either a natural or a planned process), would effect the way in which it was valued in relation to markets.

This chapter has served as an introduction to the utility of herds in the Badia pastoral system by focusing explicitly upon how they relate to the monetary economy and market institutions. In focusing upon these values, the chapter has provided an important baseline from which to examine other aspects of pastoral behaviour. The next chapter builds upon this one by 'peopling' pastoral systems with households and considering how they may extract direct material values from their herds.

Chapter 6: Non-market production and domestic consumption

6.1 Introduction

In the last chapter, emphasis was placed upon the extent to which Badia pastoral production was oriented towards markets. In this way, the Badia case stands in confirmation of those studies which have highlighted the growing integration of pastoral producers into markets (see for example, Amanor 1995). Even so, most assessments of pastoralism continue to ascribe value to the subsistence functions of livestock, and to the domestic consumption of livestock products within producer households.

However, this latter view has been challenged by Behnke (1980). In his description of the modernisation of Bedouin herding in Cyrenaica, he identified a growing shift away from the consumption of domestically produced dairy products towards purchased food items. Behnke states that "*by committing themselves to a system of commercial production, the Bedouin also committed themselves to a pattern of commercial consumption*" (1980:88). Behnke contends that in the Libyan case, increasing specialisation in market oriented production induced most herd-owners to abandon subsistence level production in favour of purchased commodities. These commodities became increasingly attractive and accessible to pastoral households as they became more deeply integrated in local markets, and cash became more available from the sale of pastoral products.

This chapter will consider the applicability of the Cyrenaican model to the Bedouin herders of the JBRDP area. In order to do so, it will examine the role of livestock in directly provisioning pastoral households that are integrated within the monetary economy. The discussion will encompass a broad sweep of products including meat, milk products and animal fibres, but necessarily begins by considering the characteristics of the corporate group who form the principal unit of domestic production and consumption.

Domestically produced (and consumed) pastoral products are described in this chapter and their importance assessed relative to consumed commodities purchased from markets. The contribution of these domestically produced products is further evaluated in terms of cash values. The chapter concludes by considering how the domestic consumption of livestock products relates to the market-oriented production economy. It is argued that in addition to the subsistence and livelihood security functions of herds, production for domestic consumption may also be important in the management of larger herds oriented towards commercial production.

6.2 Pastoral household constitution and demography

In the Badia, with very few exceptions, consumption is not planned and managed by individuals, but rather by members of aggregate household groups. In Bedouin society, these aggregates are commonly structured along lines of kinship. However, there exists great variation in both the extent of bounded groups and how boundaries work between them. Consequently, the first part of this chapter describes the organisation of Badia households with specific reference to domestic production and consumption.

For the purposes of this study, households were defined as the basic units of provisioning and shared consumption. Adhering to this definition, distinct households were also those autonomous units where both livestock and non-livestock incomes and other resources were pooled and redistributed for the purpose of group subsistence. These consumption units were in nearly all cases found to be congruent with production units (where production is oriented to domestic consumption).

Findlay and Maani (1998:203), reporting on the population geography of the JBRDP study area, described the average household size as 6.5 for the Badia population as a whole (n=2398). More recently, Oughton and Adas (1999), focusing specifically on a much smaller number of households which were (or had recently been) involved in livestock herding (n=15), recorded an average household size of 11 (1999:6).[26]

The group of households headed by livestock owners *A-W* had a mean of 9.25 (std. dev. 2.47) members with a variation of between 4-15 members (Table 6.1). Households categorised as mobile[27] were found to be slightly larger (mean population 9.9) than sedentary households (mean population 8.3) although this difference was of only borderline significance (<0.05). However, a moderate correlation was found between herd size and household populations (r=0.51).

These *A-W* households encompassed either two or three-generation families taking either nuclear or extended forms. The most complex forms of households were those in which adult married sons remained within the same household unit as their parents, contributing additional labour to the management of herds. Oughton and Addas (1999:6) have described these types of institutions as 'joint households'. From the A-W group of households, *B, D* and *U* fitted into this category of patrilocally extended household. Furthermore, four heads of household from the *A-W* group had 2 wives (*D, F, O* and *T*) while one herd-owner (*B*) had three wives.

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[26] The disparity between these findings was probably related to the way in which households were defined in each study. Findlay and Maani's study (1998) investigated family residence units, while Oughton and Adas (1999), like myself, identified households as provisioning units.

[27] Mobile households are here defined as those which usually migrated away from their normal place of residence for the duration of at least one season annually

Nine of the 23 households described themselves as sedentary and lived throughout the year with their livestock in stone houses in villages on the flanks of the Jebel al Arab. Amongst these, households were found to be largely congruent with family residence units.

Table 6.1: Demographic characteristics of Badia herding households

	Age Head	People >15yrs	People <15 yrs	Total People	Residence system	Household type	Herd 7/95
A	44	4	5	9	M	Unitary	274
B	47	7	8	15	M	Divided	1353
C	31	5	6	11	S	Unitary	305
D*	70	8	6	14	M	Divided	578
E	39	4	5	9	M	Unitary	405
F	52	4	6	10	M	Divided	552
G	44	4	6	10	S	Unitary	376
H	61	5	3	8	S	Unitary	192
I	64	5	2	7	S	Unitary	486
J	49	5	3	8	S	Unitary	47
K	55	4	0	4	S	Unitary	331
L	52	5	3	8	S	Unitary	81
M	38	5	6	11	S	Unitary	362
N	45	3	5	8	M	Divided	437
O	49	4	5	9	M	Divided	158
P	30	5	5	10	M	Divided	380
Q**	63	5	3	8	M	Unitary	149
R	58	4	6	10	M	Unitary	544
S	54	7	1	8	M	Unitary	1118
T	46	4	6	10	M	Divided	507
U	52	7	5	12	M	Divided	515
V	55	4	3	7	M	Unitary	262
W	48	5	3	8	S	Unitary	216
Total		113	101	214			
Mean	49.82	4.91	4.39	9.34			
(std.dev)	9.95	1.22	1.94	2.34	*M = Mobile*	*S = Sedentary*	

* Herd-owner *D* died in September 1995. For three months after his death his household and herd were managed by his eldest son, but following a dispute between this son and his step brother (or possibly between their two mothers), the household and herd divided and were thereafter separately managed. The data above describes the two households combined.

** Herd-owner Q died in December 1995. His eldest son replaced him as head of household.

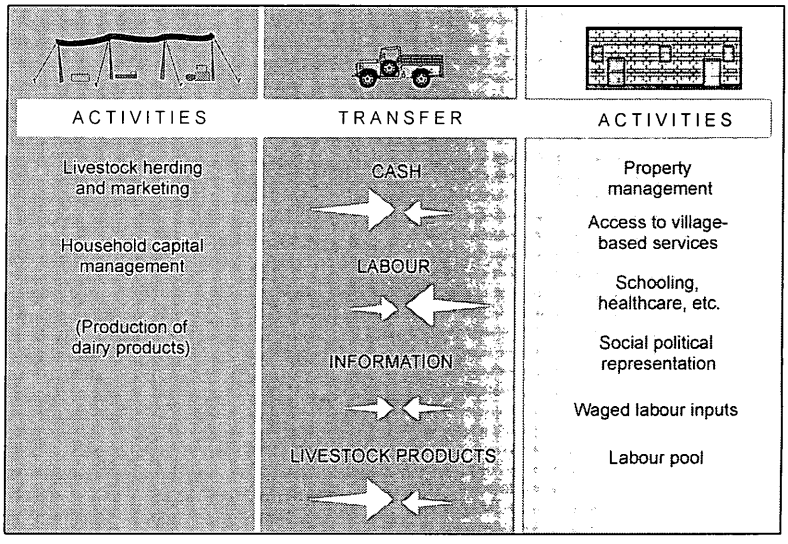
The residential pattern in mobile households was rather more complex. It was found that herding migrations did not necessarily involve all members of all pastoral households. While some mobile households migrated as a whole family unit (n=6), others divided between a pastoral component which accompanied the herds out to the desert rangelands and other household members who remained at a permanent dwelling (n=8). Although these latter

residence groups were sometimes spatially separated by hundreds of kilometres, they remained the same household unit by virtue of the pooling and redistribution of resources between them.

The most common reason for the division of households was to allow school-age children, those in need of medical care, or adult unmarried son(s) in waged employment to remain in the villages. Where village-based members of divided households were also wage earners (as was the case in households *U* and *D*), cash or commodities could be transferred in either direction (or even in both directions simultaneously) between both sections of the household.

A schematic representation of the relationship between village and rangeland-based sections of households is given in Figure 6.1

Figure 6.1: Links between mobile and sedentary household sections



Village residences of divided households were to some extent managed as repositories of those family members who could not contribute active labour to the herding encampments. In this way, livestock management camps could be 'staffed' by an optimal labour force.

Too many non-productive members of the household residing at a busy herding camp was thought to undermine the production efficiency of the herding unit, adding to daily domestic and other chores. Herd owner *M* once told me:

> *"When I travel with the herd my mother always accompanies me as* sitt al beit. *My eldest daughter now comes also because my mother is getting too old for milking. My wife stays at home with the younger children. She prefers the life of the village. Our children keep her very busy. There would be no profit from their presence on the* tarheel. *My wife would have no time to work and I would spend all my time taking the children to the (health) centre".*[28]

Both migratory and non-migratory sections of households require at least one adult female (>15 yrs), to cook and provide domestic services as *sitt al beit*. Given the high demand for specialist female labour at herding encampments (particularly during the busy milking season), this may require some household members being temporarily transferred into the care of other village-based households (often of common lineage) to free additional adult female labour for use at

[28] Herd owner *M*, at *Tel* Sheih, December 1995.

the herding encampment[29]. Demand for female labour in part explains the popularity of second marriages among the owners of large herds.

Nuclear households in the Badia take the form of parents and their offspring. While children are able to contribute some forms of labour to households from an early age, they are not considered full partners in (livestock) production until their mid-teens, when they assume the full responsibilities and tasks of an adult. Upon reaching full maturity (>20) it is expected that male offspring marry and establish their own households, although these often remain closely linked both spatially and economically to that of the father. In marriage, women transfer from the *beit* of their father to that of their husband, although the continuing preference for patrilateral parallel cousin (*ibn 'amm*) marriages generally keeps women within the same minimal lineages. In the contemporary Badia, rising bride prices[30] may act to delay the marriage of young men from poorer households. However, the owners of large livestock herds view expenditure on the marriage of a son as an investment strategy to procure additional female labour from outside the *beit.* Herd-owner *F* facilitated the marriage of his eldest son at the age of 18, while owner *B* had arranged the marriage of his first son at age 19 and organised the marriage of his second son aged 17 in 1996.

The extended three-generation household is another common type among Bedouin herders. In most circumstances, this unit is formed by the addition of an elderly parent to the nuclear family. However, another form encountered is that where a married daughter resides (together with her children) in her father' s household following divorce, death or permanent absence of her husband (*H, I* and *L*).

Examination of livestock managing households *A-W* reveals wide variation in organisation. The complexity of household systems is a composite of household type, residence system and the age and sex-structure of the unit. These factors, together with both household size and livestock population are determinant elements shaping the characteristics of domestic production and the consumption of livestock products. Household age-structures determine the number of producers in relation to consumers within the household, while sex structures indicate the type of labour available to the household. The residence system employed by the household structures the spatial organisation of household members, which in turn influences consumption patterns and the contributions of individual members to household production and reproduction. Finally, the ratio of livestock to human population determines the absolute extent to which livestock products can be domestically produced and consumed within the household group.

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[29] Discussed further in section 7.2.

[30] Oughton and Adas (1990:40) report brideprices varying between 2500-7000JD. My own informants reported prices at the upper limit of this range

Owing to this complexity, the organisation of herding households is perhaps best illustrated by reference to specific case studies of household units and the organisation of labour within them. The following case studies introduce the four households *F*, *I*, *S* and *T*, in which residential work was undertaken during Phase 3 of the study. Table 6.2 then contrasts aspects of the organisation of these households and summarises some important differences.

Household *F* (*Abu* Ward)

Abu Ward did not identify himself as of the Ahl al-Jebel. He and his household were instead of the ash-Shr'a, a very small tribal group[31] claiming genealogical links to Saudi Arabian tribes and the Sirhan, another cross border-tribe in Jordan. However, economically the ash-Shr'a co-reside with the Ahl al Jebel tribes and there is little difference apparent between them.

Abu Ward's household, an inside view

Abu Ward's household was well organised. The tent was scrupulously clean and meals were served punctually. There existed a very clear division of labour between the household members and work was conducted with efficiency. However, in the absence of general milking, spring seasonal labour demands were relatively low. The exchange of household members with the village residence occurred regularly. The social universe of the household was embedded within that of their wider *qoum* community, and within this the household members enjoyed influence and prestige. Overall, the household struck me as happy and business-like.

Owing to the management requirements of *Abu* Ward's large herd, the household was divided into a residential unit at Baj village and a specialist herding section which travelled widely around the northern Badia. *Abu* Ward's two wives were rotated between the village house and the herding camp. Four young school age children resided in the village house along with either their mother or stepmother. In addition to an unmarried adult daughter, two children (<15) resided normally at the herding camp. These were a young girl of 14 years of age who actively contributed to domestic labour and the care of her young stepbrother, and a boy of about 4 years. *Abu* Ward told me that the young boy was present in the herding camp "*to be raised as a Bedouin in the tent of his father, just as I was raised in my father's tent*" [32]. It was anticipated that only when this boy reached age for primary schooling (about 7) would he be transferred back to Baj village.

The section of the household resident in Baj village lived in close association with the household of *F's* elder brother in the adjacent house. *Abu* Ward held shares in an area of cleared agricultural land[33] suitable for barley production, which was managed by his elder brother. However, owing to labour shortages, this was not worked by the kin-group but instead rented out to farmers.

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[31] I was informed by *Abu* Ward and subsequently heard it confirmed that only one village of the ash-Shr'a exists in Jordan.

[32] *Abu* Ward, Wadi Rakban, December 1996

[33] Approximately 200 *dunnams*

The organisation of labour within *Abu* Ward's household was complex, owing to the fact that *Abu* Ward was the headman of a *qoum* (multiple household encampments). In some aspects of livestock management, this kinship-based group acted corporately and assumed the attributes of a unitary socio-economic entity. This co-operation sometimes includes the reciprocal transfer of labour between households. However, at a domestic level, the household maintained an individual budget and in most respects produced and consumed individually[34].

Household I (*Abu* Asima)

Abu Asima's household was one of three in the small Adhamat settlement of Ghadir al Nagah, the site of a prehistoric water reservoir (Figure 7.3). *Abu* Asima had settled there in the 1960's after being discharged from the military with an injury. Along with his wife, *Abu* Asima shared his household with two unmarried sons, the eldest of which worked in the post-office of a neighbouring village. The final adult occupant of his household was a divorced daughter with two young children.

Abu Asima's household: an inside view

This household was characterised by frequent noisy altercations. *Abu* Asima was vocally critical of his two sons and his daughter while his wife disapproved of his political aspirations and involvement with the JCO. To compound these tensions, while most members of the household enjoyed close social and working relations with their closest neighbour, *Abu* Asima himself harboured a grudge against his cousin which dated back to the early settlement of Ghadir al Nagah. Because of this, the three household *ibn 'amm* group resident at Ghadir al Nagah never really entered into full economic cooperation.

In addition to his livestock herds, *Abu* Asima also owned approximately 2 *dunnams* of fruit trees and 80 *dunnams* of land cleared for dry barley cultivation. In 1996, the barley land was being cultivated on a sharecropping basis by a kinsman from a nearby village, due in part to the household's labour shortage.

In addition to supervising the management of his own herd, *Abu* Asima spent a lot of time undertaking his duties as the head of the local branch of the JCO (Jordan Co-operative Organisation) for the Umm al Quttayn area. Consequently *Abu* Asima was frequently absent from Ghadir al Nagah.

Owing to his frequent absences and lack of interest in the younger of his two sons, *Abu* Asima employed a hired shepherd to manage his household herd by day. At night the animals were safely housed in a stone corral by night and thus did not require 24 hour vigilance.

However, due to the relative inadequacy of labour within the household, and the spatial and genealogical proximity of the other households at Ghadir el Nagah, informal transfers of labour (and some commodities for domestic consumption) occurred between households. Some co-

[34] The organisation and function of the *goum* and kinship-based livestock collectives is discussed in greater detail in section 7.2.

operation also occurred in milking, with everybody helping to separate out the milking ewes although the actual milking was done by the women of each household separately. However, at the level of domestic consumption and budgeting, resources were pooled and reallocated at the level of the individual households.

Household *S* (*Abu* Rashaid)

Abu Rashaid and his wife were of the Adhamat tribe of the Ahl al Jebel . They owned a stone house in the village of Umm al Quttayn although, owning a large herd, it was impossible for them to live there. They also owned a small olive orchard that was rented to villagers and brought a small income in their absence. The household consisted of eight individuals. *Abu* Rashaid had four adult sons in his household, the eldest[35] aged 25, the next aged 20, and the youngest aged 16. His wife, although slightly older than he, remained extremely active and presided over three unmarried daughters, the eldest aged 19 years, the next aged 16 years and the youngest of about 14 years (who nonetheless contributed to work as fully as her elder sisters). The eldest son was only irregularly resident in the household as he served with the military, in the prestigious *Hijana* camel corps.

Abu Rashaid's household, an inside view

Abu Rashaid's tent always seemed to be the scene of chaos. Groups of animals milling outside the tent frequently surged inside until driven back by a hail of thrown objects, curses and laughter, (although on cold nights the household goats were allowed to squeeze in between the humans around the fire for warmth). While *Abu* Rashaid was formal head of the household, it was his outspoken and knowlegable wife who in many respects was the principal authority. Most major decisions were debated at length by the whole family, and in this sense the household seemed quite democratic. Residence in remote locations with limited external social contacts had made the family very close and self reliant, although the younger son expressed frustration at the Bedouin lifestyle and hoped to move to find waged employment one day. *Abu* Rashaid's household kept a three legged sheep as an *aleefa* (household pet) which proved an endless source of amusement for visitors.

The household commanded excellent labour resources; the family had reached the point in its lifecycle where all members were approaching adulthood, but other than Rashaid, none had yet married and established an independent household. In consequence (other than for annual shearing), *Abu* Rashaid did not need to hire any additional labour for livestock production. Furthermore, on the basis of his labour resource, *Abu* Rashaid was able to engage in a range of labour intensive management strategies, separating the herd into specific management groups

[35] *S* had an older son, aged 28, who in early 1996 married and established an independent household in Um al Quttayn village. This son had a disability which made him unsuited to pastoralism and the herding life, so his father helped to establish him in an alternative occupation.

(lactating ewes, rams and yearlings) with each being offered specific feed rations to reduce expenditures.

Household T (*Abu* Sweilim)

Abu Sweilim was of the Sharafat and had two wives, the older of which was most commonly resident in his *beit sha'ar* with him. She was not however, *sitt al beit*, as this honorary position was held by *Abu* Sweilim's mother who was also resident with her son. One unweaned child of the older wife also lived at the herding encampment. The other five school age children of the household lived with *Abu* Sweilim's second wife at the Sharafat village of Menarah, where he was building a stone house. The status of the group at Menarah was complex since they lived in close association with the household of *Abu* Sweilim's elder brother. *Abu* Sweilim's wife was the younger sister of his elder brother's wife. However, this residence group was provisioned as part of household *T*.

The pastoral section of the household was mobile throughout the northern Badia area, and *Abu* Sweilim held a high personal reputation, particularly as a man of management and business acumen. *Abu* Sweilim also owned 160 dunnams of cleared, unirrigated land managed by his elder brother at his village. Without labour to work the land, it was worked in *Abu* Sweilim's absence by villagers on a sharecropping basis.

Abu Sweilim's household, an inside view

Abu Sweilim's household was very conservative, and women rarely visited the public part of the tent while I or any other male external to the lineage was present. The life of *Abu* Sweilim's household was intricately bound with those of the other households of the *qoum*.

Indeed, it almost seemed that within the *qoum*, lineage identity was expressed above that of the household. *Abu* Sweilim, his wife and mother spent more time with kinsmen of their own sex than they did collectively. *Abu* Sweilim's activities took him frequently to Menarah village where his second wife and children and elder brother lived.

Abu Sweilim was sober, conscientious and well organised, although more autocratic in internal household decision-making than the heads of households *F*, *I* and *S*.

Like *Abu* Ward of household *F*, *Abu* Sweilim held the position of headman of a multiple household, kinship-based herding encampment. Labour relations between households within this encampment were to some extent characterised by reciprocity and informal exchanges although some work (mainly that by males) was paid[36]. *Abu* Sweilim used a hired shepherd to oversee his herd on a daily basis.

[36] Described in section 7.2.1

Table 6.2: Organisation of four case study households compared

	Household head	Household Type	Labour resource	Market oriented production	Mobility
F	*Abu* Ward	Divided	Poor	Collective	Mobile
I	*Abu* Asima	Unitary	Poor	Some cooperation	Sedentary
S	*Abu* Rashaid	Unitary	Good	Independent	Mobile
T	*Abu* Sweilim	Divided	Poor	Collective	Mobile

6.3 The division of labour in Badia herding households

Based upon my own observations of Badia herding households (*F*, *I*, *S*, and *T)* and supplementary oral reports from households *A-W* , I have categorised work related to economic production and social reproduction into three categories, given in Table 6.3.

Table 6.3: Gender divisions of labour in pastoral households

Category	Description
Non-gender specific	Includes shepherding herds, various types of manual labour such as handling of feed supplies and feeding, mustering of livestock for milking and matching orphan lambs/kids with lactating ewes/nannies.
Male	Driving vehicles and driving related activities (collection and delivery of feeds, herd management, delivering animals to markets, information gathering and managing household interactions with formal markets and other institutions). Waged employment; contributing outside incomes.
Female	Household management (cooking, baking, cleaning, childcare, firewood collection), milking and production of milk products; spinning and weaving animal fibres, tent maintenance. Also care and management of small livestock holdings permanently maintained in vicinity of household for supply of animal products to household.

The observations in Table 6.3 and reports of how labour was divided in herding households correspond closely to the observations of Pape *et al* (1994) among Bedouin households in northern Syria and the more recent findings of Oughton and Adas (1999:11) within the JBRDP area. However, Pape *et al* describe the hand-feeding of animals to be a predominantly female activity while in Jordan the responsibility for this seems to be more general. A possible explanation is that the smaller herd sizes found in Syria correspond to the small livestock holdings maintained for domestic supply which are also fed exclusively by women in Jordan. Oughton and Adas (1999:16) also describe a limited incidence of waged agricultural labouring among Bedouin women. Although I have observed this practice in the Badia at large, it was not reported among the *A-W* group of households.

The divisions of labour by sex as described above are indicative rather than absolute. Women of many households drove trucks when necessary[37] (although they did so without driving licences), while equally men often joined in the milking of sheep if they felt that their women folk required additional assistance. During the occasional absence of women from households, men ably milked livestock, cooked and cared for children. Similarly, not all men were capable of performing specifically male tasks such as driving, and wide variation was recognised to exist between the skills of individual women in their respective areas of work.

The category of labour described as 'non-gender specific' in Table 6.3 includes activities which were not widely perceived to be gendered, (i.e, specifically requiring skilled male or female labour). As skilled labour of either sex was considered to be at a premium in the activities of herding households, general tasks were often relegated to less experienced junior members of the household or, in circumstances of general labour shortage, undertaken by hired labour.

Overall, established gender roles in the Badia herding households tend to limit women's engagement with formal and monetised livestock-related transactions while giving them primary responsibilities for the provisioning, maintenance and the social reproduction of the household (Figure 6.2). Consequently, the organisation of production for domestic consumption was largely in the hands of women. The major exception to this rule were decisions regarding the slaughter of animals, principally as such slaughters were made either as gestures of hospitality, expressed within the 'public' domain of the household, or were related to the ill health or under-productivity of animals, thus constituting a herd management (culling) decision.

While gender roles were fairly well established in the Bedouin households, with men and women each holding responsibility for complementary aspects of the unit's livelihood security, it would be incorrect to assume that management and decision-making roles were inflexible. It was observed that the degree to which women acted in a management role was linked to the personal character of the individuals. Strong-minded and elderly women of great experience in some households could (privately at least) overshadow the authority of husbands and sons.

This situation was clearly observed in two households of the *A-W* study group, that of household *Q* (where the head of household had recently died and was replaced by his relatively inexperienced eldest son) and in household *S* where the *sitt al beit* (*Umm* Rashaid) was a few years senior to her husband and rather more assertive in behaviour. She was observed to assume the role of head of household in some social situations. To add to her general position of influence within the household, approximately 15% of the household's large livestock holding were considered to belong to her personally. These were described to me as being the

[37] This is particularly true in tent dwelling households.

descendants of a small goat-herd that she had brought from Syria when she married *Abu* Rashaid in the 1960's.

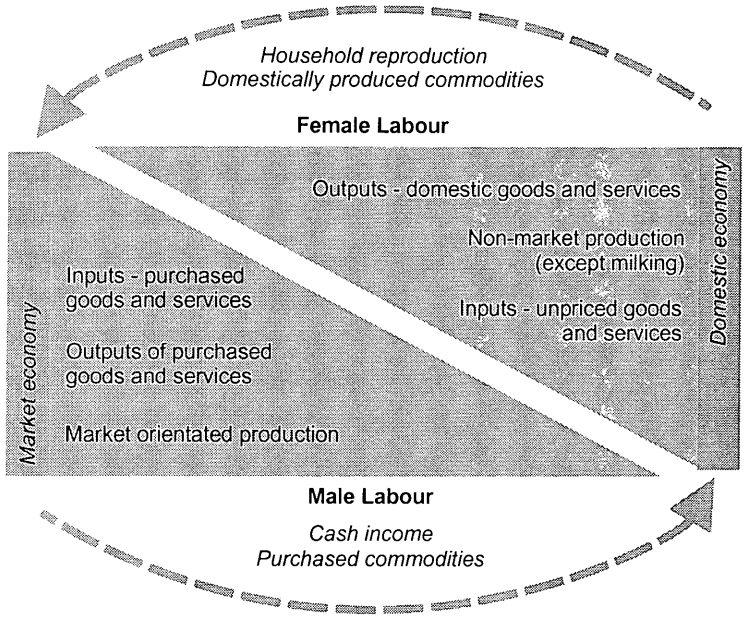

Figure 6.2: Complementary roles of adult male and female household members in the economic life of the Badia herding household

This figure describes the relationship between the twin spheres of market and domestic economy that constitute pastoral livelihoods in the Badia. Male labour is associated principally with the market sphere and female labour with the domestic sphere, although overlap exists between the two.

While women may command influential negotiating positions within the herd management process the implementation of decisions in the public or market domains must usually be mediated by male members of the household. The major exception is in the case of female-headed households (although none of these existed in the *A-W* group).

Livestock under the direct management of women

Where portions of livestock herds were managed separately for the purposes of household subsistence, these animals commonly fell under female management. The reason for this was in part pragmatic, as male herd managers often spent considerable periods of time absent from the place of residence. This was particularly true of village residences in divided households.

Furthermore, the *sitt al beit* was considered to be the manager of all aspects of the residential accommodation and its environs, and a small herd tethered or corralled in the locality, fed partly on household scraps, was consequently perceived as falling within the female dominion. Finally, the maintenance of small numbers of animals for the purposes of subsistence production is widely perceived by men as a component of dairy and milking activities, rather than of commercially oriented livestock production

6.4 The purchase of foods in herding households

The complexity of assessing patterns of household consumption in the JBRDP area has been illustrated by Papadopulos (1999), who in the early stages of her fieldwork attempted to define food supply sources to Bedouin households. Papadopulos discovered that most pastoral Badia households are involved in the simultaneous purchase, production, consumption and sale of food products.

In the four households *F,I, S* and *T,* foodstuff purchases were almost always made by men after brief consultation with the *sitt al beit* about what supplies were needed. It was generally only men who, using the truck, had the mobility to reach local *suqs*[38]. Furthermore, commodity purchases often directly followed the sale of animals at livestock markets (when cash was raised) and women never accompanied men to these markets. In consequence, most purchases seemed to have been made in response to short-term need. Internal household negotiations revealed only limited evidence for central budgeting of domestic expenditures.

Based on discussions with householders, personal observations and access to the sales records of a village store-keeper, I have estimated that most weekly foodstuff expenditures among the study group largely fell within a range of 3.15 to 5.25 JD per adult and half this amount for children[39]. Consequently, as an indicative estimate, a typical livestock-owning household comprising 5 adults and 4 children would spend 1200 – 2000 JD annually. The most common types of food purchases are listed in Table 6.4.

Time allowing, most households reported eating three meals a day, although rarely with all members present. Approximately half of these meals were based around home-produced dairy products[40] (although tea and bread were also served with every meal). It was other food expenses (including purchased animal products), that were covered by the 100-166 JD monthly expenditure.

An important consideration for herding households when making foodstuff purchases was durability. In the absence of chilled storage facilities, and often with only irregular access to supplies, food that was not to be consumed on the day of purchase or the following day needed to be durable at ambient temperatures.

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[38] In the large village of Umm al Quttayn, where women had independent access to local shops, it was reported that they were able to acquire groceries and other goods on credit.

[39] These figures are my own estimate based upon observation and reports of the types and quantities of foundstuffs consumed by households at meals and the known prices of these commodities in local *suqs*. One of the study group, herd owner *W*, was also a storekeeper at Umm al Quttyan and was able to comment on my calculations as well as allow me access to sales and credit records.

[40] For annual variation in quantity of home produced dairy products consumed domestically, see Table 6.6

This need for durability limited the consumption of fresh fruits and vegetables (except for those sedentary village households that had immediate and regular access to retailers). At remote Badia herding camps, where households were only re-supplied every few days, the need for durable products was heightened, resulting in a less varied diet.

Table 6.4: Common household food purchases in livestock-owning households (listed according to frequency of purchase)

Foodstuff	Comments
Flour	Bread baked daily. Some sedentary livestock owners cultivated wheat along with barley and domestically produced some flour
Sugar	Principally used in tea. Until 1998, sugar was subsidised through a coupon system
Tea	Frequently drunk with meals
Vegetable oil	Used for frying and serving with dairy products. Off-season substitute for for samn
Tomato paste	Used in many common mixed vegetable dishes. Highly valued for its durability. An important food in herding camps
Onions	Valued for durability
Dates	Traditional foodstuff amongst pastoral Bedouin. Very durable when dry
Lentils	Durable and often eaten as soup
Laban	Purchased outside of the milking season, a common breakfast or evening dish with bread
Potatoes	Durable and cheap. Fried or boiled in stew
Cracked wheat	Used in several common dishes
Rice	Subsidised with coupons until 1998, but not often eaten other than as *mansaf* or as a rice/milk dessert. Few households exceed their quota
Tomato/ Cucumbers	Frequently eaten in season, but not very durable or easy to transport. Less common at herding camps
Dried milk powder	An important element of the diet outside of the milking season
Cauliflower	Often fried or boiled when in season
Mulakhir	Cheap and often available in village areas
Chicken	The most commonly consumed meat

Although no investigation was made of the nutritional value of the household food purchases listed in Table 6.4, a study of Bedouin diet was recently undertaken as part of a socio-economic survey of pastoral families in southern Jordan, where food purchases were found to be broadly similar to those made by pastoralists in the northern Badia.

The nutritional consultant to that study found that the majority of food purchases were high in carbohydrates but deficient in many other nutritional requirements. Consequently, domestically produced and consumed meat and dairy products were found to be of particular importance in supplying households with required amounts of calcium, energy and protein[41].

[41] Rana Khoury Tsikhakis (Roe *et al* 1997)

6.5 Production and consumption of livestock products

The principal domestically consumed products from Badia herds are meat, milk and fibres. While section 5.4 quantified the monetary output of herds at point of sale at markets, this chapter considers the value of consumed livestock products at point of consumption. Therefore the data, presented in this section describes only what was consumed by the *A-W* group households and takes no account of products that were transferred outside the household.

6.5.1 Milking and consumption of milk products

All households in the *A-W* group milked some livestock for the purpose of domestic consumption. The principal months for milking in the northern Badia area were from February to May, with some lactation (particularly goat lactation), continuing through until late autumn.

As milk cannot be stored fresh, any milk for domestic consumption that is not immediately consumed had to be quickly processed into durable products. The principal products processed from milk in the northern Badia were *laban* (yoghurt), *jamidh* (dried yoghurt) and *samn* (clarified butter). Another product *jibna* (soft white cheese), is sometimes sold, as is *jamidh*.

Table 6.5: Reported production of dairy products among herd owning households (A-W)

	Laban	Jamidh	Samn	Jibna
All households (A-W)	A, B, D, E, F, G, H, I, J, L, P, Q, S, T, V, W.	A, B, D, E, F, H, K, N, P, Q, S, T, V.	I, J, M, P.	

The base product in milk processing is *laban.* Fermenting boiled milk by adding a small quantity of *laban* from the previous day produces new *laban*, which can be dried for storage as *jamidh* or made into *samn*. To make *samn*, the *laban* is churned by rolling it in a sealed goatskin sack on the ground until it turns into butter. This is then salted and heated to evaporate off any remaining water.

Making *jibna* is slightly more complex and requires the curdling of milk with rennet. After this, liquid is squeezed from the curds while wrapped in a muslin cloth. For the final stage of production, the cheese has to be pressed. I observed this being done in Bedouin households by stacking rocks onto a special wooden tray with a fitting wooden lid. The cheese is then cut in lumps and stored in brine.

The production of these products, like milking itself, is both labour intensive and time consuming for female members of the household. During the milking season, *Umm* Asima (the wife of herd owner *I*) described spending approximately three hours daily engaged in milking and an additional three to four hours processing milk, quite apart from her daily household and livestock management duties.

It is principally due to the competing demands for female labour that households favour selling milk unprocessed, and processing only that part which is destined for domestic storage and future consumption.

Of all milk products, *jamidh* is considered the most durable. During 1997, much of the *jamidh* being eaten in Bedouin households had been produced in 1995. By contrast, *samn* was only stored for up to about ten months. *Laban* is non-durable although *jibna*, if stored in a sealed container in brine keeps quite well (>6 months).

However, despite the durability of milk products like *jamidh* and *samn*, the work of Papadopulos (1996) in the JBRDP area suggests that the degree to which domestically produced dairy products are autoconsumed (and thus the degree to which food purchases are made elsewhere) is linked to the annual milking season. Papadopulos's findings indicate a marked trend of consumption of milk products during the milking season (Table 6.6).

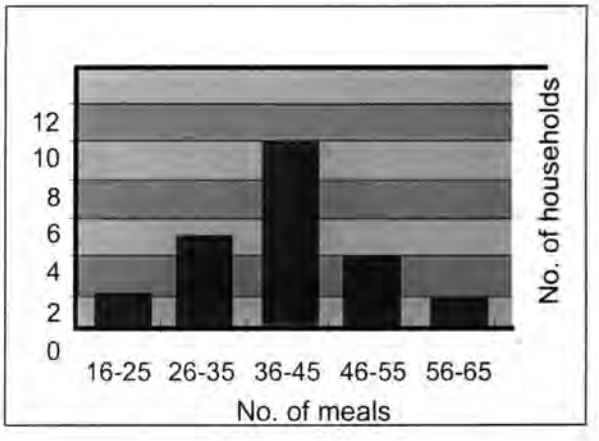
Table 6.6: Reported percentage of diet taken from dairy products at different times of the year: Numbers responding in each percentage category n=108

Percentage %	Milking Season	Autumn	Winter
0-20	8	30	44
21-40	8	34	40
41-60	32	34	20
61-80	26	10	4
81-100	34	0	0

(Source: Papadopulos, 1996)

The *A-W* group of households reported consuming a weekly average of 10 milk product based[42] meals during the 1995 autumn season.

Figure 6.3: Frequency of milk based meals consumed monthly by herding households A-W (during the autumn season)



It is difficult to attribute a cash value to domestically produced dairy products. However, at the time that fieldwork was being conducted, a 250-gram ration of commercially produced *laban* was priced at about 0.13 JD and 200 grams of *jamidh* (imported from Syria) was valued at 0.15 JD. On this basis, an individual (adult) portion of each dairy product based meal has been valued at approximately 0.1JD (and 0.05 JD for individuals <15yrs).

[42] A milk product-based meal was defined as one in which a dairy product was reported (or observed) to constitute the principal dish.

Autumn dairy consumption patterns, if extrapolated over the whole year (520 meals)[43] indicate that adults may consume dairy products to a value of about 52 JD, while the annual value of a child's consumption would be about half this. These estimates form the basis of calculations made in Table 6.7.

6.5.2 Domestic consumption of red meat

In herding households, the consumption of red meat constituted another important element in the domestic consumption of livestock products. All households (*A-W*) owning livestock reported consuming the meat of their own animals.

However, distribution and consumption of meat following a slaughter is characterised by widespread reciprocity and transfer between households, both for the maintenance of social networks and reputation[44], but also for the very practical reason that (in the absence of refrigeration) meat cannot easily be stored. Consequently, it is difficult to gauge how much meat from each slaughter is actually being consumed by the household. For the purpose of this study, it is assumed that each household receives approximately the same quantity of meat in return from other households as it distributes.

Keeping animals for slaughter

Abu Mohammed, (herd owner *F*) while telling me about how he selected animals for sale, once mentioned that he did not automatically select those animals in the poorest physical condition. He explained that these animals would bring a lower price at market and thus he would need to sell more of them (than healthy animals) to raise the same amount of cash.

Instead, he argued that it made more sense for these low value animals to be maintained within the herd for the purpose of future slaughters.

Selection of an animal for slaughter is usually the responsibility of the herd owner, who will normally conduct the slaughter and subsequent butchery himself. The animal's throat is cut with the invocation *Bismillah ar-Rahman ar-Raheem* (in the name of God, most gracious, most merciful). The carcass is then suspended (from tent poles or a specially constructed frame outside a house) from an incision made behind the tendons of the hind legs. The skin is removed in a single sheet. The carcass is butchered into large cuts while suspended. From this stage on the responsibility for preparation of the meat is transferred to the *sitt al beit*.

Animals were generally selected for slaughter on the basis of low material value, often due to weakness or ill health[45]. Livestock found suffering common maladies such as bloat were normally slaughtered if they seemed unlikely to recover. In a large herding encampment such as

[43] According to the data of Papadopulos (1996) given in Table 6.6, autumn levels of dairy product consumption were the closest to the annual average.

[44] Discussed in section 7.7.

[45] However, for certain slaughter events, such as wedding feasts or the Islamic *Eid al Adha* feast, animals were on public display for several days prior to the slaughter. On these occasions, male yearlings of superior quality were favoured.

the *qoum* headed by *Abu* Sweilim (herd owner *T*), death from bloat was sufficiently common to virtually guarantee a weekly supply of fresh meat to be shared between households.

The *A-W* group of households reported a total of 325 slaughters over the proceeding 12 months; an average of 14 slaughters per household. Based upon nutritional values for cited by Dahl and Hjort (1976:202) for Hejazi sheep under extensive management, 14 slaughters would yield approximately 847,350 kcal of energy, 21 Kg of protein and 84 Kg of fats[46].

Table 6.7 values slaughtered animals conservatively at 20 JD each, owing to the likelihood of weakness, ill health and consequently a low market value for animals selected.

6.5.3 Animal fibres and tent repairs

Al-Tabini (1996) describes various domestic uses of *qisab* (the wool of yearling sheep) which is not normally sold. These include the sewing of mattresses, rugs and cushions. However, one use of animal fibres, which is of continuing importance to many herding households, is the spinning and weaving of goats hair to make *Ashqaq* (tent strips) for the maintenance and repair of *beit sha'ar* (Plate 7)

The roof section of the *beit sha'ar* comprises a number of *ashqaq* (woven strips) stitched together lengthways to create a rectangular whole. According to informants, it was traditional practice in the Badia for two strips to be replaced annually, by unstitching the roof down the middle, sewing in the new sections and removing the two outer ones from the edges of the roof section (Figure 6.4). In this way, each strip made its way, over a number of years, from the centre to the edge of the roof before being finally removed.

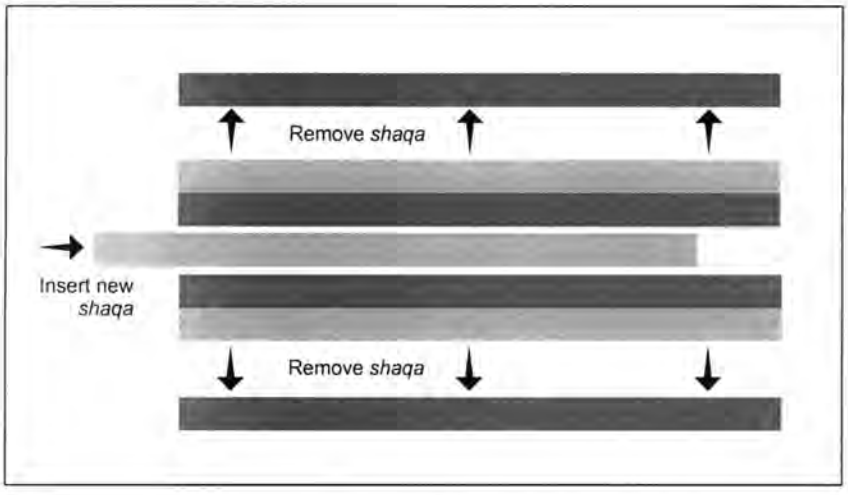


Figure 6.4: Annual maintenance of the Bedouin tent roof using animal fibres

[46] Assuming average daily energy requirements of 1800 kcal per adult and an average household population of 7.5 (children <15 valued at 0.5), annual household energy requirements can be estimated to 4,927,5000 kcal. Considering energy values alone, the domestic slaughters of the *A-W* households provided approximately one sixth of total annual requirement.

Of the *A-W* group, 9 households (about half of those which owned and used *beit sha'ar*) reported weaving their own *ashqaq*[47]. This task is undertaken by women during the relatively quiet summer months of the *taghreeb*. As the first stage of production, after goats have been clipped in the spring, the hair is spun into a coarse fibre using a wooden *mughzl* (gravity spindle). This was observed to be a popular task among young children, especially girls. These fibres are then woven using a wooden ground loom[48]. It was reported that the completion of a typical 10-metre long goat hair strip takes about 30 days of work for one woman working a four-hour day.

The household of herd-owner *K*, living in Umm al Quttayn, did not produce *ashqaq*: He explained:

> *"We don't weave* ashqaq *these days. When I lived in my father's tent, half of our herd was goats. We kept them because we were living in the* Jebel *and the* harra. *But now we have few goats, because we live in the village. Our sheep graze on barley and eat* 'alaaf *from the government and we sell the wool. Why do we need* ashqaq? *After my wife clips the goats her sister comes to take the* sha'ar*".* [49]

It was estimated by herd-owners that the hair of 60-80 goats was required to weave a typical *shaqa* with a length of ten metres. Given the sheep-dominated configuration of most contemporary herds, very few pastoral households own sufficient goats to fulfil the hair requirements of even a single *shaqa*. Consequently, most of the 9 households from the *A-W* group who produced *ashqaq* domestically were dependent upon the acquisition of additional goat hair to that produced by their own goats. In the Badia, unprocessed goat hair did not command a high commercial value and in most cases, as reported by *K* and others, additional supplies were acquired through informal transactions with neighbours and kinsmen who had no use for their own goat hair. These transactions were conducted between women.

Scarcity of female labour (particularly women with experience of weaving *ashqaq*), as well as the scarcity of goat hair, acted to limit production. Another reason some households did not produce *ashqaq* domestically was the availability of prefabricated *ashqaq* at major Bedouin market centres such as Mafraq, Azraq and Ruweishid. At Mafraq *suq* in 1995, an individual ten-metre tent strip was priced at 60 JD. The decision to purchase a tent strip[50] rather than produce it domestically was thus probably based upon an evaluation of the opportunity cost of female labour applied to tent weaving.

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[47] Each of these households reported weaving only one individual strip annually.
[48] Household *T* had a more modern metal loom
[49] Herd owner *K*, Umm al Quttayn, April 1996
[50] Households *B* and *N* reported purchasing tent sections in 1995-1996.

6.5.4 The monetary value of consumed livestock products

Domestic consumption of dairy products, meat and fibres, as reported by the *A-W* households is detailed below (Table 6.7). The cash value of consumed products has been calculated on the basis of estimates given in sections 6.5.1-3.

Table 6.7: The value of domestically consumed livestock products

	>15 yrs	<15 yrs	Milk Meals Monthly	Slaughter annual	*Ashqaq* Annual	Annual value of dairy products(JD)	Annual value of Meat (JD)	Annual value of tent repair (JD)	Total annual value (JD)	Herd size 7/96
A	4	5	44	10	1	343.2	200	60	603.2	245
B	7	8	24	41	0	316.8	820	0	1136.8	1506
C	5	6	28	0	0	268.8	0	0	268.8	0
D	8	6	36	32	0	475.2	640	0	1115.2	742
E	4	5	52	9	1	405.6	180	60	645.6	383
F	4	6	48	16	1	403.2	320	60	783.2	548
G	4	6	28	19	0	235.2	380	0	615.2	503
H	5	3	36	6	0	280.8	120	0	400.8	218
I	5	2	32	21	0	230.4	420	0	650.4	535
J	5	3	36	7	0	280.8	140	0	420.8	36
K	4	0	40	9	0	192.0	180	0	372	328
L	5	3	32	9	0	249.6	180	0	429.6	70
M	5	6	36	13	0	345.6	260	0	605.6	486
N	3	5	36	12	0	237.6	240	0	477.6	502
O	4	5	36	0	0	280.8	0	0	280.8	16
P	5	5	48	15	1	432.0	300	60	792	507
Q	5	3	52	5	1	405.6	100	60	565.6	171
R	4	6	56	15	1	470.4	300	60	830.4	724
S	7	1	60	14	1	540.0	280	60	880	1005
T	4	6	44	22	1	369.6	440	60	869.6	474
U	7	5	28	18	0	319.2	360	0	679.2	734
V	4	3	36	15	1	237.6	300	60	597.6	276
W	5	3	24	17	0	187.2	340	0	527.2	136
Total	113	101	892	325	9	7507.2	6500	540	14547	
Mean	4.91	4.39	38.78	14.13		326	282.6	23.47	632.48	
Std. dev	1.23	1.92	10.12	9.3		96.99	186.09	29.94	233.64	

These figures indicate a mean annual value of domestically consumed animal products of about 632 JD per household, with a range extending from 372 JD (household *K*) to 1,136 JD (household *B*).

Using the estimated cash value (JD) of consumed livestock products as a common unit of measurement, it is possible to differentiate the autoconsumption of these products between the mobile and sedentary residence systems in the *A-W* group.

Table 6.8: Levels of domestic consumption of livestock products by residence type.

Residence type	Mean herd size	Mean Annual Consumption (JD)	Mean Household Size (>15yrs=0.5)	Annual Consumption per person (JD)	Annual consumption per animal (JD)
Mobile	516.57	732.63	7.5	97.68	1.48
Sedentary	266.22	476.71	6.4	74.49	1.79

Division of the cash values of autoconsumption by residence type indicates that mobile households on average consume livestock products to a higher value than sedentary households. The difference between the two mean values was significant ($P<0.01$). Furthermore, investigation revealed a marked correlation between herd size and value of livestock products consumed ($r=0.767$).

Observations made during my period of residence in households *F*, *S* and *T*, suggest that part of the discrepancy in consumption between households of different residence systems have been related to difficulties in accessing markets, particularly during the migration season. Trucks were never used for 'shopping trips' to buy supplies. Instead, foodstuffs were purchased whenever markets were visited for the purpose of other exchanges (e.g. selling animals or buying feeds). Consequently, five or ten days often elapsed between re-supply.

In contrast, sedentary households had more regular access to a range of purchased foodstuff commodities, either from village stores or mobile traders.

However, another reason why the consumption of livestock products was important to households specialising in rangeland-based pastoralism, is related to the distinct annual cash flow of this type of household.

6.6 Domestic cashflows, seasonality and consumption of livestock products

As described in section 5.5, livestock incomes were found to be seasonal in character. It was observed that the cost of maintaining sheep herds was particularly high during those months when livestock incomes were lowest. Therefore, a cycle of cash availability followed by scarcity was one of the most pronounced livelihood features of those households where livestock constituted the sole or major source of income.

Although, while feeds remained subsidised, total annual revenues would normally exceed expenditures, the evidence from the *A-W* group of households suggests that cash surpluses in the spring and summer months were not necessarily budgeted and carried over to cover the following months of deficit. Instead, there seemed to be little confidence in cash as a secure

store of value[51], and it was usually spent quickly by herders once they received it. For example, on receipt of income from sales of weaned lambs and milk in spring 1996, many herders expressed the intention of stockpiling feed supplements for security against future shortages or possible price rises.

I also noted that as soon as cash became available to households, many were confronted by financial obligations or outstanding debts that they felt compelled to honour[52].

In consequence, although many herding households commanded considerable assets and a high annual turnover, the instability of income and the way in which cash was often tied into market and non-market transactions made them particularly vulnerable during the winter months

The value of domestically produced and consumed livestock products was important within this context. As quantified among the *A-W* households, the monthly value of livestock product consumption to the domestic economy of the household was comparable to the value of a secure income from waged employment.

Furthermore, the consumption of livestock products could be employed by herd-owners as a management tool giving the managers of large specialist pastoral herds (which being mobile, had fewer stabilising sources of income) some additional flexibility in negotiating costs and expenditures during the difficult parts of the seasonal production cycle. This process is described in Figure 6.5, which illustrates how production of diary products could be increased or decreased seasonally (or out of season) to effectively create additional value at times of severe cash scarcity. This system helped to regulate the household's articulation with the market economy and clearly constituted a store of value. Observation of this type of behaviour provided further evidence for the indivisibility and integrity of market and non-market spheres of production within the household.

While it could be argued that in choosing to consume livestock products, pastoral households lost the sale value of those products and thus were no better off than at first, this argument is based upon the assumption that products sold and those consumed were necessarily the same

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[51] In 1988 the Jordanian Dinar had been devalued by 50%,.

[52] On a visit to herd owner *E* (following his sale of weaned lambs in spring 1996), I chanced upon two male kinsmen petitioning him for cash. I quickly departed, but on my subsequent visit he explained that one man was raising money within the kin-group to pay for a bereft young man's marriage. The second petitioner needed money to clear debts. *E* reported giving money to both, but did not volunteer how much. Such transactions do not seem to be uncommon.

things. While much of what was consumed by Badia households held market value, some did not[53].

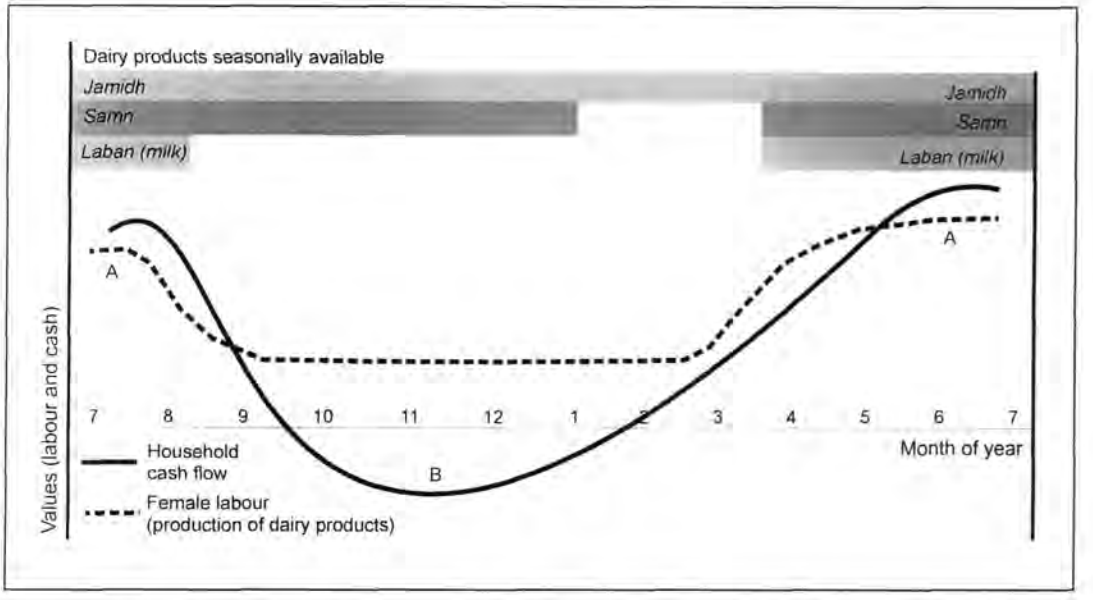

Figure 6.5: Relationship between domestic production, consumption and the seasonal cash flow in pastoral livelihoods.

Variation in production of dairy products along section A of the labour curve may be used as a strategy to modify cash availability along section B of the cash-flow curve.

6.7 The management of livestock for non-market oriented production

The systems by which livestock products were accessed for consumption by households were complex. Where requirements for products could not be met by the household herd, they could sometimes be obtained from the herds of other households (binding households into networks of reciprocity) or exchanged for other commodities such as labour[54]. However, the majority of livestock products, (particularly dairy products), consumed by households were products of the household's own animals.

During the spring milking season, it was common practice for a quantity of sheep milk to be separated from that destined for sale in order to be consumed domestically within the household. Large quantities of milk are consumed fresh during the milking season, and more is processed into durable products (principally *samn*) for storage and consumption later during the

53 For example, following out of season lambings (when no traders were available to buy the milk) sheep milk was generally used for production of durable diary products. Likewise, goats milk was another commodity which held no real market value and yet was very important for domestic consumption just as goats hair had little market value either (section 6.5.3). Finally, as described in section 6.5.2, animals slaughtered for meat were often weak or ill animals of low monetary value. Thus, for a proportion of what was domestically consumed in the Badia, opportunity costs were low (other than labour).

54 Male household members assisting their neighbours with labour intensive activities such as shearing are traditionally feasted on a slaughtered animal for their services. This practice can be viewed as a meat for labour exchange.

year. However, throughout the year animals producing specifically for domestic consumption were often managed separately from the commercially producing herds.

It has proven difficult to acquire accurate information about animals kept separately from the main herd for the purpose of household supply, because these animals were invariably managed by women and male informants tended to understate their importance and numbers.

Almost all the *A-W* households (with the exception of those with the very smallest livestock holdings, which were under fully sedentary management), withheld small numbers of animals from their main herds to be managed separately in the locality of the household. The reported reasons given for the spatial separation of these animals from the main herd are listed in Table 6.9.

Rank	Reason
1	Easy access for daily milking and to prevent kids suckling
2	To consume unwanted household scraps and waste
3	Sick or weak animals for special care and monitoring
4	Personal property of women/children
6	Fattening for slaughter/gift
5	Providers of fibre products

Table 6.9: Ranked justifications for spatially and economically distinct household herds

I would add some further observations to those listed in Table 6.9. First, most households (whether stone house or tent-based) were able to offer sheltered accommodation to a small number of animals (either in a roofed pen or a special tent for animals). Shelter was of particular importance to goats in winter as they did not endure cold and damp conditions as well as sheep. Animals with special needs were thus treated distinctly from the rest of the flock. Second, ailing animals were sometimes (not always) kept under closer household supervision less to facilitate their recovery than to pre-empt their natural death by slaughter for household consumption of meat.

The household herds mentioned in Table 6.7 could be considered economically distinct from animals managed in larger, commercially oriented, herds. Making this distinction can be justified in several important ways. First, the production of these animals was generally oriented to domestic supply or informal non-market transfer to other households. Second, although purchased feed supplements were sometimes employed, the feeding regime of these animals differed from those in commercial herds. Particularly in villages, domestic and agricultural waste formed a high proportion of their dietary intake. Labour inputs were exclusively non-waged. Consequently, the spatially distinct management of relatively small numbers of animals for the purpose of non-market transactions fell largely outside the domain of the monetarised livestock economy.

Livestock holdings oriented to household production varied both in constitution and size. Goats were favoured for the production of milk. Not only did lactation in goats extend over a much

longer period but the flexibility in their reproductive cycle and the wide time-span of kidding meant that it was possible for households to have fresh milk for much of the year. Furthermore, goats were especially well suited to thrive upon the eclectic diet of by-products and scraps that were commonly offered to animals at the household. However, domestic herds did not comprise exclusively of goats but often also included some sheep, which may have been the personal property of a household member[55], or otherwise needed to be managed outside the monetary economy for some special purpose.

As for the size of holding, in the *A-W* households the number of animals managed within the household domain seemed to range from about 5 to 30 animals, with 10 to 20 being the most common. Obviously, given the large quantities of livestock products consumed, these animals did not alone account for all the consumption of the household. As stated above, during the sheep-milking season, households could further appropriate a considerable quantity of milk from commercially producing herds and transfer this across to the domestic domain. This transaction is important, not just because of the amount of milk products required by the household, but also because *samn,* one of the most important durable dairy products, was usually only made from sheep milk.

6.8 Conclusions

When I conducted my fieldwork in the Badia I found that livestock management and production was closely bound to household constitution and residence forms, in large part because livestock production at a domestic level (and some aspects of production for market supply) remained subject to the availability of household labour resources. However, as labour availability could act as a constraint upon production, many households had adopted complex residential strategies in order to overcome these problems. These strategies included planning household growth (through marriage, etc.), the construction of extended household groups, the spatial division of households and the transfer of individuals between residential locations to bolster labour supply or for other reasons.

However, the management of household labour resources in the Badia was further complicated by the availability of labour for hire and the gendered division of labour with the consequence that a herding household could have a surplus in male labour but be deficient in female and *vice versa.* These gendered labour roles were perhaps the most visible manifestation of the two distinct spheres of pastoral production; one sphere supplying markets and the other producing for domestic supply. These spheres of production were found to be complementary in the construction of a household livelihood.

[55] The mature daughter of *Abu* Qasim (owner *I*) had two sheep which ran with her mother's domestic group. These were both given as gifts to her male child and would remain in her care until the boy's maturity.

Turning to the non-market sphere of production, the value of production and consumption was found to be high, in most cases equal to about half of the total household monetary expenditure upon foodstuffs.

Furthermore, given the types of foodstuffs that were routinely purchased by pastoral households, it is clear that consumption of livestock products was of particular nutritional importance in the Bedouin diet, constituting a major source of protein and energy. Consumption of livestock products remained especially important in those production systems where residential mobility was practised because animals provided a convenient store of food products and milk could be processed into high energy, durable products, ideal for consumption where markets were relatively inaccessible.

Given that the main costs of livestock products were non-monetary (principally female labour), the consumption of livestock products was a strategy that households could adopt to make savings in costs during periods of cash scarcity. Thus, within the livestock economy of the Badia, the supply of animal products to the household could provide herd managers with greater management flexibility in dealing with markets, thus enhancing the herd's overall productive capacity.

In the light of these findings it is possible to return to Behnke's Libyan model for the integration of pastoral economies into markets, where the traditional production for domestic consumption was replaced by foodstuffs purchased from markets. While a similar shift to that described by Behnke has undeniably been underway in the Badia over recent decades, the evidence of this chapter suggests that modernisation and autoconsumption of livestock products are not necessarily incompatible, and in fact in some cases, consumption of livestock products can be an important element within the market oriented production strategy of specialist rangeland-based households. As such the Badia case-study challenges the notion of a clear-cut transition between non-market and market-based pastoral livelihoods.

In the following chapter, the idea of continuity and change in pastoral livelihoods is explored further with reference to the non-material values attributed to livestock, and the role that herd management plays in structuring pastoral society.

Chapter 7: Socio-economic organisation, interdependencies and informal livestock transactions

7.1 Introduction

In Chapters 5 and 6 I considered the material values of livestock at a household level, both within and without the formal monetised economy. However, as highlighted by the discussion offered in Chapter 2, most theoretical positions on the changing utility of livestock in pastoral systems stress the importance of placing livestock herds within their wider institutional context. The need for this awareness is encouraged, among others, by Galaty and Johnson (1990:18) who argue that:

> *"In pastoralism, animal husbandry is a social pursuit within a total way of life, not simply a technical process of animal production... The pursuit of pastoralism implies both individual and societal commitment often codified as a pastoral ethic... This cultural dimension together with the proper social relations for each region lends a human face and a definite framework for the technical process of raising animals. The interplay of cultural and technical dimensions can be can be seen in the functions, objectives, management techniques, labour process and scale of operation of pastoral systems".*

However, Chapter 2 further revealed a dichotomy of scholarly opinion surrounding the issue of how pastoral Bedouin social structures, institutions and values respond to socio-economic change. Some work, such as that of Meir (1997) clearly emphasises the breakdown of social institutions as household economies modernise, while others, noticeably Chatty (1986,1996), Lancaster (1981) and Lancaster and Lancaster (1999) believe that traditional social institutions may survive within the new market economy. Indeed, some of the more recent theoretical contributions to the study of marginal rural communities stress the role of social institutions in underpinning economic development (Bebbington 1997).

This chapter addresses these important questions by considering non-material values of livestock within the modernised pastoral economy of the Ahl al Jebel. At the outset of the Chapter, I begin by describing the socio-economic organisation of livestock production, with reference to the major organisational forms encountered during the period of fieldwork and the differences between them. On this basis, the households of the A-W sample group will be aggregated into four broad categories based upon social form and economic orientation.

The discussion will consider how livestock may be owned, managed and how commodities may be transferred within these social structures, including important inter-generational transfers. Developing this theme further, I consider to what extent evidence from the Badia substantiates the persistence of social and symbolic values for livestock within the contemporary production

system, and conversely, the operation of the traditional value system within the modern livestock economy.

The chapter concludes with an evaluation of the importance livestock systems play in the structure of Ahl al Jebel society and in doing so, considers the relevance of Marxist and substantivist theory to contemporary pastoralism in the Badia.

7.2 The kinship-based livestock collective

During my fieldwork, I adopted the term 'livestock collectivism' to describe one of the most important forms of herding organisation in the Badia. The households of *Abu* Ward (F) and *Abu* Sweilim (T) were both members of livestock collectives (and indeed, were the headmen of their respective collectives). The A-W group coincidentally contained one other household (V) that was a peripheral member of the collective headed by *Abu* Sweilim[56]. Outside of the *A-W* group, I was aware of several other multiple household herding collectives operating in the northeastern Badia of Jordan.

The underlying rationale for collectivism can be traced to the principles of Bedouin descent group solidarity, within which, in the words of Jabbur (1995:288) *"individual interests have melted away and become transformed into that of the descent group"*.

Both Behnke (1980:118) and Lancaster and Lancaster (1999:291) have already described the generation of associated household production economies by the combined management of an inheritance by adult brothers (or close kinsmen) as property of the *beit,* rather than any particular individual within it. Likewise, the prevailing pattern of patrilateral cousin marriage (*ibn* or *bint 'amm*) illustrates the systematic reinforcement of the minimal lineage in terms of both power and wealth, as *al warath* (the operating inheritance system) consolidates capital and resources within this structure.

The term 'collective' has been selected as one suitably ambiguous to define the operational relationship between households within the herding encampment. The two livestock collectives studied were built upon a core of close agnates (in both cases four brothers), by whom most of the production capital was held. The level of economic association practised within this core was distinct from relations between core and more peripheral households.

Both of the livestock collectives within the study group were the products of an inheritance collectively managed for optimal efficiency. They comprised of four core-households, of which only three were located within the herding encampments, while the fourth was located away from the encampments at a village base. However, households could alternate between their

respective positions within the collective and could break down into sub-units or other structural forms to best exploit the management environment. The structural organisation of the two livestock collectives studied was basically similar:

Table 7.1: Roles within and organisation of a livestock herding collective

Households	Participation
Core household units in herding camp	Full partners in strategic management of the core resources of the encampment, including livestock, production equipment and finances. Livestock divided between partners and herded separately: Individual incomes and equipment, but accumulated capital of the 'business' available to all
Core household unit at village base	Full partners in the strategic management of the herd but absent for daily decisions. May possess livestock or equipment at the herding camp and receives share of profits. Represents the interests of the collective externally (at sub-tribal, tribal and state levels). Responsible for general liaison, communication and facilitates access to services. May contribute non-livestock incomes
Peripheral household unit in herding camp	May be consulted by core households on strategic management issues, particularly if the household contributes important assets (labour, livestock or equipment). Although outside the immediate *beit* of the core partners, associated with this *beit* through lineage and/or marriage. Manages its own livestock separately from the core but may benefit from limited access to and support from core resources
Peripheral household unit at village base	Larger peripheral units may maintain a base elsewhere performing the same functions as core village based households
External	External to the collective. May simply be an unassociated household camped nearby, or may have a purely economic relationship with collective households (e.g. provide waged labour)

The operation of the livestock-herding collectives is perhaps best illustrated through the use of a case study: *Qoum Abu* Sweilim.

7.2.1 Case study: *Qoum Abu* Sweilim

The word *qoum* is used by the Ahl al Jebel and neighbouring Bedouin tribes to describe a multiple household herding camp which travels together[57], and is distinguished by the name of the recognised head man within it. The *qoum* is not the same entity as the livestock collective: it expresses a spatial and political relationship between households, not necessarily an economic one. However, the *qoum*s described in this chapter were simultaneously livestock collectives and therefore comprised an economic dimension.

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[56]When household *V* had originally been selected for participation in the research, it was detached temporarily from the herding collective. Thus the association between it and household *T* was not immediately known. However, in the longer term it provided a valuable insight into the relationship between core and peripheral households within herding collectives.

[57] The Steingrass Arabic Dictionary (1989:864) gives one definition of the the term *Qoum* as 'to break camp' or 'depart'. Although the term *Qoum* holds several meanings in Arabic and can be applied to several types of aggregate groups, it is used in the Jordanian Badia to describe an encampment of tents which migrate together. For further discussion of the term *qoum* see Lancaster (1981)

Qoum Abu Sweilim usually encompassed six to eight households and a population of about 30 individuals. The core households within the *qoum* were those of *Abu* Sweilim (B1) and his two brothers B2 and B3 (See Figure 7.1).

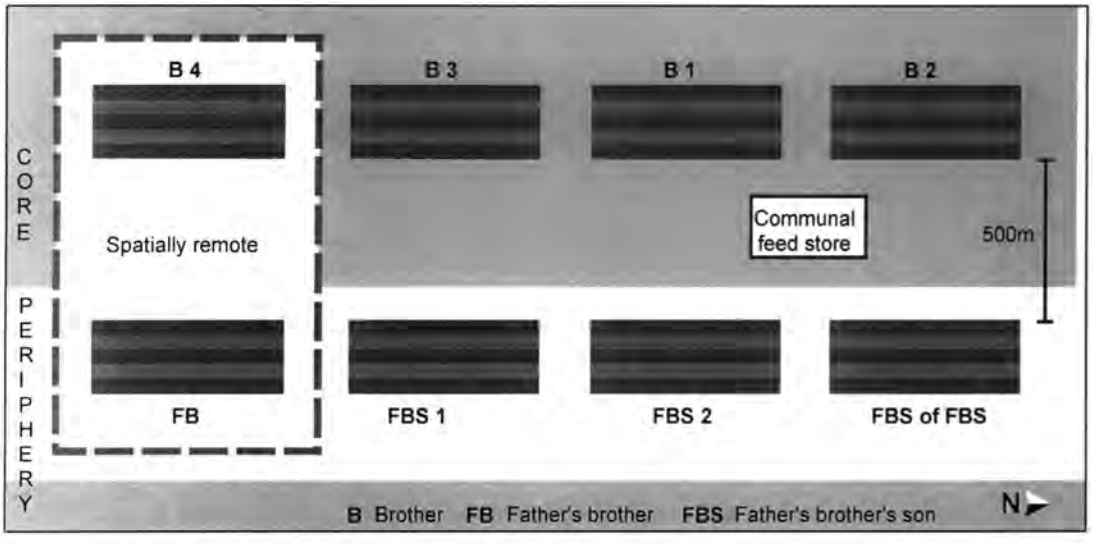

Figure 7.1: Qoum Abu Sweilim (Marab Qitafi, February 1997)

Between them, in 1995, these three core households managed about 1800 sheep. They also owned two trucks, a water tanker truck and a small pickup truck. The animals were managed as four separate flocks; three of roughly equal size belonging to *Abu* Sweilim and his two co-resident brothers, while a smaller flock was owned by the spatially remote core-household of the fourth brother B4, who lived in the village of Menarah. While B4 was actually older and more senior to *Abu* Sweilim, the latter was recognised for his business acumen and worldliness while the former was of a more spiritual orientation and acted as the religious and moral authority within the *beit*.

The other three long-term members of the *qoum* were displaced by one lateral degree of descent from the core households. Two heads of these peripheral households were *ibn 'amm* (father's brother's son) while the third was *'amm* (father's brother). Thus, in genealogical terms, the core B group households of the *qoum* represent a single *beit* of four adult brothers and their families, while the whole *qoum* represented shared interests at a wider *ibn 'amm* level. In total, these peripheral households managed about 600 animals but only possessed two unreliable trucks between them.

The herding and management relationship between *Abu* Sweilim and other members of the core B group of the livestock collective was flexible. On the whole, each brother took individual responsibility for his own flock[58], but this management was closely co-ordinated between them. For example it was usually agreed for all the herds to meet at a previously agreed point and time to facilitate the easiest and most economic feeding, watering, inspection and transfer of

[58]The flock of the villaged-based B4 was managed on a daily basis under the supervision of *Abu* Sweilim.

animals for sale. As a visible manifestation of this management co-operation, the brothers had regular meetings to review activity logistics and schedules.

Domestic economies at a household level were (publicly at least) managed entirely separately: This was important for each brother since precedence over a household was considered a social and cultural point of honour for the adult male in Bedouin society. However, the households quite frequently ate together for convenience because *Abu* Sweilim and his two brothers were often engrossed in policy deliberations. The women and children of the households also spent much time together (for both labour and society). Furthermore, when animals were slaughtered from any of the B group flocks for meat, this was routinely divided between households, being too much for one household to consume before spoiling. The preparation of bread and dairy products was usually undertaken jointly by the women (who enjoyed each other's company and seemed less inhibited about compromising household independence).

Decisions among the B group of herd-owners were centrally planned and described to me as being the product of consensus between the partners. However, my own observations of this process suggest that in practice *Abu* Sweilim's business and herding judgement was so highly respected by his younger brothers that his opinions usually found general acceptance. Furthermore, being entrusted with the absent B4's livestock meant that *Abu* Sweilim effectively held the 'casting vote'.

Livestock management decisions were planned to produce a relatively equitable division of income between households. For example, when animals were sold to raise cash, the sales were divided between the four herds to generate comparable incomes for each. Only B4, with less livestock, had a smaller share of the livestock income. He had presumably at some point decided to liquidate part of his herd in order to invest in other (village) assets[59].

While production capital was individually 'owned' by each of the B group (e.g. B3 owned a truck), in practice access to this capital was open to each of the brothers and usage was planned collectively. Specialisation within the herding collective acted to kindle a degree of interdependence. For example, *Abu* Sweilim owned a small pickup vehicle, relatively fast and fully licensed for road use, which was an important asset for facilitating information gathering, marketing, meetings and other business practices, while B2's tanker truck was indispensable for watering the large herd.

Logistically, the herding collective operated reasonably smoothly. Time-consuming but necessary tasks, such as fetching feeds from Azraq and water from the nearest source, were organised and executed co-operatively, creating savings through economies of scale and division of labour. Major livestock expenditures such as feeds were planned centrally and feed stocks maintained communally in a single store. *Abu* Sweilim was often absent from the *qoum*

for the purpose of gathering information on grazing, commodity and livestock prices, and conducting business affairs on behalf of the collective or liasing with B4.

In common with other business enterprises, the collective was structured to operate with efficient use of labour. Personnel staffing the 'production site' were selected to constitute the optimal labour resource and the demographic characteristics of the *qoum* reflected this. The encampment seemed normally populated by adult males and females, with a few very young infants (those too young to be separated from their mothers). Children, the very aged or the infirm were conspicuously absent from the *qoum*. Each household within the herding collective was managed to maintain an optimal workforce, which (as described in section 6.2) frequently involved the transfer of individuals between the encampment and village-based residences. Labour at the herding camp fluctuated both seasonally with changes in management policy and with labour availability. In spring, as female labour for milking and milk processing became more important, the adult female population of the herding encampment increased and during school holidays children also made important labour contributions to simple, repetitive or general tasks. Labour resources at herding encampments were managed dynamically and the *qoum* population was thus relatively fluid.

The roles of the village-based element of the core *beit* were multiple. At a most general level, B4 acted as guardian of the *beit*'s interests at Menarah village. Any members of the *beit* resident within the village were entrusted into the protection of B4.. As these individuals include women, children and the elderly, it was (in a *beit* of relatively conservative outlook) considered only culturally acceptable to place these in the care of a brother. While they did not necessarily live with him, he was seen as morally responsible for their well-being and security while at the village.

Menarah was one of the largest settlements of the Sharafat tribe in the JBRDP area, and the continued presence of B4 in the village was considered an important tool in maintaining a dialogue with other *beiyut* of the same lineage and *fakhad,* thus perpetuating the *beit*'s articulation with its wider kinship group. In this way, the social and political agenda of the *beit* was not compromised by its absence. The sedentary B4 household also served as a point of contact between the mobile herding section of the *beit* and official state agencies. It facilitated the *beit*'s access to Ministry of Social Development food subsidy coupons, army pensions and the Ministry of Agriculture's *Kushan* (livestock ownership certificate). Furthermore, B4 administered the large area of unirrigated land owned by the group of brothers, collecting rental from the local farmers who worked it. Finally, B4 held a position at the village mosque, which brought him a small income, but also helped to underpin the *beit*'s status within the community.

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[59] At the outset of my fieldwork B4 was the only household from the *qoum* to have a permenant stone village house. *Abu* Sweilim commenced construction of a house in 1995.

At intervals (both at times of great labour demand or when B4's household wanted a holiday with their kinsmen), B4 relocated his household out to the encampment, uniting the entire *beit*. I last observed this in March 1996 when B4 moved his *beit sha'ar* out to the herding encampment to inspect the livestock and discuss a major restructuring of the flock. With B4's participation, the livestock collective sold off more than 200 animals during the month.

As illustrated by Figure 7.1, the peripheral households of *qoum Abu* Sweilim (i.e. those representing the wider *ibn 'amm* level of association) camped in a separate linear formation from the core households (about 500m away across a major *wadi*)[60]. This spatial distribution tended to reinforce both the economic and the social configuration of the *qoum*, in which the core households exhibited the highest levels of social and economic interaction.

Peripheral households shared common interest with the core *beit* in preserving the political and economic integrity of the collective group, albeit at a once removed degree of kinship. Furthermore, the likelihood and prospects for future links through marriage with the core households were high. This likelihood increased through prolonged social and economic association between the households (as occurred at the herding encampment).

Collective supply at Qoum *Abu* Sweilim

The supply of 2000 sheep required three truck journeys to Azraq for feeds each week (10-15 tonnes). Because of the slow speed of the vehicles and the need to arrive early at the feed distribution centre, the truck(s) departing for Azraq would leave in the evening and arrive back at the encampment the following afternoon. At the same time, two tanker truck journeys were required daily to the Qitafi well to water the flocks. This truck and one other were also required to drive out to the flocks to deliver the daily feed and water rations.

It would have been very difficult for *Abu* Sweilim, B2 and B3 to maintain this weekly supply schedule using their three trucks alone. Similarly, each operating independently, households FBS1 and FBS2 were capable of meeting their flock supply needs but their old trucks would have needed to run almost continuously at high cost, and even one breakdown would have resulted in serious problems.

As a centrally coordinated unit, the available pool of five trucks met the logistical requirements of all households in the *qoum* far more effectively. This operating system also freed labour and vehicle resources for the encampment's frequent pastoral movements around the Badia to maximise the use of available grazing.

Co-operation between peripheral and core households of the livestock collective occurred on several levels[61]. During the period of study, these peripheral households managed their own domestic economies independently of *Abu* Sweilim, B2 and B3. However, all members of the livestock collective co-operated together in fetching animal feeds and water supplies. This

[60] The general encampment layout of both *qoum*s described in this chapter remained fairly consistent over the three years of my fieldwork.

[61] From a decision-making perspective, I was struck by similarities between the structural organisation of Badia herding camps and those of the *Raikas* shepherds in western India described by Agrawal (1993:261-279). In both cases, certain categories decision, principally those involving camp migration and its interaction with external institutions (such as markets) are willingly delegated by heads of household to camp headmen, while individual households remain autonomously managed.

central management of logistical supply made significant savings in labour and fuel for all *qoum* households.

One *qoum* household, that of the impoverished FB (household *V* of the *A-W* group), did not own a vehicle and was completely dependent upon other *qoum* members for supply and transport support[62]. Even though FBS1 *was* FB's closest agnate within the *qoum*, support more usually came from core B households (notably the headman *Abu* Sweilim), which not only had greater resources to assist but also, as the senior *beit* of the *qoum,* considered itself in a position of social responsibility for beleaguered kinsmen.

At the strategic level, the livestock collective behaved as a single actor. The core-brothers developed a common economic and political policy, giving the collective a better negotiating position in business affairs. This included negotiating bulk feed purchases and bulk sales of lambs (which enticed traders to travel out to the flocks, placing them at a bargaining disadvantage) and special deals with milk merchants. Even the livestock researchers of the JBRDP were forced into concessions by the collective's bargaining position during arrangements for the 1995 vaccination trials.

Another frequent area of co-operation between households is the exchange of labour. While core households of the collective hold the majority of the capital and production resources of the encampment, they do not maintain the labour to manage it effectively. This was clearly demonstrated during the milking season of 1996, when the core households could only muster seven women to milk more than 1600 ewes. While not impossible, this task alone would have occupied all household members for about four hours daily, while the herds waited in the locality. Instead, the four peripheral households of the *qoum* contributed a further seven women to this operation, effectively halving the management time required. Extensive co-operation also occurred between women of the *qoum* in the processing of milk products, with the net flow of labour being from peripheral to core households (the latter owning the largest numbers of sheep and processing the greatest volume of milk). A comparable system of non-compensated labour transfer within socio-economic herding associations among the Komachi pastoralists of Iran has been discussed by Bradburd (1990:67).

Not all exchanges of labour between periphery and core were non-monetised. Two of the peripheral households (FBS1 and FBS2) supplied young men as waged shepherds (although at a less than market rate of remuneration) to the core households; an arrangement desirable to both groups. *Abu* Sweilim described the young (albeit inexperienced) shepherds as more reliable than hired Syrian labour, as they had a direct interest in the well-being of the sheep.

Also in paying wages, the employers were not putting money of the *beit* into the hands of strangers but were instead redistributing it from one section of the descent group to another.

In explanation, *Abu* Sweilim indicated the cluster of tents in the encampment and said:

> *"Here we are all one family: What I hold today, my brother takes tomorrow and my kinsmen the next day. Still, it is always there for me if I need it"*[63]

Indeed, within the herding collective, peripheral households also enjoyed limited access to venture capital and the considerable financial reserves of the core households (depending on the consent of all brothers). This mainly took the form of access to livestock feeds on credit, although occasional transfers of cash were also observed. Against this type of credit facility the core households gained access to female (non-compensated) labour, co-operation in logistical supply, favourable terms for the hire of male labour and payment in kind by the transfer of dairy products. The patronage extended by *Abu* Sweilim and his brothers to the peripheral households of the livestock collective can also considered in the light of Lancaster's (1981) analysis of Rwala social relations, where the accumulation of personal and *beit* reputation had intrinsic asset value as a form of social capital.

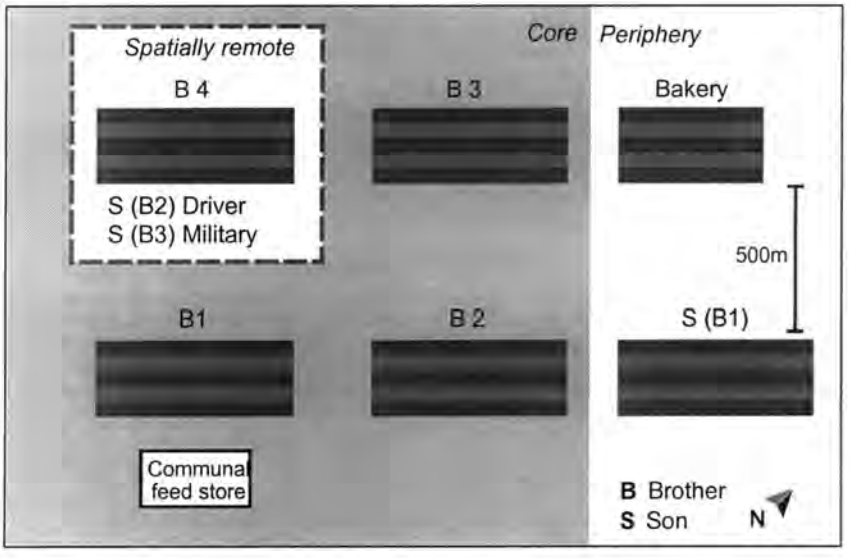

Figure 7.2: Qoum Abu Ward (Wadi Rakban, December 1996)

Qoum Abu Ward, the second livestock herding collective studied (Figure 7.2) displayed a comparable organisation to that of *qoum Abu* Sweilim. Three brothers jointly managing an inheritance (with a fourth brother located at Baj village) constituted the core of the collective, with the household of *Abu* Ward's adult son (SB1) constituting a peripheral household with its own smaller separately managed herd, plus a tent functioning as a communal bakery. However, SB1 was dependent upon the core for some types of support in exchange for labour. This collective also had two household members who were wage earners (SB2 and SB3), who contributed part of their income to their respective households. The core households of *qoum Abu* Ward further received a small income from land rents received on their behalf by B4.

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[62] During Januray 1997, FB chose to move his tent 20 kilometres away from the main *qoum*. During this period, other members of the livestock collective made twice weekly visits to his camp to supply his flock.
[63] *Abu* Sweilim, Marab Qitafi, Feb. 1997

In summary, the kinship-based herding collective displayed a high level of organisation in the management of livestock. Economies of scale were enhanced by a centrally developed economic policy, a planned division of labour and the maintenance of an optimal labour force at the encampment. While core and peripheral[64] households gained distinct types of social and economic benefits from the association, the latter drew considerable advantage from association with the former, and were at any time free to depart the collective if they perceived individual advantage in doing so[65]. Pooled resources gave the livestock collective the logistical ability to exploit rangelands, while a securely managed village base and active representation at tribal and official levels gave it the social and political freedom to do so. In some respects the collective acted as a single economic entity; within its boundaries, labour, capital and finance flowed to best exploit economic opportunity and, where necessary, fend off disaster. In this respect the economic viability of the *qoum* was ensured and the relative cohesion of both the *beit* and the wider three-generation *ibn 'amm* descent group was strengthened.

However, the socio-economic association of households for the purpose of livestock herding was not solely restricted to construction of large herding collectives (although these were perhaps its most visible manifestation). Households could alternatively be bound into long-term herding associations with just one or two other households. The households of herd-owners *E* and *R*, based at the settlement al Jedda on the Syrian border provided evidence for this latter strategy.

E and *R* were kinsmen related at the *ibn 'amm* level of genealogical proximity. Originally from Syria, they had brought their respective households to Jordan in 1980 for the purpose of claiming marginal agricultural land adjacent to al Jedda. The two households managed their herds jointly, co-operating on the logistical supply of their herds and encampments. For a short period during 1996, they even divided the cost of hiring a shepherd. Between October 1994 and November 1997, the two households were never spatially separated for more than a few days, despite migrating widely around the eastern part of the *hammad*. The two households also collaborated on the opportunistic ploughing and sowing of barley at al Jedda.

The combined herd of the two households in summer 1996 numbered about 1000 head, which granted them, like the larger livestock collectives, several types of supply and marketing advantages over smaller independently managed herds. In 1993, one of *R*'s sons had married *E*'s eldest daughter.

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[64] *Qoum* residents did not acknowledge the existence of a 'periphery' or a 'core' within the organisation of the encampment. They viewed themselves as equal herding partners benefitting from mutually advantageous cooperation where it suited them. Obvious differences in access to resources were explained in terms of respective kinship positions within the *qoum*, rather than economic organisation.

[65] For example, since the core households of the livestock collective own too many animals to be able to graze agricultural residues, when grazing contracts become available in early summer, some peripheral households may chose to detach themselves from the *qoum* and rejoin later.

7.3 Independent household herding

Distinct from collectivised herding within socially structured aggregates, the specialised, rangeland-based production of livestock alternatively occurred at an individual household level. Three commercially producing households within the *A-W* study group were identified as managing their livestock in the absence of regular collaboration or association with other households. These were the herds of owners *B*, *S* and *U*.

Livestock management at the individual household level may occur only if all basic production requirements can be met from available household resources. On the basis of this prerequisite, individually herding households may be distinguished by several characteristics. These characteristics will be outlined with reference to household *S* (that of *Abu* Rashaid).

Abu Rashaid's household was socio-economically distinct owing to its large labour resource (comparable to that of households of B1, B2 and B3 of *qoum Abu* Sweilim combined). Furthermore, the household was able to meet its logistical supply requirements independently: although in 1995 the household owned only a single 10 tonne truck, this was well maintained and proved sufficient for the households requirements. In January 1997, *Abu* Rashaid purchased a second truck (a water tanker).

These labour and transport resources facilitated *Abu* Rashaid's widespread movements around the Badia, making maximum year round use of available perennial and annual forage. Like other rangeland-based pastoral households, *Abu* Rashaid's consumed large quantities of animal products, reducing dependency on outside food sources and thus extending the household's herding range. A large number of goats provided the household with daily fresh milk for much of the year (in addition to the high fat sheep milk available during the milking period). The women of the household processed milk into large quantities of durable products for consumption throughout the year and wove *ashqaq* from goat hair.

Since the whole population of *Abu* Rashaid's household was concentrated into the single mobile residential unit, there was no need for the productive herding camp to maintain an economically 'unproductive' (unproductive in a monetary sense) village-based section of the household.

However, in the case of *Abu* Rashaid's household this specialist 'pastoral' orientation imposed limitations on socio-economic development. Notably, it became increasingly difficult for the nuclear herding household to diversify beyond livestock. In *beit Abu* Rashaid, although one son had begun a career with the *Hijana* camel corps, it thereafter would be difficult for a second son

to take up outside employment (or continue his education) without acquiring additional hired labour, which would modify the favourable economics of livestock production[66].

Mobility in *Abu* Rashaid's household generally precluded most employment options while the absence of a functioning village representative acted to weaken the household's social position relative to its wider descent group. I noticed that for a major livestock owner, *Abu* Rashaid held a comparatively low profile within his own tribal group. Consequently, he missed opportunities for cultivating economic associations outside his own rangeland-based peer group and the household became increasingly focused upon rangeland-based livestock herding.

Households *B*, *S* and *U* owned 1506, 1005 and 734 head of livestock respectively in July 1996. This made them owners of the largest three herds in the *A-W* group. Quite clearly, the phenomenon of households herding individually was in some respects related to herd size. Owners with large individual herds could benefit from the same economies of scale and strong position in market transactions as herding collectives where numbers were built up by the economic association of several smaller herds. However, large herd sizes and an economic specialisation in livestock production was also matched (in all cases) by corresponding substantive investment in production capital (vehicles, fencing, water storage tanks). Managing smaller numbers of livestock, households were less likely to individually own the full range of necessary production equipment.

The three individually-herding households each had strong labour resources, although the constitution of each differed. While household *S* was a nuclear household, both *B* and *U* were patrilocally extended households, including married sons and their partners. Furthermore, while household *U* employed a hired shepherd, *B* supplemented his domestic labour pool with 2 shepherds and a full-time driver. Therefore, while households required labour resources consistent with their herd size in order to be able to manage livestock independently, these could be hired (if the household could afford to do so). All three households also benefited from external incomes.

Herds *B* and *U,* like *Abu* Rashaid's herd, ranged widely across the desert rangelands to make optimum use of grazing resources and minimise feed expenditures. However, both households *B* and *U* seasonally divided between rangelands and their village bases (both having school age children) and members in waged employment. Furthermore, both heads of household, unlike *Abu* Rashaid, were politically active within their respective communities (although herd-owner

[66] Changes in the family's constitution through marriage, births or deaths would similarly affect herding capabilities. Reflecting upon this, *Abu* Rashaid expressed the hope that two of his sons, after marriage, would bring their wives to work with the family herd.

B had difficult relations within his tribal group)[67]. This additional management flexibility may be a consequence of the more diffuse, patrilocally extended structure of *B* and *U* households, (an interpretation perhaps supported by *Abu* Rashaid's hope of building a patrilocally extended household of his own following the marriage of his sons).

On the occasions when we discussed it, *Abu* Rashaid justified the individual herding strategy of his household in two principal ways. First, he did not think that *shirka* (partnership) could economically benefit the household's livestock productivity and increase domestic income, and he speculated that the net benefits of collaboration would instead go to his partners. *Abu* Rashaid also raised social issues to explain his reticence towards co-operative herding. He observed that neither he nor *Umm* Rashaid had any close relatives who herded livestock in Jordan and commented that those who herded collectively were "*either poor to start with or became poor*".[68]

While this statement should not be taken as literal truth, I understood *Abu* Rashaid to be indicating that wealthier 'core' households in herding collectives were investing part of their production revenues into the maintenance of social institutions. While bi-directional economic exchanges occurred between associated households, the principal beneficiaries (in a monetary sense) were the poorer households of the collective, which received a range of support services at low monetary cost. In essence, *Abu* Rashaid was emphasising the redistributing effect of socially structured group-herding, in which opportunities for capital growth (for individual households) were to some extent curbed by social obligations[69].

Herd-owners *B* and *U* both described making the decision to herd individually on the basis of having the full range of resources necessary for livestock production. Herd owner *B* stressed to me the importance of economic autonomy for 'success' in the livestock business and pointed out that when the wealthy brothers of his youngest wife had recently offered him a herding partnership he had rejected it. Herd owner *U* was more ambivalent, conceding that close economic affiliation with kinsmen was an important aspect of production for households that lacked important management resources. He related how his own household had for a long period worked closely with another within his *ibn 'amm* group. This co-operation had only terminated when the kinsman had sold his herd (a large part to *U*) and *U*'s second son had simultaneously found employment as a driver. Reviewing the circumstances of his newly enlarged herd, *U* had not sought further herding associations.

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[67] Herd owner *B*, was the wealthiest individual of his lineage, but he had political differences with the state sanctioned *sheikh* of his descent group (herd owner *D*). Quarrels threatened to split the lineage and after *D* died in sept 1995, *B* failed to pay his respects at the sheikhs household. The subsequent division of the *sheikh*'s household between two stepbrothers was probably related to the continuing tensions within the lineage.

[68] *Abu* Rashaid surprised me by making reference to his close friend *Abu* Sweilim to support this observation. He commented "*Look at our friend Abu Sweilim: he's broke!*" *Abu* Rashaid, Bir *Abu* Tawzir, November 1996.

Thus far, this discussion has focused upon households for whom (whether collectively or independently) livestock constituted the predominant source of livelihood. For these pastoral households, domestic labour, residential organisation and social and economic affiliations were largely centred around the needs of their herds. However, as described in section 4.6, one of the key areas of change among Badia households in recent decades has been the diversification of livelihoods and the process of sedentarisation.

For this reason, the discussion will next consider relevant aspects of the social and economic organisation of livestock herding among sedentary households. Special reference will be made to both those households that kept livestock for domestic oriented production and those that produced predominantly to supply markets. The discussion commences with an outline of the typical pattern of agnatic settlement that structured social and spatial relationships in sedentary communities.

7.4 The sedentary herding environment

The social and spatial organisation of lineage-group settlement in Jordanian villages has been described elsewhere (Lancaster and Lancaster 1997). In the current study, the spatial organisation of village settlements was observed to broadly follow the same pattern of agnatic association that characterised multiple household herding encampments[70], although this pattern was frequently mitigated by constraints of available space. Furthermore, in the JBRDP area the history of settlement was insufficient to account for more than two generations of house-builders within these residential spaces.

Lancaster and Lancaster (1997) have developed the concept of the *khana*[71], the corporate residential community defined by descent from a common ancestor. The first generation of settlement is often centred around the *ibn 'amm* unit, principally brothers and cousins. As in herding encampments, the spatial distribution of residences often reflects genealogical proximity with brothers' households closest and other agnates settling further afield. The second generation of construction is similarly distributed (e.g. sons' houses cluster around their fathers') and in this way segmentary settlement patterns generate distinct kinship-defined locales within villages.

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[69] This analysis of economic dynamics within herding collectives echoes the model of redistribution between peasants established by Eric Wolf (1957).

[70] Frequently stone or brick houses were constructed immediately adjacent to the pitched *beit sha'ar* of the original Bedouin encampments. When the tents were finally taken down after completion of the building work, the resulting settlement resembles the original camp.

[71] William and Fedelilty Lancaster appropriated the term *khana* from village areas in southern Jordan. While the term is not in common used among the Ahl al Jebel Bedouin of the northern Badia, the social, spatial and architectural formations it describes are very much in evidence.

Ghadir al Nagah, the small but typical settlement of three households (within which herd-owners *H* and *I* resided), usefully illustrates this pattern of agnatic settlement with a combination of stone houses and tents (Figure 7.3).

The social organisation of livestock production within these sedentary village environments differed from rangeland-based households in a number of ways.

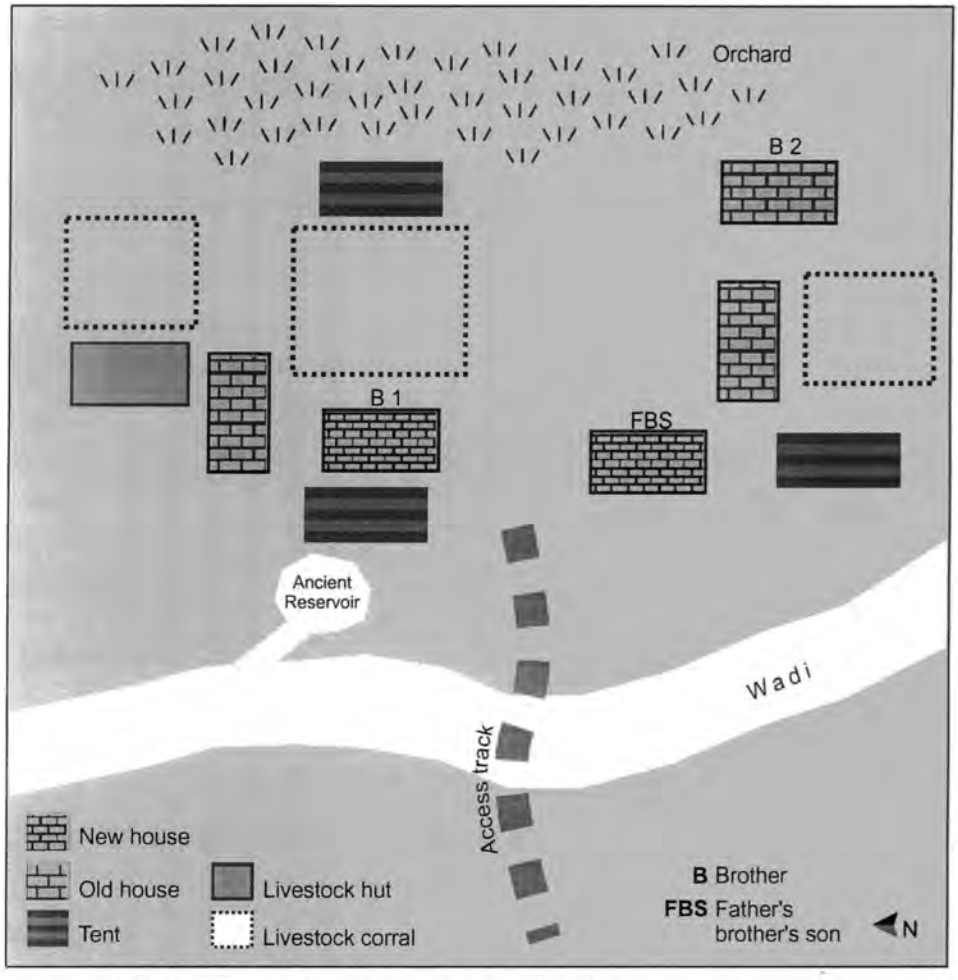

Figure 7.3: Settlement at Ghadir al Nagah (December 1996)

Differences arose less from spatial immobility as from the level of economic diversification and multiplicities of income which were characteristic of most sedentary households. While many rangeland-based herding households received supplementary non-livestock incomes, the herd remained central to the household economy. Village-based households commonly practised multiple resource economies in which livestock would constitute but a single component within a range of parallel economic activities. In some cases, it was found that non-livestock incomes would normally exceed income from livestock (*C*, *J*, *L*, and *W*).

7.5 Sedentary herd management for domestic supply

As outlined in section 6.7, small livestock holdings were managed within the domestic economy to provide dairy products and meat for domestic consumption. They could also serve a range of less tangible social functions, which will be discussed shortly.

However, small herds of this type did not have sufficient animals to produce viable single incomes for households. Thus in all cases households must have been in receipt of cash from other sources. Indeed, as few livestock products reached formal markets to generate an income, small domestic herds must have been subsidised from elsewhere within the domestic economy. Small-scale herding was thus not a 'stand alone' activity, but was bound in with other economic activities either at the level of household or extended *beit*.

The principal pattern observed was the management of small herds within the household by the head of the *beit*, with contributions to the cost of these animals being met by second generation *beit* members still residing within the household. While Oughton and Adas (1999:7) report that rising marriage costs in the Badia are putting pressure on young men to reduce their contributions to their parental household and save for their own, my own study suggested that most households with unmarried working sons (*D*,*I*,*K*,*L* and S) received regular contributions. This evidence is supported by the studies of Findlay and Maani (1998:209-211), who maintain that as of the early 1990's the net intergenerational flow of wealth in Badia households remained upwards.

My work in Badia villages did, however, confirm the finding of Oughton and Adas (1999:30) that the second (often educated or employed) generation of young men in villages seemed to have little interest in working with livestock. However, this generation was aware that any contributions that they made towards their father's herd-costs would one day be recouped through inheritance (and until 1996 livestock remained a well-favoured capital investment). The elder son of owner *K* (a clerk for the Customs Department) pointed out to me that by supporting his father's herding enterprise he was fulfilling his social obligations while simultaneously serving his own economic interests.

Unmarried sons reported contributing a high proportion of their income to the head of the *beit* (up to about two thirds of the total wage was cited). In most cases a small amount was held back by the individual for personal spending or saving. However, I was told that for large expenditures (marriage, building a house or buying a car) the wage earner would normally need to refer back to his father for cash. Furthermore, for these high expenditures additional sums would probably need to be accessed from elsewhere within the minimal lineage. That only the head of *beit* could solicit these resources from within the kinship group provided an incentive for financially astute wage-earners to continue pooling resources within the household.

The management of livestock in the care of *beit* elders made practical sense in sedentary Badia households. Not only did the older generation usually have the most extensive experience of

animal husbandry[72], but they also had the most time to devote to the activity. Indeed, one of the sons of herder *L* confided in me that he helped subsidise his father's herd because the herd was his father's principal interest and activity: effectively it gave the old man something to do.

With special reference to households *K* and *L* from the *A-W* group, I sensed that management of a herd gave household elders a sense of participation in the economic life of the household, (which by the mid 1990's had become largely dependent upon the waged incomes of the second generation). Even a 'symbolic' contribution to the domestic economy through the supervision of livestock helped to validate the status of the head of *beit* within an economic institution to which he himself made a minimal (if any) monetary contribution. Responsibility for the *beit* 's small livestock holding allocated key social roles to the head (such as organising slaughter and extending hospitality on behalf of the household on important occasions). In this way, livestock helped to resolve ambiguities in social roles, which had arisen owing to the affects of socio-economic modernisation within these households.

The small scale, sedentary management of livestock could be characterised as largely 'passive' in nature. Falling principally within the domestic sphere of production, small village herds were viewed as peripheral to other economic activities and management requirements were prioritised accordingly. Under the daily management of women (and often children), small herds were managed conservatively, usually with only limited access to financial or logistical support from the household resources. Rather than the household being organised around management of the herds (as out on the desert rangelands) the herd was conversely managed around the other priorities of the household.

Limited inter-household collaboration in the management of small sedentary herds certainly occurred in the villages area. However, distinct from herding relations within livestock collectives, association between households did not extend to any monetary transactions[73]. This seems to be because small herds were managed largely outside the monetary economy. One manifestation of limited collaboration observed in the village areas was the daily grouping of small numbers of livestock from individual households into a combined herd for shepherding outside the village. This form of co-operation was observed in Umm al Qutayyn and the Al Mukayfta areas where shepherding duties were rotated.

While I found no evidence for organised co-operation between women in the production of dairy products (presumably because herd sizes and thus volumes of milk produced were relatively small), in two village households (*J* and *L*) processed products were being regularly

[72] While the older generation was well experienced in animal husbandry, they often lacked aptitude for the equally important business and marketing side of livestock production. In herds not producing commercially this did not matter so much.

[73] The main exception to this observation was the collectivised delivery of feeds organised by *Abu* Asima , head of the Umm al Quttayn branch of the JCO.

supplied to other households (which had no livestock of their own). These transactions were occurring through the female line, mother to daughter.

7.6 Sedentary herd management for market supply

On the whole, owners of larger commercially oriented sedentary herds practised more dynamic management than the owners of smaller herds, including the opportunistic use of seasonal grazing, active marketing and attempts to improve productivity through investment experiment and technical innovation. Accordingly, socio-economic associations at this level were found to differ from the largely kinship and intra-household level exchanges of small herds. Economic associations, both with and without kinship groups, were primarily production oriented: long standing relations with individual traders and links with land-owners, farmers and the owners of private wells[74]. The ability to build long-term business associations of this type was undoubtedly related to the sedentary residence mode of the herd-owners but also related their mixed business interests[75]. For example, one owner (*G*) owned a tractor, which he regularly rented to local land-owners. He explained to me that in return for small favours or advantageous rental rates, he secured advantageous terms for grazing or watering his herd on their land. Similarly, owner *W* ran a village grocery shop and many of his business partners were also his customers.

Labour relations within this group were fully monetarised. I found little evidence for collaboration between herding households in animal management, in part because of the simpler logistics of herding in an area served by infrastructure.

Economic diversification and innovation seemed to characterise this category of herd-owner and several had risen to official positions. The inheritor of owner *D* was director of a local community centre and he drove to work in a suit and tie[76]. Owner *M* was a school-teacher undergoing training to become the schools inspector for the Badia region. Owner *G* combined several economic activities with his role as village *mokhtar*. *Abu* Asima (owner *I*), was the leader of the local branch of the Jordan Co-operative Organisation. All owners of this category (*D, G, H, I, M, W and W*) managed multiple assets and sources of income (Table 5.10) and developed their herds as active components of this framework.

Within this category of sedentary households managing commercial herds, the relationship between non-livestock incomes and the livestock economy was complex. This was because,

[74] For herds of several hundred animals to be managed on a daily basis within heavily cultivated village areas requires widespread linkages between herd managers and local land-owners.
[75] The two characteristics are linked: the reason these owners of market oriented herds were not mobile like specialist herding households was because many had other business interests which bound them to the villages area.
[76] Althought in Table 6.1 household *D* is described as mobile, the status of the household changed following the old *sheikhs* death, when the the household effectively divided between two brothers in law.

although most of the time these commercial herds could be managed on a profitable basis, they were not managed in isolation from other economic activities.

Herd-owners *G*, *M*, *W* and *O* described their mixed economic activities primarily in terms of the extra security which multiple incomes offered both household and herd. It was pointed out that when the livestock economy slumped, the herd could be subsidised by cash transferred from other incomes. The importance of these other sources of income to the livestock component of the household economy was precisely because they were not livestock related and therefore not necessarily subject to the same vagaries as the livestock economy. Thus, the development of economic 'strategic depth' through diversification essentially served the same function as the very large numbers of livestock and collective management of resources adopted by some specialist pastoral households. Alternatively, as owner *G* explained, when the livestock economy was favourable (as it largely had been for the decade prior to my fieldwork) the same economic resources were diverted to boost the growth of the herd.

'Active' management of sedentary herds required mobility and with two exceptions (owners *I* and *H*), all owners of this type had their own vehicles and were able to actively market outputs and procure inputs. As with migratory households, mobility was recognised as being essential to successfully negotiate the modern market economy. Consequently, many of the largest production investments made by commercial livestock producers during the three years of the study were to upgrade transport capabilities (new vehicles, conversions of trucks to tankers, and licensing vehicles for legal road use).

Another conspicuous feature of households *G, M, H* and *W* were the comparatively low values for domestic consumption of animal products (Table 6.7). These households had a discernible orientation towards the purchase of foodstuffs and herd-owners G, M and W told me that their respective wives' traditional dairying skills were weak. In households *G* and *M,* the head of household's elderly mother was responsible for the limited dairy production that occurred.

Commercially producing village herds were thus predominantly under active management within the monetarised economy, and owner households were oriented towards the purchase (rather than home production) of foodstuffs. In consequence, herds of this type were mainly under adult male management and women and children seemed to contribute comparatively less to the livestock economy (i.e. relative to herds under different types of management).

7.7 Summary: herd management and socio-economic organisation

On the basis of the qualitative evidence offered above, the *A-W* group of households have been be subdivided into four broad (and sometimes overlapping) types (Table 7.2). The basis for division includes the social and economic contexts of herd management as well as the predominant orientation of livestock production, with recognition that these factors were interlinked.

Table 7.2: Observed types of livestock management among the A-W household group

	Mainly rangeland-based		Mainly village-based	
Households	**A, E, F, P, Q, R, T and V ***	**B,S, and U***	**C, J, K and L***	**D,G,H,I,M, and W***
General orientation of production	Predominantly market oriented, with high domestic consumption of livestock products	Predominantly market oriented, with high domestic consumption of livestock products	Principally domestic oriented production. Some sales of surplus	Predominantly market oriented production with some consumption of livestock products
Herd size	Medium to Large	Very Large	Small to Medium	Medium to large
Management	Active	Active	Passive	Active
Main incomes	Livestock	Livestock	Non livestock	Mixed
Socio-economic organisation in production	Strong inter-household associations	Independent	Limited associations in production	Limited associations in production

* *These categories are referred to in Chapter 8 as Type one, Type two, Type three and Type four management types*

The proceeding part of this chapter outlined the principal socio-economic forms by which livestock production was organised in the Badia. Although the social forms described may be insufficiently flexible to accommodate the true range of diversity observed in herd management strategies, they do illustrate the general trends which existed in the organisation of herding activities and suggest some of the complex ways in which contemporary pastoral social structures may both influence, and be influenced by, herding behaviour. The next section of the chapter builds upon these ideas by investigating some of the key ways in which livestock may act to structure these socio-economic relations (at both inter and intra-household levels) through non-monetary transactions. The discussion first focuses upon two related issue, those of livestock ownership and inheritance.

7.8 Ownership and transfers of livestock

Lancaster and Lancaster (1999:289) contend that concepts of ownership in the Bedouin society of the Badia are highly complex. Essentially, they argue that within Bedouin society, customary ownership of capital resources (including livestock) is strongly connected with use, and owing to the structural interdependence of many economic activities (and the agents of these activities), 'owned' resources are frequently bound into inextricable social and economic enmeshments. Lancaster and Lancaster (1999:301) also describe the contexts of surplus and deficit from these resources as being multiple and deeply embedded within invisible networks, and obligatory and optional transfers.

While my own research in the Badia acknowledges that such complexities sometimes underlie the ownership of livestock, it also suggests that individuals and households may equally assert

independent property rights over certain types of livestock holdings. Therefore, while accepting the Lancasters' general position that the nature of livestock ownership is deeply embedded within social context, I would further argue that social relations may be flexibly negotiated to suit different livelihood strategies and economic objectives. Consequently, my research suggests that actors are not necessarily constrained by their 'social enmeshments'.

As hitherto indicated, management of animals does not necessarily imply ownership because transfers of animals into the long-term care of other households were reported in a number of cases. The principal underlying reason for these transactions was to facilitate a division of labour and allow for greater economic specialisation within individual households. The social basis for such exchanges was consistently found to be kinship, normally between households affiliated at the level of *beit* or *ibn 'amm*. At both *qoum Abu* Sweilim and *qoum Abu* Ward, the village-based partner to the core of the livestock collective (B4) kept herds based out on the rangelands under the management of his brothers. In socially-based arrangements of this type, while all aspects of production were managed by kinsmen, herd income and capital growth values were viewed as the property of the owner.

A similar pattern was repeated when village households which seasonally migrated out to rangeland areas were entrusted with additional animals by their neighbours and kinsmen (who were not themselves free to migrate). The numbers of animals involved in these transactions were usually small, both because the original herds were small and because the resources available for herding are often limited. In spring 1996, herd owner *Q* was running about 20 extra animals within his own herd. He explained that these animals belonged to an uncle and a widowed aunt. The uncle guarded a public building and the aunt was old; consequently neither was able to make the *tashreeq* (nor indeed was such a journey worthwhile for a handful of animals). However, each was keen for his/her animals to graze succulent *rabi'a* pastures (believing that this would enhance milk quality for the remainder of the year) and so had handed them on to *Q*. From *Q*'s perspective, the 20 extra animals made little difference to the management of his own medium-sized herd. Labour requirements and the logistical supply needs of the herd remained virtually unchanged and *Q* was therefore able to make a useful contribution to the livestock economies of the two other households with only marginal costs.

This system of livestock transfer was not fully congruent with the examples cited from commercially oriented livestock collectives. The transfer of animals from herds oriented to domestic supply placed no responsibilities upon the temporary manager for the sale of animal products and the relationship between owner and manager lay effectively outside of the monetary economy. However, as demonstrated by the example of the livestock collectives (where the feed and shepherding costs of his own herd were carried by B4) kinship-based transfers of livestock between households could be structured by either formal monetary exchanges within the market economy, or equally, rooted in the exchange of less tangible values.

True 'ownership' of animals in both customary and legal senses was explained to me in terms of their acquisition. It was stated that livestock owners commonly acquired livestock in three main ways[77]; an animal could be born into a herd, purchased or received as a gift or inheritance.

In the first case, where a lamb or kid is born, it was recognised as the property of the owner of the mother. If ownership of the mother was unclear (or it was jointly owned), there may have been grounds for further negotiation. In cases of animal purchase, ownership was usually clear-cut, unless a group of animals were bought collectively by several individuals, or animals were purchased by somebody on behalf of another owner.

The acquisition of animals as a gift or inheritance could be slightly more complex. It was not uncommon among the Ahl al Jebel for the parents of new born sons[78] to be presented with sheep as a gift from kinsmen (those who could not afford a whole sheep may have bought a sheep collectively with other poor relations). These animals then belonged not to the parents, but they (and their descendants) were held in trust until the boy's majority (when he established his own household). Even with the growing monetarisation of the economy and declining importance of livestock as a source of livelihood among the Ahl al Jebel, animals remained an important gift to the newly born. The reason was explained to me simply; an infant would take twenty years to reach the age at which full management rights are transferred across to him. Under careful management (particularly during the period of the feed subsidy) one or two animals donated by kinsmen at birth could be built up into a herd numbering tens of animals and therefore represent an important economic asset for the young man, which he could then either sell to raise cash or manage as a capital asset. At the time of fieldwork, no other possible gift in the Badia offered the same long-term growth potential.

Animals managed 'in trust' for sons thus held special status. While the trustee was not expected to make a loss running the animals (i.e. cover feed and other expenses) neither should he profit from the animals and all surplus should properly be ploughed back into herd growth. The household could consume milk products from animals held in trust (presumably because the child directly benefited from this too), but not to the point of inhibiting herd growth. Special care was taken of these animals, as losses from among them would reflect badly on the reputation of the trustee. Given their non-commercial status, these animals were commonly held under the supervision of women within the domestic sphere of livestock production.

Ownership of livestock could also be transferred through gift-giving at time of marriage. Sometimes fathers (or other kinsmen) presented their sons (or nephews) with livestock with which to help establish the new household. *Abu* Ward's eldest son [S(B1) in Figure 7.2] was the

[77] Animals were occasionally acquired in other ways too; they could be stolen, or found, or claimed within the context of a dispute. However in each of these cases, the customary and legal status of the animals could differ, giving rise to disputes

[78] According to my informants, only sons received livestock gifts at birth. While daughters also received animals as gifts, this occured at the time of their marriage.

recipient of a substantial herd (approx. 120 animals) on his accession to his own household. This practice can be distinguished from the giving of animals to an immature male child, since the animals did not need to be held 'in trust' by anybody and could be given directly to the recipient. Furthermore, animals were generally only presented to an adult individual (male or female) who would keep them and manage them for their productive values (whether subsistence or market oriented). An adult who showed no interest in livestock and who would sell the animals to realise their immediate cash values would instead receive an alternative gift such as cash or other commodities.

The interpretation of *al warath* (inheritance) in the Badia parallels those which have been described by the ethnographers of other Muslim pastoral societies in the region. (Behnke 1980, Lancaster 1981, Bradburd 1990).

The customary division of household assets between inheritors was described as follows: sons normally received a full share of all household assets, while daughters were each allocated half shares. In practice, women were excluded from the inheritance of land, and furthermore it was common practice for their brothers to hold their shares of the livestock inheritance 'in trust'. While daughters could inherit from both mother and father, sons received an inheritance through the male line only (except if their widowed mother assumed headship of her own household with its own assets).

The main features of this inheritance system warrant some clarification. The ratio by which an inheritance is divided between male and female inheritors derives directly from Islamic teaching (e.g. Quran 4: 7,11,12,176).

> *"Allah (thus) directs you as regards your children's (inheritance) to the male, a portion equal to that of two females, if only daughters, two or more, their share is two-thirds of the inheritance, if only one her share is a half." (Surah al-Nisa: 11).*

In the Badia, the exclusion of women from the inheritance of land (and other fixed assets) was almost certainly a mechanism to prevent these resources being broken up and gradually leaving the lineage. It is probable that the importance and relative value of fixed assets has been accentuated by the rapid process of land colonisation and settlement which occurred in the Ahl al Jebel territory.

Herd owner *J* explained that the notion of land inheritance was relatively new to the Ahl al Jebel. His own father's generation were the first to own land in a legal sense, and the exclusion of women from this form of inheritance was bound in with the perceived complexity of legal land registration and ownership. The state recognition of traditional land-rights and legal registration of land-holdings had proved problematic for many Ahl al Jebel households during the latter part of the twentieth century, and success had often been linked to persistent and forceful representations to governorate and national bureaucracies. It was thought that men

were best placed to make these[79]. In consequence female inheritances were largely restricted to non-fixed assets such as livestock, cash and certain types of household goods.

Women's ownership of livestock has been elsewhere reported in the literature on Bedouin societies (e.g. Hobbs 1989:34, Chatty 1996:147). Among the Ahl al Jebel, livestock (particularly goats) were considered an appropriate inheritance (or gift) for adult women[80] as they provided her with a productive resource to help secure the subsistence of her household. Women could own and manage livestock as independent property or alternatively run their inheritance with the household herd (assuming the household had other animals). In the latter case, rights of ownership became more complex.

Livestock owned as the private property of women would usually have been acquired as a marriage gift or an inheritance. If the animals were managed fully independently, they remained within the domestic sphere and were accommodated close to the residential site (house or tent) of the owner. As described earlier, these animals could then be fed on household scraps or on household resources managed within the 'domestic sphere' (such as small, cultivated plots). Labour and shepherding was organised from within domestic resources (often including children) or non-compensated labour could be negotiated from within a kinship group or community such as a village or encampment. The outputs from independently managed animals could thus be products entirely of the owner's initiative and resources. In addition to making an important contribution to household supply, the owner could produce a surplus for use in her own social transactions (gifts to daughters or kinswomen), or could even sell a few value-added products to raise an income. Obviously, the number of animals sustainable in this way was limited. However, skilful managers could balance inputs against outputs to increase the animal population by a few head. These animals were recognised as private the property of the owner and were to be passed from her to her inheritors.

Perhaps more commonly, while the independent property rights of the female owner were recognised, for practical reasons her animals are partly incorporated into the general household livestock economy. These animals received feed supplements and other management support from the household livestock budget (although relative costs were likely to remain low). In this case, livestock income or products would be considered as household rather than private assets and ownership rights could be compromised by household herd management decisions. I witnessed a very striking example of this in late 1996 when *Abu* Rashaid was seeking funds to buy a second tanker truck to improve the productivity of the household herd. After conferring,

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[79] In essence, this gendered (male) perspective placed land ownership within the public sphere, which required negotiation with external institutions. As herd owner *J* astutely pointed out, his wife could not read, so how could she register land in her own name? I was impressed by this argument until I later realised that *J* himself was illiterate.

[80] I have been informed that distinct from gifts of livestock to males, gifts to females were never made in a child's infancy, 'in trust' to her parents. This is probably linked to the contention that women needed no more animals than the number required to secure her household's subsistence: Thus herds did not need to be 'built up' over the period of the girl's immaturity.

the household decided that the most appropriate action would be to sell about half of the goats belonging to *Umm* Rashaid. It was reasoned that this sale would not erode the productivity of the commercial sheep herd, and would leave more than enough animals to continue to meet the household's subsistence needs. Although she had given her consent for the sale, on the day that the buyers arrived to collect the 80 goats, *Umm* Rashaid was crying. She told me that not only did she feel a strong personal attachment to the herd that she had personally managed for thirty years, but also that she had planned to divide the herd between her three daughters.

However, a majority of female livestock inheritances in the Badia were managed in trust by the inheritor's brothers. This is almost always the case for an inheritance from the male line. This form of inheritance was favoured because commercial livestock production (or at any rate, sheep production) required monetary investment and occurred largely within the public (market) economy. Another reason was that it was common for heads of household who managed sheep to have a son who followed him into commercial sheep production. This son would often manage the inheritance of all the second generation inheritors (male and female) combined, and thus preserve to economic integrity (economies of scale) of the former herd.

As Lancaster and Lancaster (1999:291) suggest, women may use their brother as an 'agent' for managing their business, or indeed enter into partnership with him on a share basis. However, my own observations and discussions (even with male informants) suggest that this might be something of an idealised position: the distinction between management and ownership could become blurred, and full management and decision-making control over the animals (often in a spatially remote locality) could translate into *defacto* ownership on the part of the manager[81].

Viewed in this light, the growing monetarisation and market orientation of the livestock production economy will have had the dual but related effects of redirecting larger livestock inheritances out of the direct management of female inheritors (into those of their male kinsmen or agents) and limiting the size of livestock holdings under the direct management of women.

The evolution of this market-based production system has also held implications for the predominant pattern of male livestock inheritance in the Badia. Capital-intensive economics of production have rendered small to medium-sized livestock holdings generally less competitive and cost efficient than larger herds. This observation was true of all but the very smallest populations of livestock , which benefited from inverse economies of scale. One consequence of this (manifest over the last two decades) has been growing caution about breaking up household livestock assets through inheritance into less viable economic units. The value of a commercial herd as a whole was widely understood to be greater than the combined values of sub-components broken up through an inheritance.

[81] My evidence for this observation is not substantial, as obviously nobody would admit to this apparent breach of trust. However, once while trying to ascertain when a female inheritor would get access to her livestock if it was held 'in trust', my male informant admitted, "maybe never".

My observations suggest that Ahl al Jebel households employ a range of strategies to obviate this potential problem of diminishing values.

One common strategy, as stated above, was for the entire livestock inheritance to be passed into the management of a single individual (son). This could occur in two ways: either the son received the entire herd as his personal inheritance (while other inheritors received their shares in the form of alternative assets or cash), or the inheritance could be collectively managed on a share basis (Lancaster and Lancaster 1999:291).

It was a notable feature of many of the specialist herding households in the *A-W* group that one of the heads of household's sons had been appointed as future herd manager. Individuals fulfilling this role held special responsibilities within the household and had been trained from an early age in essential shepherding (and related) skills. As the head of household became older, so the chosen successor increasingly assumed the day-to-day management of the herd.

Within the household of *Abu* Rashaid, it was the second eldest resident son, (aged 20 years in 1997) who held this position[82]. From my early contacts with the household in 1994 and 1995, I immediately noticed this young man's keen interest in management of the herd, relative to his older brother (who was serving in the military) and his younger brother (who expressed frustration at working with livestock). While the second son had received less formal education than either of his brothers, he had from the age of 15 been a proficient driver and had been responsible for the logistical support that the household herd required. Whenever *Abu* Rashaid travelled on 'business', this son generally accompanied him to gain experience and to be introduced to new contacts (these included traders, land-owners, government officials and other herd-owners). *Abu* Rashaid confidently confided in me that this son would be the future manager of the household herd. The selection of a single sibling for 'grooming' to assume herd management duties was observed in several households within the *A-W* study group (*B, D, F, L, S* and *U*).

With a large herd such as that of *Abu* Rashaid, it is probable that income from the herd would be divided into 'shares', rather than the herd being passed on in its entirety to a single individual. After one brother had assumed the position of herd manager, the others would be free to assist in management or engage in alternative economic activities elsewhere, as was their preference. These shareholders would then effectively become silent partners in the herd.

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[82] I remain unsure about how this particular son had first assumed the position of 'livestock specialist' among his brothers. Whether his interest in the herd (and his brothers' relative disinterest) was cause or effect of his selection was unclear.

An alternative strategy for preserving the economic viability of a large livestock inheritance was discussed in section 7.2: collectivised herding. This socio-economic association (as described between the core household groups of *qoum Abu* Ward and *qoum Abu* Sweilim) developed when the second and third sibling inheritors of livestock chose to become active partners in the management of the herd[83]. As described, the inherited sub-components of the original herd were then managed collectively (although as individual herds) so as to maintain the economic benefits of large-scale production.

7.9 Livestock symbolism

Lancaster and Lancaster (1988:54) have argued that the Bedouin system is founded upon autonomy and jural equality. This value system is widely thought to have evolved as a cultural form compatible with the needs of desert living (Lancaster and Lancaster 1988, Chatty 1996, Webster 1991, Jabbur 1995). Participation within the system depends upon the individual conforming to behavioral standards and thus demonstrating continuing commitment to its ideology and the social structures within which this ideology is manifest. Individuals are able to express commitment to these values through use of symbols and the upholding of shared principles. Webster (1991) echoes Chatty (1986) and Lancaster (1981) in identifying generosity and honour as key values in Bedouin society, which underpin the social order and the individual (or group's) position within it.

Given the relatively sparse material culture of pastoralists, livestock, as their principal material assets, have traditionally assumed an important role in the expression of these symbolic values. In simple terms, the way that livestock are symbolically managed with relation to a wider group (notably through slaughter, meat distribution or gift giving) can express profound gestures of commitment to normative standards and the maintenance of social cohesion. Informal symbolic transactions further emphasise the sense of commonality in pastoral society and binds individuals into networks of mutual obligations and balanced reciprocity (Bradburd 1990:157).

Despite the high level of market integration and largely monetarised systems of livestock production which characterised Ahl al Jebel society during the mid-1990's, I found that livestock continued to be utilised symbolically. Among the *A-W* group of households, the symbolic values of livestock were most frequently expressed through their use in various forms of gift giving[84]. These gifts (or slaughters made in the provision of hospitality) were widely considered of importance to the maintenance of status and management of social relations.

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[83] The B4 of each collective was a 'sleeping partner'.

[84] This discussion is necessarily restricted to the social and cultural symbolic values of livestock. Klenck (1995:57-58) alternatively considers some of the religious and ritual symbology of animal sacrifice in Bedouin society.

Among the Ahl al Jebel, these symbolic values were most frequently (but not exclusively) expressed at key junctures and events in social and economic life. Over the entire period of my fieldwork in the Badia, I noted the symbolic use of livestock for special celebrations (as described in Table 7.3).

As a general observation, it was noteworthy that the practice of giving live animals was rather less prevalent than slaughter and more restricted in terms of descent; while animals could be slaughtered to honour strangers, exchanges of live animals were generally restricted to within the minimal lineage or *fakhad*.

Many of the celebrations described in Table 7.3 marked important changes at the individual household level (such as changes in household composition). The act of slaughter and communal feasting thus enabled all parties to ratify their engagement with the social system (and consequently their continuing group cohesion), at a moment when this was of special importance. The following two examples illustrate this contention.

Table 7.3: Observed symbolic uses of animals in Badia among the A-W households

Slaughter of animals	Giving of live animals
Engagement, marriage	Marriage
Arrival of important visitor	Births
Death	
Circumcision	
Religious, ritual	
Business deal	
Other special events	

When herd-owner *Q* unexpectedly died in late 1995; his household and herd were left in the hands of a son whose management and headship skills were untested. While I was not able to pay my respects to the family until some time later, animals had been slaughtered to feed the large number of gathered mourners and meat had been distributed between neighbours and kinsmen. Thus, when the household faced an uncertain future, kinsmen and neighbours, through participation in the symbolic sharing of the meat, were able to express their continuing commitment and support.

I observed the converse of this situation a year later at the homecoming celebration for the son of herd-owner *L*. This son was an officer in the Jordanian military police and had had the good fortune to be posted to the Balkans as part of a United Nations Observer Force. For the two years of his service, he had been remunerated with a UN salary with special allowances for hardship. By the standards of his descent group, he returned a wealthy man and immediately bought this father a new pickup truck. However, although normally unassuming, *L* invited more than a hundred people to a multiple slaughter feast in his son's honour. *L* spoke candidly about his reasoning behind the slaughters:

> *"Thanks to God, we are favoured by our son's return. But my kinsmen and I remain of the same blood whether we are favoured or not: in fortune or ruin, we will stand together and I shall not forget them. Yesterday they found hospitality here and (God willing) next month they shall find it here and (God willing) next year the same..."* [85]

It seemed apparent to me that *L* had employed the homecoming celebration of his son to confirm his unswerving loyalty to his wider descent group, despite the newly improved circumstances of his household.

Thus, on the basis of these interpretations, there exists a level of ambiguity in the meaning of symbolic acts within the Bedouin value system. Animal slaughter or gift-giving is not a direct trade-off against a reputation for individual generosity. The two examples given above instead suggest that each transaction involves a two-way exchange with complex and inextricable shades of meaning between givers and recipients. These meanings may be subtly altered by the context in which the transaction is made.

Animal slaughters and communal feasting were a regular feature of social life at *qoum Abu* Sweilim (herd-owner *T*). Feasts were almost always hosted by *Abu* Sweilim or one of his two brothers. These expressions of hospitality by the core households occurred about every two weeks, with other slaughters occurring on special occasions such as when the encampment received important guests. *Mansaf*[86] hosted by the core households was usually prepared collectively by the women of those households. The feasts were open to all members of the encampment (both core and peripheral households) although in practice they were rarely attended by all residents. Men, women and children were always separated by the internal dividing wall of the tent when they ate[87]. Feasts were invariably followed by collective prayers that were led by B4, on the rare occasions that he was present, otherwise by another senior resident. However, my overall impression of these regular communal slaughter feasts (except when outside visitors were present) was that they were very informal. On the public (male) side of the tent, discussion was invariably about livestock and this added to the feeling of a 'working dinner'.

As referred to in section 6.5, the frequency of feasting at *qoum Abu* Sweilim was related to the large size of the total livestock population managed by the three core households. The number of infertile animals, bloat cases and other conditions which marked animals out for special observation and possible slaughter was high[88], and the availability of fresh meat simply exceeded the ability of the owners to eat it before it spoiled. In consequence, although

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[85] Herd owner *L*, Umm al Quttayn, November 1996

[86] *Mansaf* is the traditional feasting dish of the Jordanian Badia. It comprises choice cuts of sheep or goat boiled in liquid *jamidh* and served on rice. It quickly became a favourite of mine.

[87] This was not true of all households I visited and resided with, but as I have already pointed out, the households of *Abu* Sweilim and his brothers were conservative.

[88] The incidence of actual mortality was even higher, but not all weak or dying animals could be eaten. Certain types of visible diseases (including mange) were considered to render an animal unpalatable, as did other fatal conditions such as snakebite (many unidentified illnesses in sheep were attributed to snakebite).

communal feasting at the *qoum* certainly consisted of a transfer of value between households and reinforced reciprocal relations between residents, the real costs to *Abu* Sweilim and his brothers was comparatively low. This pattern of regular slaughter and consumption can be contrasted with a *qoum* feast that I attended in November 1996.

This feast was hosted by the poorest of the peripheral members of the *qoum* (herd-owner *V* of the *A-W* group). Owner *V*'s entire herd had bolted during a midnight lightening storm and had only been found the following day after a desperate search involving all adult males in the encampment. The herd, when finally located, had been wandering across the Saudi Arabian border and narrowly escaped capture (and confiscation) by Saudi border guards. In celebration of his salvation and in gratitude to his descent group, *V* selected his finest yearling, which he slaughtered on a hillside during prolonged prayers. All members of the *qoum* attended the feast wearing their finest robes.

In important ways, the regular slaughters of *Abu* Sweilim and his brothers, and the celebratory slaughter of herd-owner *V* expressed comparable social meaning. In both cases, the slaughter and sharing of meat represented an act of reciprocity in recognition of the ties of obligation between the host and guests. These expressions of hospitality in both celebrate the communality and unity of action of the descent group, which certainly in the case of the urgent search for *V*'s herd had been tested to the extreme, but also proved itself on a daily basis in the regular functioning of the livestock collective.

However, the observer might point to an apparent distinction between the symbolic values of slaughter in each of the two cases. Owing to the scale of production, the real costs of slaughters to *Abu* Sweilim and his brothers were low, while for impoverished herd-owner *V*, these costs were relatively much higher. These disparate costs may have been reflected in the symbolic value of the slaughters; certainly the respective levels of attendance at the feasts seemed to indicate as much. The symbolic value of the regular core household feasts may be overshadowed by the high availability of slaughter animals: i.e. the slaughter's value as a symbol of commitment to prevailing values may be somewhat diminished.

To look at this another way *Abu* Sweilim was a man who held a good reputation. It was widely recognised that the resources which he and his brothers commanded were employed in such a manner as to collectively benefit the *ibn 'amm* descent group, based upon the belief that a strengthened lineage ultimately made for a more secure *beit.* However, this adherence to Bedouin ideology was not principally expressed through slaughter. The sharing of meat and the exchange of other commodities (such as dairy products and labour) were part of a wider system of reciprocity and economic interdependence that characterised the *qoum*. *Abu* Sweilim and his brothers slaughtered regularly and were faultless in their hospitality, but their reputation had not been established on the basis of symbolic slaughter and animal gifts alone. Given the surplus of animals and meat available to them, generosity in the redistribution of meat was of lesser symbolic value than it might have been under other circumstances.

This observation is congruent with other evidence that suggest that participants within the Bedouin ideological system were able to distinguish symbols as relative rather than absolute (non measurable) values[89]: As Oughton and Adas (1999:21) report, householders in the Badia felt compelled to reciprocate gifts of equal material value to those which they received and explained that failure to do so would result in damage to their social standing. Likewise, as Lancaster and Lancaster have pointed out (1990:188), the reputation of an individual is evaluated on the basis that he extends hospitality and is generous only up to the limit of his material means (without detriment to his family's livelihood). Thus, small gifts and displays of hospitality from one of modest means may have greater symbolic meaning within Bedouin society than much larger acts of generosity made by those of ample resources.

However, while the material value of the symbol being offered is certainly a component of how its relative value is appraised, the meaning of the gift could not be extricated from the broader social and cultural contexts of giving and receiving. These contexts would undoubtedly include factors such as the reason for the symbolic gesture, the respective circumstances of both the giver and recipient, the social relationship existing between them and the status of the animal involved.

This point may be illustrated with a hypothetical example, in which an individual chooses to slaughter an animal which he holds 'in-trust' on behalf of somebody else[90]. Far from honouring a guest or indeed signalling participation within the Bedouin value system, the act would instead be regarded as a challenge to these same values and result in great shame upon the perpetrator. Likewise, symbolic offerings that are socially or culturally inappropriate or materially insufficient would likely bring opprobrium rather than esteem upon the giver.

My observations suggest that the 'Bedouin system' was maintained by gestures of communality, mutualism and reciprocity between participants and operated on a variety of different levels including those of the individual, the household and the descent group. In Ahl al Jebel society, informal livestock transactions constituted a medium for exchange that was universally accessible to all members of society. As I observed it, both women and children were active participants within this type of symbolic exchange, both in the offering of hospitality[91] and in the receipt of it. This stood in contrast to the few gifts of money or purchased commodities that I witnessed, which were largely exchanges between men. In herding households, the participation of women in symbolic exchanges had particular

[89] A theoretical background to the notion of relative 'values' in symbolic exchanges is provided by Davis (1992).

[90] I never heard of anything like this actually happening among the Ahl al Jebel. It was offered to me as a hypothetical example by a tribesman when we were talking about the responsibilities of holding animals 'in trust' for others.

[91] Women's participation in offering generosity and hospitality is not restricted to food preparation: as I have already pointed out (section 6.3), animals which are selected for slaughter (or given live as gifts) will often have been selected from special domestic herds under the daily management of women. Gift animals are specially fattened before being offered as a gift.

importance, for as I have already highlighted, women's labour constituted an important production resource and was often an element in relations of reciprocity between households. This is not to say that female labour is traded off against *mansaf*, but rather, within the monetarised pastoral economy of the Badia, livestock-based symbolic transactions were broadly inclusive in a way that monetised exchanges were not. This is a key consideration when the objective of the value system is to reinforce social cohesion and may be part of the enduring symbolic value of livestock.

In this discussion of livestock in the Bedouin value system I have endeavoured to emphasise the complexity which I believe to be inherent to this system, in which the meaning of the symbol is inextricably linked of the social, cultural and economic contexts of giving and receiving. It might therefore be inferred that change and diversification in the socio-economic contexts in which symbolic livestock transaction are made generate possibilities for still greater nuances in the exchange of these symbols.

7.10 Bedouin values and the livestock economy

Participation within the Bedouin system was generally justified throughout the *A-W* study group as an end in itself, rather than a means to an end[92]. Individuals perceived themselves born into a universe defined primarily by genealogy, which bound them at various degrees of proximity to every other individual within it.

> *"Every man in the Sharafat is my kinsman. Some are closer to the blood of my father than others but we are all sons of Sharaf. This is the will of God"*[93]

In this context, many *Ahl al Jebal* tribesmen view participation within the prevailing value system as expressing allegiance to the extended kin-group. Adherence to normative behaviour exterior to the descent group upholds the honour and good reputation of the group. Some informants argued that the individual was born directly into the Bedouin value system and non-conformity was incompatible with a Bedouin identity.

> *"A man who does not bring honour to his father's name and does not share in the honour of his kinsmen does not behave like a Bedouin. And if he does not behave like a Bedouin how can he be a Bedouin?"*

The large majority of herd-owners to whom I spoke were unanimous in the opinion that conformity to normative patterns of behaviour was a point of honour and a matter of maintaining group status. Even though personal status and household reputation were regarded as highly valued assets, their acquisition was generally defined as an act of altruism rather than self-interest.

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[92] However, this is not to say that individuals did not also work the system to their advantage. But the broadly perceived basis of the system was moral rather than economic.

[93] Herd owner *V, Marab Suttel*, February 1997

Yet my own observations suggests that for livestock managers, status, prestige and its associated social capital (in the form of socio-economic networks and active kinship affiliations) was also of considerable economic utility to herd managers active within the herding economy of the mid 1990's.

Given that the acquisition of reputation was based upon continuing conformation to behavioural standards and satisfactory performance of societal obligations, good reputation was read as a virtual guarantee that these obligations would be met. Consequently, a potential associate would be inclined to look favourably upon the economic propositions of a man of reputation given the high probability of a return to his 'investment'. This might take the form of future reciprocity and a secure relationship. In practice, a good reputation in the Badia was perceived as a form of guarantee for behaviour, one of particular utility for the establishment of relationships and transactions exterior to the individual's immediate descent group.

With most of the inputs into the herding system (including land, labour, fodder and capital) carrying monetary costs (section 5.4.1), the creation and exploitation of social relations was widely regarded as offering the producer favourable terms of access to these resources. A common example of such transactions included the granting of rights of access to post harvest residues, rotten fruit or other palatable agricultural waste. Social networks could also reduce the transaction costs of access to other important resources like labour, credit, secure markets (and even political influence).

My general position thus echoes the findings of Chatty in Oman (1996:177) who has suggested that a renewed emphasis on traditional ideals and values (such has household reputation), among Harasiis pastoralists may have been related for the growing need for tribesmen to manage their credit relations effectively. Similarly, Abu Rabia (1994:31-32) has pointed to the importance of activating social relationships in the acquisition of land resources among the Bedouin of the contemporary Negev.

As has already been noted, market-oriented, village based herds were characterised by some of the most dynamic and opportunistic management among the *A-W* group of owners. Among these herd managers, linkages between acquired social capital and channels of access to resources were particularly evident. Several owners of this herd management type (*D*, *M* and *G*) held positions of official status, prestige or reputation within their respective communities[94]. High social standing could be advantageous to the acquisition of livestock production resources in unexpected ways. An interesting example of this was related to me by herder *M*, the Badia region schools inspector.

Every two weeks between 1995 and 1997 owner *M* drove to the town of Zerqa and loaded his truck up with stale bread from an army training base located there. He was able to use this

[94] *Sheikh*/community centre director, a Schools inspector and a *Mokhtar* respectively.

bread as an inexpensive supplementary livestock feed. The social basis of this transaction was that an *Adhamat* tribesman was a junior officer in the barracks kitchen. However, the officer was not a close kinsman of *M*, and *M* told me that he had been selected for the privilege from several *Adhamat* applicants. It transpired that given the security and administrative concerns at the military base, the junior officer had been asked by his superior to vouch for one of the applicants. The officer had made enquiries amongst his kinsmen and finally nominated *M*.

From an animal production perspective, the benefits of maintaining a good reputation and wide social networks were widely recognised. It was perhaps of particular importance for village based herders who oriented their production to the market place; these producers were highly dependent upon the use of surrounding agricultural lands and privately owned water supplies. For those lacking wide influence, or social standing, these assets were highly desirable and offered the possibility of negotiating the livestock production economy with lower transaction costs.

Furthermore, while there existed wide evidence for the utility of traditional values to achieve objectives within the modern livestock economy, the converse is also true; that negotiation of the modern livestock economy offered possibilities for the acquisition of traditional non-material values. While special expertise in shepherding and knowledge of animal ailments and remedies has long been a source of prestige and reputation for some individuals (both male and female), the growing complexity of the livestock production environment has in recent years has meant that some innovative livestock managers, and those with proven business skills have risen in esteem among the Ahl al Jebel. This may be translated to social reputation when, as pointed out by Lancaster and Lancaster (1990:188) the individual is prepared to demonstrate his societal commitment by offering useful advice and mediating on behalf of others.

The case of *Abu* Asima (herd-owner *I*) provided an illustrative example of a livestock manager who over a relatively short period of time was able to build a reputation and considerable influence through mediating between Bedouin livestock producers and formal institutions of the modern livestock economy. He effectively established himself as a specialist mediator in the acquisition of the subsidised feeds, and (given the indispensability of these to all livestock managers) his personal status rose accordingly.

By the account of his brother, *Abu* Asima had long been trying to establish a mediatory role for himself within his descent group. However, these attempts had been undermined by his long standing dispute with his cousin herd owner *H*. Things only began to change after he established the Umm al Quttayn branch of the Jordan Co-operative Organisation[95] with himself as its head in 1993.

[95] The Jordan Cooperative Association (JCO) is an national NGO based in Amman which offers a range of livestock support services to its membership through several regional branches. These services normally include technical assistance, veterinary support and information.

Although awareness about the institution was very low, *Abu* Asima managed initially to enrol a paid-up membership of about 20 of his kinsmen. It had not been immediately clear what services the new JCO branch could offer, since at that time the JCO had no technical staff in the area (Al-Hussein pers. comm). However, this did not seem to deter subscribers. *Abu* Asima's solution to the problem was to offer a service collecting feeds from the Mafraq distribution depot.

Although *Abu* Asima owned no vehicle of his own, he began hiring one on behalf of his JCO membership, travelling with it to Mafraq and supervising the purchase and loading of feed. At his direction, it was then delivered to the homes/tents of each of his members. In addition to paying for the feed, each JCO member would pay a small surplus to cover the collective transport hire. However, as the majority of the village small holders had insufficient livestock to justify individual hire of a delivery vehicle, (and had little time for fetching feeds) the JCO 'service' grew in popularity.

In the 18 months after he established the local JCO branch, *Abu* Asima rose to a position of some importance to local livestock producers. For many, his JCO became almost synonymous with the provision of subsidised feeds. By early 1996, *Abu* Asima was receiving daily visits from his members who brought problems related to their feed quotas, ration books or other livestock issues. *Abu* Asima often sat for hours in the offices of the relevant departments in Mafraq, pursuing their interests.

Abu Asima's personal reputation grew rapidly on the back of his JCO endeavour and he was increasingly referred to in public as *Rayis al Jami'at* (head of the society). However, his efforts in this capacity brought no salary or direct monetary income while claiming ever-greater amounts of his time. During this period, *Abu* Asima's wife became increasingly critical of his neglect of the household and herd. Her attacks intensified in summer 1996, when *Abu* Asima decided to spend lavishly upon the construction of an elaborate new *maqa'd* (public reception hall) attached to his existing house. The new hall was styled in the manner favoured by senior *sheikhs* for feasting and hospitality and was the most tangible symbol of *Abu* Asima's growing political and tribal status, and his future aspirations.

On one level, *Abu* Asima's activities paralleled traditionally prescribed behaviour. His consistent efforts in his JCO capacity had been made without monetary reward; indeed his growing status and social capital within the community was only acquired at some monetary expense to his own household. In this way, he expressed a strong element of commitment to his kinship group by effectively redistributing value (in the form of his time and effort) among them. *Abu* Asima's activities provided fairly unambiguous evidence for an individual attempting to maximise non-material values. Furthermore, although working under the auspices of a national NGO and within the monetarised livestock economy, *Abu* Asima's major investment into the new *maqa'd* suggested ambitions for a growing engagement in tribal

politics and continuing commitment to the prevailing Bedouin value system rather than an abandonment of it.

Certain similarities may be highlighted between the roles of *Abu* Asima and his JCO membership and the position of *Abu* Sweilim within the livestock collective he headed. Both men acted as mediators between their respective memberships and external institutions in the production of livestock and in both cases their services were offered within the framework of the traditional moral economy. Both mediators were prepared to invest some of their own personal resources into the construction and maintenance of social aggregates based upon collectivised economic transactions. Furthermore, in both cases these aggregates were originally built upon existing descent–group structures.

However, the behaviour of *Abu* Asima elicited severe criticism from his wife and household,[96] while the household of *Abu* Sweilim was supportive of his mediation efforts. It is clear that *Abu* Asima's household were resentful that the JCO endeavour had the net result of placing additional labour burdens upon them while, by contrast, at *qoum Abu* Sweilim inter-household reciprocity in labour (particularly female labour) underpinned the relationship. This apparent dichotomy may also be understood in that *Abu* Asima's official NGO activities were undertaken exclusively within the public and formal economic sphere, from which women were effectively excluded, while within the context of the more socially-based livestock collective, women were active participants within, and beneficiaries from, the system.

On the basis of the evidence presented hitherto, it would be reasonable to assume that within the context of the modern livestock economy Ahl al Jebel pastoralists stood to gain considerable economic benefit from their participation within the traditional value system. However, it would be incorrect then apply this assumption to all producers, as a closer examination of the Ahl al Jebel case revealed some apparent anomalies. Perhaps the most notable lay among the group of large livestock scale herders who chose to manage their herds independently.

Abu Rashaid, as I have already described, held a relatively low profile amongst the Adhamat, his tribal group. Consequently, his households prestige and status within its own descent group was perhaps disproportionately small in terms of its capital assets (livestock). While *Abu* Rashaid and his household were well known, respected and popular with other mobile groups on the desert ranges, his personal reputation never rivalled that of his friend *Abu* Sweilim. While the household was beyond reproach in its social conduct and hospitality, it was widely recognised that *Abu* Rashaid did not pro-actively court social approbation through symbolic

[96] *Abu* Asima's wife's criticisms were ultimately vindicated. Following the 1996 removal of feed subsidies his JCO membership were angered and disillusioned to learn that the organisation had no real power to assist them and *Abu* Asima was discredited. When I last met him at the end of 1997, *Abu* Asima was lamenting the construction of the *maqa'd* which had virtually bankrupted the household and become something of a white elephant.

gestures or the adoption of mediatory roles to the same extent as some other herd managers. In character *Abu* Rashaid was quiet and unassuming (in many ways *Umm* Rashaid was the public face of the household[97]), which begs the conclusion that he may have lacked the personal charisma useful in the acquisition of reputation and personal prestige. However, I sensed that *Abu* Rashaid's position of relative detachment from the prevailing value system could have been related to the policy of productive independence that his household had adopted.

As has already been established, the high mobility of *Abu* Rashaid's production strategy already meant that the household had to be relatively self reliant in a range of important production inputs and the size of the herd precluded the possibility of using village agricultural resources. More importantly, the scale of *Abu* Rashaid's enterprise guaranteed many competitive advantages from traders and suppliers: similar advantages to those which smaller herd managers sought to acquire through exploitation of acquired social capital, or indeed which herders like *Abu* Sweilim sought to match by utilising social capital to maintain enlarged 'livestock collectives'. In short, it might be argued that *Abu* Rashaid had re-evaluated elements of his value system on the basis of his households economic circumstances.

Similarly, owner *B* (with his very large herd) had suppliers livestock traders and milk merchants competing for his custom. This might have in part explained his relative indifference towards acquisition of a social reputation. In late 1995 owner *B* repudiated tribal protocol by refusing to pay his respects to the family of the deceased *sheikh* (his kinsman, herd owner *D*). While such behaviour would probably have had disastrous economic as well as social consequences for most herders within the *A-W* group, much of *B*'s business and trading associates existed at a level outside the tribal universe (many were not Bedouin[98]), where reputation was gauged in different terms.

It might cautiously be concluded that at the highest echelons of livestock production and market integration, the exploitation of reputation and social capital (at least as derived from commitment to traditional Bedouin values) produced diminishing economic returns. As a consequence, households with large herds which placed strong emphasis upon the monetary value of livestock might, (like *B* and *Abu* Rashaid) have had less incentive to invoke traditional values to achieve economic ends.

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[97] *Umm* Rashaid would entertain guests with conversation and tea at the hearth late into the night while *Abu* Rashaid would doze off in his bedroll

[98] *B*'s business partners included large-scale traders, entrepreneurs, commodity brokers and international export licencees. Many were of urban, peasant or Palestinian origin.

7.11 Conclusions

This chapter has focused upon the importance of non-material values in the livestock herding economy and the symbolic role of animals in Badia households. Furthermore, the discussion has offered an overview of the ways in which herd management may effect the organisation of these households and the social structures within which they exist. These issues have been examined with special reference to the material values which pastoral households also attribute to their herds (discussed in Chapters 5 and 6)

Livestock in the Badia were widely perceived as holding important symbolic values. These values were derived from reciprocal transfers of animals or meat through which individuals or groups could express commitment to a wider social group and participation within its ideology. Such expressions were found to be particular important at key junctures in a household's natural history, when important social relationships required ratification. Symbolic transactions involving livestock acted to underpin the cohesion of Ahl al Jebel society and helped shape the relationships between actors within it. Given the symbolic utilities of livestock, herd-owners participant within the Bedouin system had therefore to balance the realisation of material values against the realisation of non-material values in managing their herds, and in this considerable variation was noted.

However, the Ahl el Jebel case has further demonstrated that effective management of social relationships and acquisition of societal approbation was also considered by many decision-makers to constitute an effective strategy for the reduction of transaction costs and maximisation of values within the livestock market economy.

This study therefore makes a valuable contribution to our understanding of the role of traditional social institutions when pastoral economies modernise. The evidence of the Badia has suggested a great deal of autonomy and flexibility in the way that individual households chose to negotiate traditional social structures and value systems in pursuit of their own herding objectives. In some cases, where monetary values or immediate household interests were prioritised, this could result in limited dis-engagement from social institutions (as hypothesised by Meir, 1997). By contrast, other households employed market-oriented livestock production as a forum for the expression of social responsibility and commitment to a wider kinship group. Consequently, the study has demonstrated that the ways in which livestock are valued (both materially and symbolically) cannot be understood outside the context of their production and exchange.

Clearly, in pursing disparate social and economic herding objectives, households could have a structuring effect upon Ahl al Jebel society. This was particularly apparent in efforts to maintain (or create) important economies of scale in livestock production and these concerns

were reflected in the inter-generational transfers of large herds through inheritance and in the creation of intra household economic partnerships between siblings, with the net result of reinforcing traditional kinship-based social structures. While these aggregates were generated as a market economic strategy, it was evident that there also existed an important moral basis to their maintenance.

Focus upon the social context of livestock in Ahl al Jebel pastoral society thus reveals a situation of some complexity, in which not only do herd managers make choices between utilising the material and non material values of their herds but also in which non-material values may be realised with the purpose of achieving rational economic objectives. Furthermore while some herd-owners extract material value from participation within the Bedouin system, others do not and see their rational economic interests as lying elsewhere. Thus while agreeing with work of Lancaster and Lancaster (1999) and others, that livestock ownership and management is closely bound to complex social and economic interdependencies and a prevalent value system, I would further argue that this system may be flexibly negotiated by individuals within it in pursuit of their own self determined objectives.

The following chapter describes how pastoralists' attitudes to livestock were affected by a major change in the livestock production economy, which occurred at the end of Phase 2 of the research. In doing so, the chapter brings together many of the ideas developed in Chapters 5, 6, and 7.

Part Three (Chapters 8 – 9)

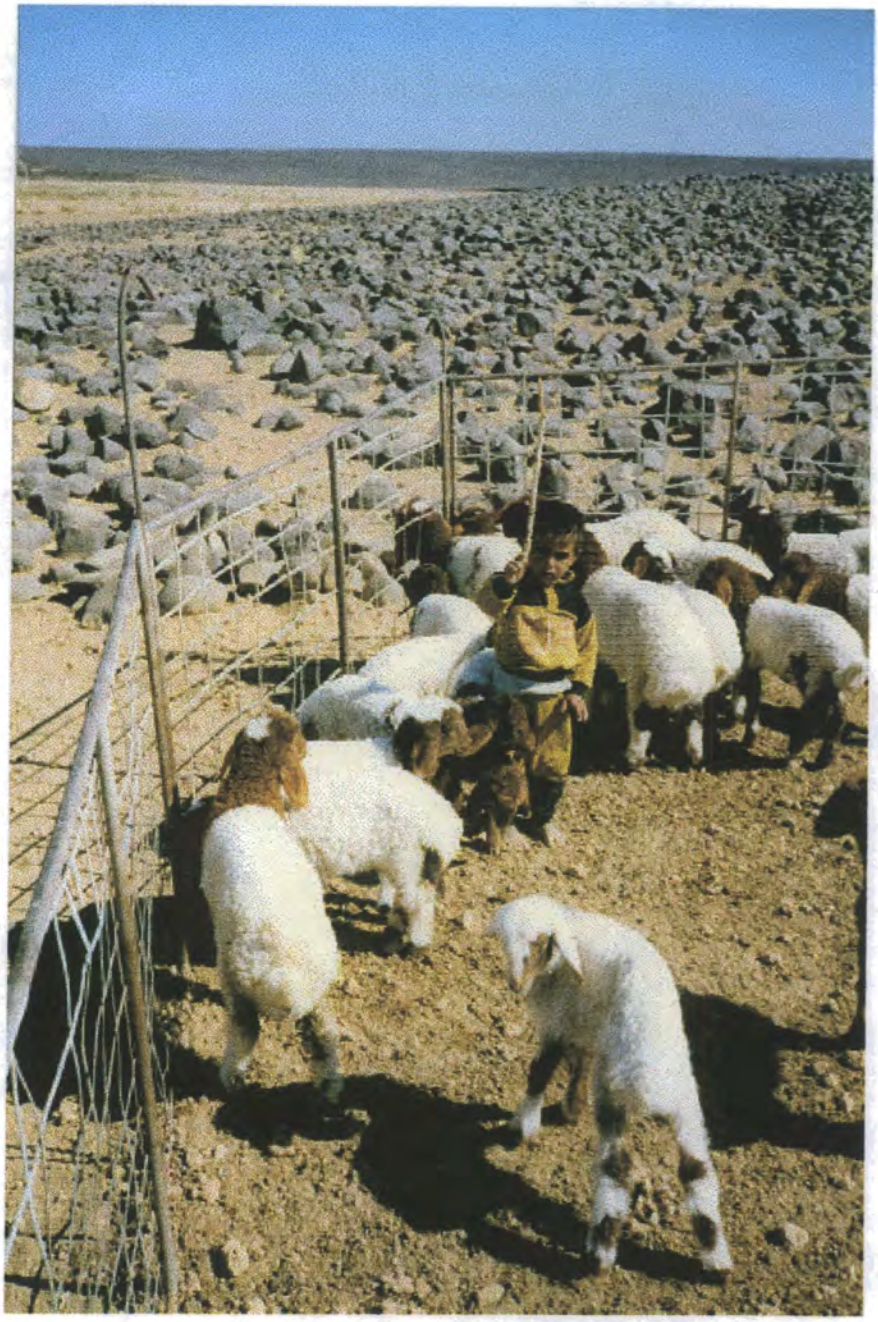

Plate 3: *A future pastoralist with his future herd?*

Chapter 8: Changes in herding behaviour following the removal of feed subsidies

8.1 Introduction

Earlier chapters, notably chapter 5, have stressed the relatively high income potential of livestock while feeds were government subsidised. Livestock held important income and capital-growth values during that period. However, in August 1996, state subsidies on livestock feeds were withdrawn, leading to major changes in the livestock production economy of the Jordanian Badia. Rising feed prices had a heavy impact on the profitability of market oriented sheep production and consequently the income value of livestock was drastically reduced.

My fieldwork observations prior to summer 1996 suggested that livestock were used and valued in complex ways by Ahl al Jebel households. Herds were widely valued as a source of cash income, but the relative importance of other types of values had been more difficult to define. After August 1996, the changing income potential of livestock provided a useful opportunity to assess the motives behind herd management and to examine the importance of livestock other than as a source of income. The change in herding economics also offered the opportunity to observe how different types of livestock managing households responded to the new production environment. In essence the removal of subsidies offered the possibility of an experimental 'control' in which attitudes to livestock could be re-evaluated in the absence of strong cash income incentives for ownership.

Naturally, the removal of feed subsidies and the social and the social economic responses of Bedouin livestock producers was of major interest to the JBRDP, and this process of change was the subject of several studies by JBRDP researchers including Oakeley (1997), Roe (1998) Campbell (1998) and Papadopulos (1999). In her work, Papadopulos has provided a detailed economic and statistical analysis of the effects of the removal of the livestock feeds subsidy at a household level (1999:196-251).

The objective of this chapter is to build upon (rather than repeat) this previous work, with special reference to how attitudes to livestock and pastoral livelihoods began to evolve in the post-subsidy period. The chapter begins with a brief but necessary overview of the economic effects of the removal of feed subsidies upon livestock producers, and the aggregate response to these changes across the whole *A-W* group of households. The second part of the chapter returns to the socio-economic types of herd management established in the section 7.7, and focuses upon how change has effected livestock producers at these different levels of production and social economic association. The latter part of the chapter considers how

changes in the behaviour of herding households after the removal of feed subsidies contributes to our understanding of the way in which livestock are attributed values in the contemporary herding society of the Badia.

8.2 The economic impact of the removal of feed subsidies

As described in chapter 4, government subsidies upon livestock feeds were fully removed in August of 1996. As a result, the price of whole barley at official distribution centres rose by about 40% to 120JD/tonne and the price of wheatbran rose by over 90% to 100JD/tonne (Fig 4.8). At first, private sector traders were able to undercut the prices at official distribution centres by between 3 and 10 JD/tonne, although by spring 1998, public and private sector prices had converged to 115 JD/tonne and 85JD/tonne for barley and wheatbran respectively.

Under the typical 1995-1996 management regime (i.e. approximately 1.02 kilograms supplementary feed offered daily in proportions of three units of barley to one of wheatbran) the increased annual expense per head at the new cost of feeds would be 11.88 JD. If this additional expenditure is added to the gross margin calculation made in Table 5.9 the calculation must be revised as in Table 8.1.

Table 8.1: Revised gross margin calculation after removal of feed subsidies

	Value (JD)
Gross margin per head	13.50
Additional feed costs (as of August/96)	11.88
Revised gross margin per head	1.62

This revised gross margin calculation is based upon the assumption that income from herds remains constant under the new production conditions. However, the increase in the costs of feeds was shortly followed by a severe slump in livestock prices (Figure 8.1). The depression of livestock markets was linked to widespread sales of animals, which followed the removal of the feed subsidies (section 8.2.1).

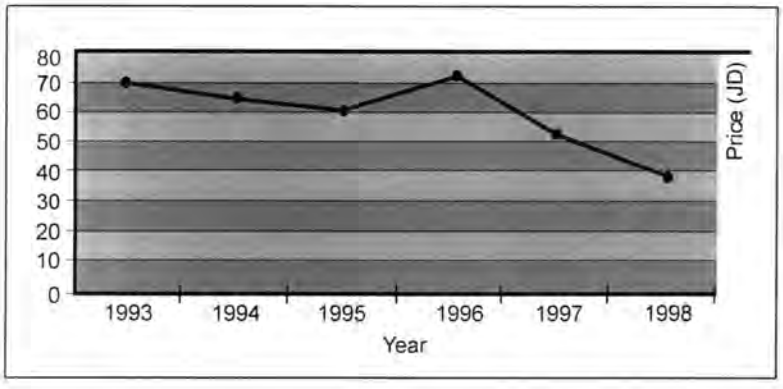

Figure 8.1: Reported summer market values for fattened lambs in JBRDP area (1993-1998)

During 1997 and the early part of 1998, the market value of livestock continued to depreciate and although there have been some recent signs of recovery in the market for fattened lambs (Campbell, pers. comm), the market for adults has virtually collapsed, with recent reports of non-productive ewes being exchanged for as little as 7JD (Dutton, pers.comm).

Falling market prices for livestock clearly render a gross margin calculation based upon 1995-1996 income data obsolete. A recalculation of gross margins based upon the typical management system observed between 1995 and 1996, but substituting 1998 costs for feeds and market values for animals suggested a return of approximately –22 JD per head annually (Campbell 1998). However, since livestock management practices have been substantially modified in the period following the removal of subsidies (including a reduction in the amount of dry feeds used), such calculations are again invalid. In the opinion of the livestock scientist at the JBRDP, even if herders reduced the quantity of supplementary feeds offered to their animals by 50%, gross margins per head would remain negative owing to the predicted deterioration in reproductive performance, sale weight and the quality of lambs (Campbell, pers.comm).

Essentially, it has proven extremely difficult to accurately gauge the impact of the removal of feed subsidies on the livestock production systems of the northern Badia. None of the various calculations which have yet been made fully reflect the extent of change which has occurred within the livestock production environment and management systems. To make an accurate appraisal of post-subsidy gross margins would require a further period of intensive monitoring of herds inputs and outputs. Unfortunately, as neither feed prices, livestock market values or herd sizes have yet stabilised after the removal of the feed subsidy, this has not been possible.

In view of these ambiguities, one of the most concise and instructive assessments of the economic impact of the removal of feed subsidies was offered to me in 1997 by a Howeitat tribesman in southern Jordan[99], who lamented that;

> *"Formerly, one goat would pay for one tonne of barley. Now five goats do not suffice...."*

Therefore, while at this stage it is difficult to make a accurate economic analysis of the impact of the removal of the feed subsidy on livestock incomes, the weight of evidence suggests that the impact has been severe. Even in a best-case scenario (such as that described by Table 8.1), it would appear unlikely that livestock could continue to constitute a profitable source of monetary income for households. However, it is of course possible that with special management, the production systems of some individual households may be considerably more profitable than those of others.

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[99] Suleiman Eid Manaj'a, Wadi Araba, May 1997.
Originally quoted in Roe *et al* (1997:3).

8.3 Aggregate management responses to the removal of feed subsidies

8.3.1 Changes in livestock population

During the 15 months following the removal of the state livestock subsidy in August 1996, the livestock population under the management of households *A-W* decreased by some 3342 head, a sum equivalent to approximately one third of the 1996 population. Figure 8.2, using data collected from the 23 households of the *A-W* group illustrates the gradual increase of herd sizes between the time of the preliminary livestock survey in 1994 and the removal of subsidies 19 months later.

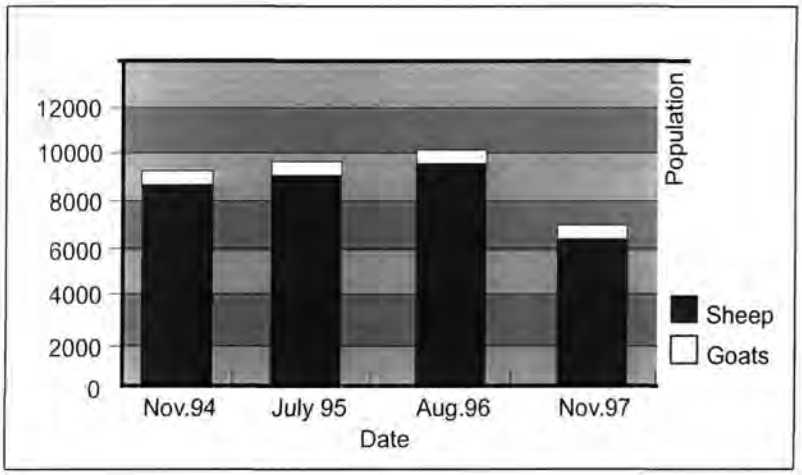

Figure 8.2: Livestock population managed by the A-W group of households (1994-1997)

Some herd-owners acted quickly and decisively upon first hearing about the feed price changes. As described in section 5.3, two herd-owners even made large livestock sales on the strength of rumours that preceded the rise in feed prices. However, the majority of livestock sales from the *A-W* group were delayed until late spring or early summer.

The removal of the livestock feed subsidy, (part of a Structural Readjustment Programme) coincided with the removal of other key government subsidies such as that on bread. The removal of these subsidies in August 1996 was at first met with confusion nationally. A short period of political instability and civil unrest (in southern Jordan) followed and rumour abounded that the government might be compelled to retract its decision. Over a period of a few weeks, news reached Badia livestock owners of a package of compensatory measures being put together. When these measures were announced, they offered 6 JD per head for herds of less than 100 head for the first 12 months following the removal of the subsidy and so were to have little impact on Badia livestock holdings. However, by the time that this situation was clarified, heavy rains in November and December 1996 had promised good seasonal grazing and the probability of minimal feed purchases for the months ahead. Livestock managers generally welcomed the respite this offered them from difficult decisions about the future of their herds.

Owing to this chain of circumstances, the full effects of the feed price increases were not felt until the end of the 1997 *rabi'a* (grazing season). After pastures were exhausted, herders found

that they needed to sell increasing numbers of animals to raise funds to make feed purchases for those which remained. As more animals reached the marketplace, prices at Mafraq, Ruweishid and Azraq declined accordingly, (Figure 8.1), requiring still more to be sold to meet feed costs. Several herd-owners described this downward spiral of sales as *"the sheep are eating the sheep"*

While some owners sold animals at undervalued prices, others who were able to tapped alternative sources of income, savings, or borrowed in the hope of meeting maintenance costs until the livestock market recovered.

One feature of Figure 8.2 is the apparent inconsistency in post-subsidy change between goat and sheep populations. While the total sheep population managed within the *A-W* group of households declined by 33% in the 15 months following August 1996, the goat population decreased by only 8% ($P<0.0.5$). This data is consistent with the findings of Papdopulos, who, with a much larger sample group, observed a similar proportional disparity between the changes in goat and sheep population in the post-subsidy period (1999:214).

8.3.2 Changes in the use of dry (supplementary) feeds

A second widespread response to the rising costs of feeds by Ahl al Jebel livestock producers has been changes in the use of feeds within the production system. All livestock owners from the *A-W* study group of households reported changes to their feeding regime following the removal of fed subsidies on barley and wheatbran.

Herd-owners attempted to modify feed use in such a way as to reduce overall feeds expenditure to levels similar to those prior to August 1996. This was done in two principal ways. First, daily ration quantities of dry feeds were reduced to an annual mean of 0.8 kg/head per/day, although a substantial part of this reduction may be attributed to the quality of 1997 spring pastures, (Figure 8.3). Second, livestock managers reported changing the proportions of dry feeds that they were using.

Owing to the 90% rise in the price of wheatbran, (which was considered of low nutritional value) livestock owners widely felt that this feed supplement was more overvalued than barley at the new prices. As described in section 5.4, research prior to August 1996 indicated that the mean barley:wheatbran feeds ratio employed was about 3:1. After the removal of subsidies, reported patterns of feed use indicate that this ratio changed to approximately 5:1. However, this changing ratio did not mean that greater absolute quantities of barley were being used than previously. Instead, it was indicative of greater diversification in the types of feeds being offered to livestock.

Many herd-owners responded to the rising cost of barley and wheatbran by attempting to minimise the use of these feeds as much as possible. By late 1997, livestock producers were utilising an extensive range of alternative feed supplements (Table 8.2). These included

purposely grown barley or harvest residues, stale bread, cheap agricultural surpluses such as onions, tomatoes, or cauliflower and agricultural by-products such as crushed (dried) tomato and pressed (dried) olives[100].

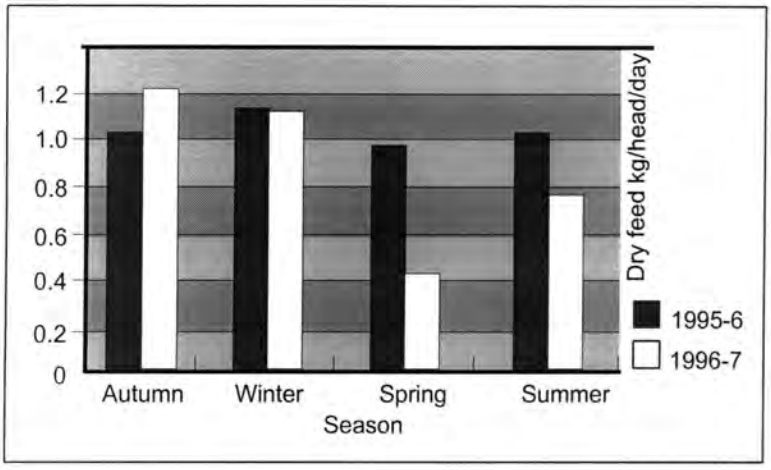

Figure 8.3: Mean daily dry feed ration per head for the A-W herds(1996-97)

Table 8.2: Reported strategies for the feeding of livestock (1996-1997)

	Straw & other feeds	Crop residue hire	Barley cultivation
A	✓	✓	✓
B	✓	-	-
C	Herd Sold	Herd Sold	Herd Sold
D	✓	✓	✓
E	✓	✓	✓
F	-	✓	✓
G	✓	✓	✓
H	✓	✓	✓
I	✓	✓	✓
J	✓	✓	✓
K	✓	✓	✓
L		✓	✓
M	✓	✓	✓
N	✓	✓	✓
O	✓	-	-
P	-	-	-
Q	-	✓	✓
R	-	✓	✓
S	✓	-	-
T	✓	-	✓
U	✓	✓	✓
V	✓	-	-
W	✓	✓	✓
Total	17	16	17

The increasing use of agricultural surpluses and by products in the post subsidy period has been difficult to evaluate because no standard unit of measurement for the various commodities exists. Monetary value is of limited utility as an indicator since some exchanges were undertaken outside of the monetary economy and many have a social basis that commands 'special rates'. Of the remaining 22 livestock owners in the *A-W* group, 13 reported experimenting with tomato and/or olive pulp as feed supplements, while 4 households of the group reported the use of other agricultural by-products.

Similarly, in the year following the removal of feed subsidies there was a substantial

[100] Pressed tomato and olive were the by-products of processing tomato paste and olive oil, and were very cheaply available from processing factories. The nearest of these (a tomato paste factory), was located about 30km west of the JBRDP area, along the Mafraq highway. The nearest olive oil factory was even further. Both pressed tomato and olive were obtained wet and needed to be dried before they could be fed to animals. This labour intensive task was often undertaken by women and children.

increase in the number of Ahl al Jebel herding households renting agricultural residues on a contract basis (Table 8.2). A majority of households in 1997 also reported clearing, ploughing and sowing areas of unirrigated barley for the purpose of fodder production (Table 8.2). The rising costs of barley on the free market may have increased the incentive for herd-owners to engage in this marginal-return activity. However, it should also be noted the winter rains of 1996-1997 were good and this may also have encouraged opportunistic sowing. The result was an observable extension in the area of cleared and developed land around the villages of the northern JBRDP area. Papadopulos (1999:209) found that the total area of dry barley cultivated by her sample of 68 livestock managing households increased by 21% between 1995 and 1998. By 1997, 17 of the *A-W* group of households reported sowing barley the total area of which amounted to 1258 dunnams.

Table 8.3 summarises the changes in feed acquisition strategies observed within the *A-W* sample group after August 1996. Experimentation with, and diversification into a range of alternative feed supplements represents the technological adaptation of management systems to the new livestock production economy, but also a general movement to a more 'active' and acquisitive form of management. Many owners pointed out that herd management had become much more demanding of their own labour following the removal of subsidies. Consequently, for many of the households that remain within the livestock sector, the cost of more intensive management should be considered along with the other additional costs of production.

Table 8.3: Changes in feed acquisition strategies after the removal of dry feed subsidies

Year	Use of straw and by-products (no. households)	Crop residue hire (no.households)	Barley Cultivation (no. households)
1995-1996	10	11	7
1996-1997	17	16	17
Change	+7	+ 5	+ 10

8.4 Changing livelihood strategies and attitudes to livestock

Section 8.2 has provided, in summary form, an overview of the recent economic changes to the livestock economy of the northern Badia. As such, it constitutes a synthesis and restatement of what is already known. However, the manipulation of aggregate quantitative data has thus far failed to provide a clear picture of how changes to the livestock economy have effected livelihood strategies and attitudes to livestock at a household level. For this reason, when all 23 households of the original *A-W* group were revisited in the fourth phase of research, quantitative data was recorded in the context of broader discussions as to why particular decisions had been reached and how household's perceived the changing place of livestock within their livelihoods.

In the following section, attitudes to livestock are reconsidered with specific reference to the four types of socio-economic and herd management orientation identified in section 7.7 However, the analysis also makes wider reference to all previous chapters of this thesis.

8.4.1 Independent market oriented producers (type two herd management)

Household's producing livestock independently for market supply were the least prevalent of the four forms of herd management described in section 7.7. The form was characterised by very large, predominantly rangeland based herds, with large capital and labour resources, demonstrating relatively limited participation within traditional social and political structures. Herd management had placed heavy emphasis upon monetary values, both in terms of income and capital growth.

At face value, the three households (*B*, *S* and *U*) which managed herds of this type demonstrated disparate responses to the economic changes of August 1996. Both for this reason and because they represented the largest herd owning households of the *A-W* group, it worthwhile to consider them individually.

Immediately after the rise in feed prices became generally known, herd owner *B* had sold his 1500 sheep and the following month bought 70 immature bull camels for fattening. These were herded out to the *hammad* rangelands[101], beyond Ruweishid for three months before they were prematurely sold and *B* instead entered into a commercial partnership with his new Ruweishid in-laws.

At our final meeting, *B* told me that he had known about the planned removal of subsidies before it became public knowledge. He had had time to meet with several trusted informants in the livestock industry before deciding that the rising feed prices would effectively undercut his profit margins. He had also anticipated the subsequent depreciation of prices at livestock markets and so had sold off his entire stock (except for a handful of goats) as fast as possible so as to acquire the highest value for them. *B* explained that his subsequent decision to purchase camels had been made because he had expected them to be more independent of supplementary dry feeds than small ruminants and thus more profitable. However, the migration to Ruweishid had brought him into closer association with his in-laws there, and as soon as a new partnership[102] (offering higher profits than the camels) had been worked out between them, the camels had been sold.

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[101] At *B's* request I brought camel harness and saddlery equipment across from Egypt and later participated in the droving of the camels out to the *hammad*. None of *B*'s three sons had previously ridden camels and thus the five day trip proved eventful.

[102] Although never explicitly stated, it was widely reputed that *B*'s new business involved illegal cross-border trade. By the end of 1997 he had acquired an additional (third) 10 tonne truck and a four wheel drive pickup truck and was clearly in the business of moving commodities about.

Herd-owner *B* stated his indifference to the sale of the herd. As far as he was concerned, he'd put his money where the highest incomes and best capital growth could be achieved. He explained that the goats remaining unsold belonged to his wives. Given the low prices for smuggled Iraqi livestock at Ruweishid, he could cheaply buy any animals that he might require without the expense and inconvenience of actually maintaining them himself. The only resistance to the sale was raised by his senior wives, who were socially established within the livestock herding society of their village. They had felt threatened by the proposed household change in livelihood and the relocation to Ruweishid where they had no kinswomen. *B* explained that his elder wives had feared that the move to Ruweishid would empower his junior (Ruweishid) wife within the household to their disadvantage.

As a compromise, (and perhaps as security against his risky business endeavours) *B* had decided to establish an irrigated olive orchard at his village of origin to provide the basis for maintaining part of his household there, where they could continue herding the household's goats, while his elder sons joined him and his newest wife at his Ruweishid house.[103]

In contrast to the behaviour of herd-owner *B*, herd-owner *S* reacted to the removal of feed subsidies by making further monetary investments into his herd, effectively underlining the commitment of the household to livestock.

In November 1996, after it became clear that no reversal in government policy was likely to occur, *Abu* Rashaid suggested that he and I should '*bilad*'[104] (travel around the Badia, ostensibly to check pasture conditions and collect news of rainfall from encampments with a view to planning a migration). Over the following two days, as well as gathering information on grazing conditions and the reported seasonal movements of various Bedouin encampments, *Abu* Rashaid sought out precise information on what other herders were doing about the increased feed costs. This research produced anecdotal accounts of rising animal sales, falling market prices and rumours of several herders abandoning livestock production entirely.

Abu Rashaid had concluded that the subsiding livestock market and generally low confidence in livestock was a prime opportunity to buy a water tanker truck cheaply. This decision was a bold one, given that the prevailing trend was towards the downscaling of livestock investments. Raising money for the second truck, even at a bargain price, required sales from the herd and *S* took the opportunity to restructure the herd for optimal productivity.

By December 1997, the net result of these changes was that herd was about 200 head smaller than it had been in 1996, (animals sold out from the rams, older ewes, and as previously noted, from *Umm* Rashaid's goats). The intention of these sales was not only to raise cash but also to improve the overall gross margins of the herd. The household had experimented with tomato

[103] It is possible that this arrangement was also in part stimulated by the tensions which (as I earlier described) had arisen between *B* and the *sheikh* of his lineage, herd-owner *D*.
[104] At that stage *Abu* Rashaid had only one truck, so my vehicle was the only one available for the journey.

pulp as a supplementary feed but *Abu* Rashaid confided that he did not think he would use it regularly because of the logistics and high expense of collecting it from his remote rangeland locations. *Abu* Rashaid pointed out that the tanker truck would now more effectively facilitate the herd's migration to remote grazing areas, a strategy which had always been effective in reducing feed costs for the household.

Thus, despite the diminished herd, by December 1997 the household's overall sunk investment in livestock had grown above its former (1996) level. Although the household had sold no further animals (due to the low market prices) since spring, *Abu* Rashaid reported successful milk sales owing to the good spring pastures. The household's one (additional) income was being used to cover fuel costs and according to *Umm* Rashaid, durable dairy products had been stockpiled in greater quantities than ever before. The household clearly judged that a highly specialist independent herding unit (such as their own) could continue to profitably produce livestock.

They still firmly identified with livestock as a way of making and living, and a way of life. One of *Abu* Rashaid's arguments against making additional livestock sales in order to raise funds for feeds was that he had two sons who would soon need to be married;

> *"It takes just one hour to sell 500 sheep. But how long would it take me to raise 500 sheep to divide between my sons? When a man has sheep it is better for him to keep them than sell them and try to regain them later"* [105]

The hope of *Abu* Rashaid that his sons would continue in the 'family business' of sheep herding, and his determination to grant each a proportion of the herd at marriage indicates that he saw the herd continuing to play a central role in the economic reproduction of the household even after the removal of subsidies. *Umm* Rashaid staunchly supported her husband's position. She said:

> *"Our people have always herded. Abu Rashaid's father gave him his first ewes and my mother gave me does from the Jebel. We wish only to provide for our children as our families provided for us."* [106]

The response of the third livestock owner of this type, owner *U*, was rather more ambiguous than that of owners *B* or *S*.

I found *U* in November 1997 at his village of Al Ashrafiyya. Like many herd-owners, *U* had made some additional sales from his herd to meet the immediate costs of the rising dry-feed prices. Between August 1996 and November 1997, the herd had been down-scaled by about 150 animals.

U explained that after the spring grazing season, he had returned to his village, re-uniting the pastoral and sedentary elements of his household. He was adamant that within the new

[105] *Abu* Rashaid, *Abu* Tawzir, December 1997.

economic environment, sheep could not be profitably herded as before. He stressed the need to become less reliant on costly dry feeds and the necessity for improved access to livestock markets. He saw relocation of the household to within its own descent group at the village as a way of achieving these ends. Over the summer months the household had collected considerable quantities of tomato and olive pulp and had dried them for storage (I was shown large piles of these stored under tarpaulins). *U* also reported renting barley residues from kinsmen over the summer, and had, (for the first time in several years) sown barley seed on the household's own land the month before my visit. At the time of my visit I was informed that the herd were being managed by a shepherd under the supervision of a kinsman who was herding in the same area, just a few kilometres away from the village. *U* was optimistic that under this new management the household could continue to support itself on the income from the livestock.

Essentially, *U*'s response to the removal of feed subsidies reflected that of household *S* in that it involved a changing management strategy aimed at improving the gross margins of production. However, contrary to household *S,* the adopted strategy resulted in the household becoming less specialised in rangeland-based pastoralism, and more dependent upon the diverse possibilities generated by the village/agricultural environment. In this approach to acquisition of resources, (mediated by the descent based organisation of the village) the livestock management orientation of household *U* perceptibly shifts towards that in which herding is embedded within complex social and economic relationships.

Table 8.4: Changes in livestock population (sheep and goat) under type two management

Household	August 1996	November 1997	Change
B	1506	8	-1498
S	1005	821	-184
U	734	591	-143
Total	3245	1420	-1825
			57%

While an overview of the three type two households suggests very different responses to the removal of feed subsidies (Table 8.4), further consideration suggest that in each case, the predominant livelihood objective of households has been to maximise monetary incomes. Herd management behaviour was in each case economically rational within particular socio-economic context of each household and the values of decision makers.

Household *B* dispensed with livestock (except a few goats for domestic supply) when the possibility for more remunerative economic activities arose. By contrast, the respective responses of households *S* and *U* to changes in the production environment were based upon the belief that livestock still held income values under revised management. The additional monetary investment of household *S* in particular might be considered informed speculation

[106] *Umm* Rashaid, *Abu* Tawzir, December 1997

upon livestock. This predominant emphasis upon neoclassical monetary values is consistent with the herding values observed among type two households prior to the removal of feed subsidies.

There is a danger that the predominantly commercial orientation of large herds may overshadow the other functions of livestock in the livelihood and lifeways of individual households. However, each of the three households conspicuously retained small numbers of animals for household supply after other changes to their herds and in the case of household *S*, the herd certainly seems to symbolise household independence and continuity. Indeed, such is the centrality of the herd in household *S* that it constituted a unifying interest for all members of the household; all members participated in the herding and preparation of products, all benefited from incomes in the short-term and stood to benefit from a meaningful inheritance in the longer term.

8.4.2 Socio-economically associated herding households (type one herd management)

The long-term association of households in livestock herding and marketing activities was found to be quite common among the *A-W* group of households. The basis of contemporary herding associations, as outlined in section 7.2, could be found in a range of material and non-material values, related to economies of scale and productivity, but also in the expression social commitment and participation within a moral economy of reciprocity. As with other forms of market oriented production, herds tended to be quite large, and associated households were found to be predominantly rangeland based, although often divided between rangeland and village residences.

Type one households were heavily affected by the removal of feed subsidies, owing to their high degree of dependency upon livestock and limited scope for alternative sources of income. In late 1997, I found that herd-owners had widely followed the prevalent pattern of attempting to diversify livestock feeds to reduce costs (Table 8.2). However, several reported difficulties in gaining access to agricultural by-products and residues for grazing. This was a particular problem for those households with inadequate transport (*V*) or those with kinship associations with villages in eastern part of the villages area where very low rainfall made the dry-farming of cereal crops particularly difficult (*E*, *P*, and *R*).

Among the principal concerns of these herd managers was the high level of their dependency upon livestock; all insisted that they 'could not afford' to make reductions in livestock numbers as households with multiple incomes had done. Several of the herd-owners, particularly *Q*, *V*, *P* and *R* reported having gone deeply into debt, both with kinsmen and commercial lenders (generally free market dry feed suppliers who extend credit). Herd owner *R* pointed out that one of the reasons why he had to maintain his herd was that it stood as collateral against his various debts.

> *"All the Bedouin have debts; this is the way that they live from one year to another. The merchants allow me to become indebted only because I still have sheep to sell. Now I cannot sell these because of what I owe the merchant, so I must buy more feed to keep them. Then my debt is greater"*[107].

Several other type one households that resorted to borrowing to obviate animal sales did so within their own kinship groups. These included household *V* which had become increasingly dependent upon the core households of *qoum Abu* Swelim. Not only had *V* to rely upon other households for normal logistical supply, but also in time consuming attempts to acquire cheaper alternatives to barley and wheatbran. Herder *V* reported that mobility constraints had made adaptation to the new production economy difficult and his household had been unable to access some alternative sources of feed[108]. Consequently, the household had been accepting dry feeds (barley and wheatbran) on credit from the core households of the livestock collective as an alternative to selling off stock at low market prices.

Household *E* had also reported incurring debts to cover feed costs rather than selling stock at 'undervalued' prices. This household normally camped and herded livestock in close association with that of kinsman owner *R*. Both households had spent the autumn months at the settlement of Al Jedda, clearing field areas in the hope of cultivating barley after winter rains. They had also collaborated in the collection and drying of limited quantities of tomato pulp.

Realisation of a growing deficit in livestock production led one producer (*P*) to state that he wished to be rid of his whole herd and would gladly sell them. However, he later added that the herd could only be sold once the household had been assured an alternative (waged) income, but conceded that the chances of finding this were low. Herd-owner *A* was more optimistic when I met him in November 1997 at his village. He described his household as having become more pro-active in livestock management and the acquisition of resources. Herd-owner *A*'s wife and adult daughters were assisting in the drying of olive and tomato pulp and he reported they had also had begun barley cultivation. It was also widely rumoured within *A*'s kin-group that he was collaborating in some business ventures with *B* (another kinsman)[109]. This assertion seemed to be supported by the appearance of a new pickup truck at the household, and the fact that *A* recently had his battered old truck extensively overhauled and relicensed. *A* explained that he needed the new truck because of all the extra journeys he had to undertake, not only to support his own herd, but also to assist the household of his migration partner.

Following the removal of feed subsidies *qoum* headmen *Abu* Ward and *Abu* Sweilim had made some initial sales of animals in order to raise money for feed purchases, but as livestock values

[107] Owner *R*, Al Jedda, November 1997

[108] For example, household *V* had not migrated to a village area to rent post-harvest residues in 1997. This was attributed to the fact that they had no independent transport. Although the core households of *qoum Abu* Sweilim had supplied *V* when it had camped individually in January, that distance had been shorter than the one between the agricultural areas and the rangeland location of *qoum Abu* Sweilim.

subsequently depreciated, a decision was made by core households at both camps to avoid animal sales[110]. *Abu* Sweilim had experimented with (but ultimately abandoned) the idea fetching tomato and agricultural by products and *Abu* Ward negotiated a large area of barley residues to graze, close to al-Zarqa. Both households reported arranging for the sowing of the cleared fields they held in their respective village areas. In both cases, the sowing of barley was being managed by the village-based households of each livestock collective. *Abu* Ward reported cutting his use of dry feeds by approximately half and returning to commercial sales of milk.

At the time of my final discussions with these two heads of household in late 1997, both remained resolute in their commitment to their herds, although *Abu* Ward bemoaned the expenses that his own household (and those of his brothers and son) were incurring. In apparent self contradiction, *Abu* Ward stated that there was *"no longer any profit in livestock"*, yet in the next sentence claimed that sheep were the kin-group's source of livelihood and thus the herds had to be sustained at any cost. *Abu* Sweilim re-iterated a similar perspective, describing the various herds within his group as "*the wealth of the* beit" despite the fact that monetary value of the animals on livestock markets was much diminished.

All type one households cited the production and consumption of dairy produce as an important reason for maintaining their herds. In overview, one of the most consistent features of type one management behaviour was the widespread resistance to selling livestock. All households of this type produced for market supply and were heavily dependent upon livestock incomes.

Table 8.5: Changes in livestock population (sheep and goat) under type one management

Household	August 1996	November 1997	Change
A	245	276	+31
E	383	344	-39
F	548	490	-58
P	507	353	-154
Q	171	141	-30
R	724	427	-297
T	474	421	-53
V	276	277	+1
Total	3328	2729	-599
			18%

However, after summer 1997, gross margins of production had fallen considerably and some herds may have even been running at a loss. Assuming that these households managed their herds for their income values alone, it would seem the rational economic choice for unprofitable herds to be sold off (as *B* had done), rather than run up debts in order to maintain them at a loss.

[109] As noted in Table 5.10 owner *A* had made a small monthly income from opportunistic sheep trading (principally between his village and Mafraq) during 1995-1996. However, after markets slumped in 1997, profits from trading dwindled and he had discontinued this activity.

[110] Both *Abu* Ward and *Abu* Sweilim described how they had made exhaustive efforts to find higher market values for animals from the two livestock collectives. In December 1997 *Abu* Sweilim had been investigating livestock prices at the Sahab central market near to Amman, which the collectives had not previously sold to before.

However, it can be seen that between August 1996 and November 1997 the total livestock population of type one households fell by only 18% (Table 8.5). This is a smaller reduction than recorded for the aggregate *A-W* population and indeed, was lowest of any of the four management types.

As pointed out by several of my informants, reluctance to downscale or sell herds may in part be related to the absence of alternative income opportunities for herding households, but might equally be explained by the widespread expectation that the livestock economy would again improve, justifying the maintenance of herds at a loss in the interim[111]. This is perhaps an indication that herd-owners perceived their herds to hold long-term investment values distinct from their immediate monetary or income values.

Yet in my discussions with these (type one) livestock owners I sensed that positive attitudes were in part related to some other, intangible, sense of worth which herders attributed to their livestock which was not directly related to their monetary value at markets.

This high regard for livestock was held by many owners and may have been based upon one or more of many factors, including, their important subsistence and symbolic functions and their traditional centrality in the Bedouin way of life (section 7.9). As several heads of households pointed out, many successive generations of the Ahl al Jebel had been closely associated with livestock, and doubtless some form cultural disposition existed in their favour.

More pragmatically, owners' attitudes to livestock may have been influenced by the lingering culture of 15 years of state-subsidised growth in the livestock sector.

Either way, although difficult to define, this predisposition to livestock was a discernible factor in the way that many older owners evaluated their herds and made decisions about them. While evident in attitudes to livestock throughout the *A-W* group of households, it was particularly apparent after the removal of feed subsidies in the statements and actions of households of this management type.

The perceived need to maintain large herds at a time when the monetary and income values of the herds had fallen substantially may also reflect a growing livelihood security function for them. As pointed out in section 5.7, by the mid-1990's the principal risks to large-scale livestock production were economic rather than physical. Under such circumstances, the building up of large herds could be best understood in terms of neo-classical economic rationality and profit maximisation rather than risk aversion. However, in the post-subsidy period, with monetary incentives for large herds diminished, several type one herders began to

[111] According to William and Fidelity Lancaster, the Bedouin have come to view herding profits as essentially cyclical in nature, periods of economic growth being punctuated by losses and underproductivity. They argue that with these oscillations in mind, herd owners manage their herds with a longer term perspective. (pers. comm Lancaster and Lancaster; letter to the author 11 January 1996).

explicitly associate the survival of the household with that of the herd, echoing the risk aversive herd maximising observed in some subsistence level pastoral economies.

The social context within which these herds were managed had itself clearly been affected by the post-subsidy economic environment. While growing economic pressures upon producers and the need for increasingly active management reaffirmed the value of mutual support through the association of herding households, changes in production strategies of herders (notably in the acquisition of feeds) had also encouraged the extension of links outside the pastoral community and into the agricultural and business sectors. Further developing social and/or economic linkages in these directions may have taken some households outside their kin-groups and resulted in subtle changes in the nature of these relationships[112]

Changes in the livestock economy widely led type one management households to attempt barley cultivation as well as to develop associations with sedentary agriculturists and land-owners. But importantly, there is also evidence that after August 1996 herders became increasingly aware of the vulnerability of solely livestock-based incomes and the establishment of links with other non-livestock herding kinsmen became of recognised importance. Some households went as far as to express an interest in economic diversification, but, as pointed out by Oughton and Adas (1999:19) real opportunities for this were not widespread in the Badia.

8.4.3 Village based commercial producing households (type three herd management)

A further major pattern of livestock management among the *A-W* group involved the village-based management of medium to large sized herds. These were principally oriented towards market supply, but were distinct from either type one or type two management in that these commercial herds were managed within a broader portfolio of economic activities and sources of income. Managers of this type had previously been found to be business competent, active and innovative in their approaches to herd management. Most type three managers (*D*, *G*, *H*, *I*, *M*, *N*, *O* and *W*) managed their herds independent of kinship based social structures, with more emphasis upon extra-kin economic relationships. Finally, it was noted that domestic consumption of pastoral products was relatively low for this management type.

The removal of livestock feed subsidies in August 1996 prompted important changes in the production strategies of type three management households. As observed among herd managers of types one and two, the rising cost of barley and wheatbran prompted diversification in the acquisition of cheaper feed alternatives, principally from agricultural sources. This was particularly notable of households *H* and *N*, which both began using agricultural by-products as feed alternatives, renting barley residues and cultivating barley of their own. At considerable expense, owner *N* had cleared, ploughed and sowed an area of 200 dunnams during autumn of

1997. During our final discussion in November 1997, he confidently informed me that the new fields would mean that he would no longer have to buy any barley from the free market. Given the arid location of *N*'s village and fields (Mathnut Rajil, approximately 30 Km north of Safawi), this expectation may have been rather optimistic.

Both herd owner *H* and his neighbour *I*, (*Abu* Asima) at Ghadir al Nagah reported switching to sowing barley of their own rather than renting out their fields to farmers from neighbouring villages.

Of all the type three households, those of *Abu* Asima and *H* were perhaps most disadvantaged within the new herding economy. The main reason for this was their lack of transport[113]. While mobility had been perceived as very important for herd management in the period of subsidised feed, it became even more so after the removal of subsidies, when production resources and markets needed to be more actively sought. *Abu* Asima was well aware of this limitation and had insisted I give his eldest son driving lessons while I stayed in his household. However, neither household could raise enough capital to buy a pickup or truck[114], nor could anybody therein drive. *H*'s eldest (married and resident elsewhere) son had a pickup and sometimes undertook errands on behalf of his father, but he worked as a guard posted at the Jordanian Embassy to Lebanon and thus was rarely available.

Lingering animosity between *Abu* Asima and his neighbour compounded this problem by precluding co-operative activity. A further reported problem for both households was the relative insufficiency of the non-livestock incomes they received (see below).

All type three households reported substantially down-scaling herds through sales in the aftermath of the subsidy removal. The more astute managers reported making these sales shortly after the change in feed prices, pre-empting the slump in the livestock market. One household, that of owner *O*, acted on inside information to sell the larger part of his herd (other than some goats for household supply) prior to the official announcement[115].

In the 18 months following August 1996, all type three households were in receipt of non-livestock incomes. While there was wide discrepancy in the respective value of these incomes,

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[112] An example of this observation was the way that growing demand for barley residues in the post subsidy period drove some herd owners to search for new grazing contracts outside their villages and descent groups.

[113] Previously *Abu* Asima had hired vehicles to fetch feed from Mafraq. But collection of barley from the distribution depot had been a straightforward transaction, with set days and times for collection. By contrast, negotiation of alternative feeds was much more labour intensive, sometimes requiring several return visits, first scouting out resources, then negotiating and (at tomato and olive factories) many hours of waiting. Under such conditions the option of vehicle hire was at best costly.

[114] *Abu* Asima had incurred debt in the construction of his new reception hall, while *H* hardly had enough sheep to warrant investment in a vehicle.

[115] Herd owner O spent six months during 1997 in Iraq, buying up sheep for unofficial transit to Jordan. In November 1997 he told me that part of the reason he had sold his herd was because of the greater profits to be realised by trading from Iraq. He sold his herd in Jordan, leaving only as many goats as his wife and children could manage without him.

in most cases these provided a basis for partially subsidising livestock production. This was emphasised to me in separate discussions by both herd-owners *M* and G:

> *"If I was not working and spending my wages on feeding the sheep I would not be able to carry the expense from the product of the herd alone. These sheep are no longer a source of income for me but an expenditure".*[116]

Owner *G* pointed out that although the removal of subsidies had undermined profits from his herd, he had been rewarded by increasing demand for the hire of his tractor as increasing numbers of livestock managers (and villagers) were attempting to cultivate their own barley. He observed that this additional income went some way towards making up his lost income from livestock.

The situation was somewhat more precarious in those households with fewer or lower incomes (such as those of *Abu* Asima and his neighbour *H*). In both these cases, household incomes (a waged income and a pension respectively, together with small agricultural incomes) were insufficient to subsidise their herds at August 1996 size. The flexibility of both households to acquire cheap alternatives to barley and wheatbran was limited by lack of transport.

Abu Asima described how he had sold off a large part of his herd, both to pay off accumulated debts but also to bring his livestock holdings more into line with what available household incomes could afford to subsidise[117]. Herder *H* also described reducing his herd in order to make it more sustainable upon his available non-livestock income, and he also dispensed with the services of a hired shepherd.

This pattern of animal sales and then subsidising the reduced herd with non-livestock incomes appeared to be confirmed by the reports of most of the type three livestock managers. It was argued that even households with multiple and fairly secure sources of non-livestock income had good incentives for downscaling herds. Herd-owners *G* and *W* had observed that owing to declining profit margins after August 1996 livestock had become less important within their respective portfolio of activities; in consequence, both had less time to invest in herd management. In reducing herd sizes, management demands were likewise diminished, and (to some extent) management and labour inputs could be transferred from the heads of household to other household members.

While all type three management herd-owners downscaled livestock holdings, only one (owner *O*, whose case has already been discussed) reduced his herd to a level consistent with purely subsistence functions. Otherwise, livestock managers maintained their herds at somewhat

[116] Herd owner *M*, Umm al Quttayn village, November 1997.

higher levels, despite their declining (possibly even negative) values as sources of income. Prevailing attitudes to animals at this time seemed to be that livestock remained a future potential source of income after markets had stabilised. Consequently, the animals held a longer-term investment value that made it worthwhile to maintain them amidst a range of other economic assets. Herder owner *W* (who also owned a shop in Umm al Quttayn) described his reduced herd as an asset which he could maintain at relatively low cost to his other activities; the herd provided his household with dairy products and meat and allowed him to slaughter when necessary. *W* pointed out that inverse economies of scale existed for his reduced herd; it could be fed from household scraps, home grown barley and low cost agricultural surpluses. Furthermore, the herd no longer needed a waged shepherd to manage it, and savings had been made on labour costs. Finally, W anticipated that the herd could be built up again very quickly once livestock incomes justified it.

In summary, perhaps the most consistent feature of change among households practising type three management was the downscaling of herd sizes through sales. At 27% (Table 8.6), the reduction in livestock population is the second largest of the four management types (or the largest, if the sales of herd owner *B* are excluded). This suggests sensitivity to the falling income values of livestock in the post-subsidy period, and comparatively little resistance to sales.

Table 8.6: Changes in livestock population (sheep and goat) under type three management

Household	August 1996	November 1997	Change
D	742	543	-199
G	503	492	-11
H	218	121	-97
I	535	268	-267
M	486	421	-65
N	502	375	-127
O	16	18	+2
W	136	67	-69
Total	3138	2305	-833
			27%

However, as income values of livestock fell, type three managers did not abandon herds completely. Instead, most reported choosing to maintain reduced livestock populations, which were to some extent subsidised by their other non-livestock incomes. Type three managers have thus showed willingness to switch from keeping livestock for their income values to maintaining them as dormant longer-term investments.

As the main focus of owners 'business interests' shift to more profitable non-livestock activities, there has been a tendency among type three households for livestock herds to be

[117] During my residential periods with *Abu* Asima, I witnessed constant friction between him and members of his household on this subject. While *Abu* Asima's wife had long been an vocal critic of his livestock activities, his eldest son (the households' sole wage earner) had come to increasingly to side with her in the bitter disputes following the removal of feed subsidies and collapse of the JCO. *Abu* Asima down-scaled his herd within the context of this unrelenting criticism, although his own explanation for the sales made no reference to this conflict.

realigned away from the market economy and fall within a more domestic sphere of management. This shift seems consistent with the changes in the way in which animals are valued.

8.4.4 Village based households producing for domestic supply (type four management)

Those households practising type four management were distinguished from all other households within the *A-W* group in that they managed livestock predominantly for household supply, although during the year 1995-1996 all households of this type (*C*, *J*, *K* and *L*) also made sales of animals. Owners *C* and *K* also made some sales of milk. However, herds of this type were generally managed within the domestic sphere of production and were characterised by relatively small herds[118].

While well-managed small domestic herds could be self-sufficient, surpluses were insufficient to support a household. Therefore, type four management households' herds were linked to the availability of cash from non-livestock sources. Often these involved informal cross-generational transfers within a household or *beit*. In addition to subsistence values, these herds were recognised to facilitate the expression of important social and symbolic values.

On my final visit to households *J*, *K* and *L* in November 1997, I found that only limited intensification had occurred in management, with none of the households having experimented with drying tomato and olive pulp as cheap dry-feed alternatives. As was pointed out by owner *L*, between his own cereal residues and those which he could hire from village neighbours, he had no need for additional feed alternatives which he described as time consuming to acquire.

While the herds of owners *L* and *J* had remained relatively static in size, owner *K* had down-scaled his formally large livestock holding substantially (Table 8.7).

Household	August 1996	November 1997	Change
C	0	0	0
J	36	52	+16
K	328	242	-86
L	70	55	-15
Total	434	349	-85
			19%

Table 8.7: Changes in livestock population (sheep and goat) under type four management

He explained that since the herd was really only for use "*dakhal al beit*" (inside the *beit*), expenditures on feeds to maintain a large herd were unjustified. More pragmatically, *K* pointed out that following the collapse of the Umm al Quttayn branch of the JCO, he had no way of accessing feeds on a large-scale. Although his son owned a pickup, he was often away on

business and *K* himself did not drive. Furthermore, *K* noted that since his three sons had become increasingly disillusioned with his herd and were unlikely to take it over in future, there seemed little point in him continuing to build it up.

In November 1997, the livestock population of *J*, *K* and *L* held high proportions of goats to sheep (approximately 1:6) confirming an orientation towards domestic supply. Researchers have found that domestically produced milk products remain highly favoured among Badia households, because they were believed to be of higher quality than those available on the market and they gave the producers/consumers a "*sense of security*" (Oughton and Adas 1999:24).

8.5 Households and changing livestock economics

The evidence and discussion hitherto presented in this chapter has focused primarily upon the reports of male heads of households and thus emphasises male activities within the formal economic sphere. For this reason, it is important to briefly consider how economic changes in the livestock production environment have impacted upon household units and notably upon the domestic sphere of production.

With the possible exception of herds under type four management, important changes have been reported in the labour organisation of most households following the removal of state feed subsidies. One notable aspect of this change has been an 'intensification' of domestic labour inputs, in some cases to replace labour which was previously waged, or in other cases to undertake new types of labour. One example of the latter is the widespread female responsibility for drying and mixing the agricultural by-products that many households now use as supplementary livestock feeds. A further example, applicable to the whole household, is the increase of small-scale barley cultivation in village areas. This activity, (particularly in the context of small-scale livestock production), often falls within the domestic sphere of productive activities and may be undertaken by women.

Evidence from the first 18 months of the post-subsidy period also suggests that in some livestock managing households, (particularly those practising type three management), economic changes may result in herds being realigned away from the market economy and shifted more towards the domestic sphere of management. Under such circumstances, livestock management and labour inputs responsibilities would fall increasingly to women and children.

In most of the *A-W* households, production of livestock products for domestic supply was cited as an important element in the way that livestock were valued. Given the diminished gross

[118] One of the type three households (*K*) managed a herd of medium size. The reason for its inclusion within this management type is more determined by the attitude of the owner, who treated it as a hobby herd and oversaw its management within the domestic sphere of production rather than actively engageing within the market economy.

margins from livestock within the market economy, it seems that households have tried to maximise their subsistence values, which (6.6) can be effectively used as a buffer against cash shortages. Indeed, pointing to diminished household expenditures after August 1996, Papadopulos concludes that "*home produced milk and dairy products will certainly take on a more significant role in the diet even if the quantity consumed has not changed*" (1999:231)

This growing importance of livestock production within the domestic sphere, together with the changes in labour organisation following the removal of feed subsidies has certainly (in the short-term) drawn women more centrally into the livestock production process. It is difficult at this early stage to discern exactly what the longer term outcomes of this change might be, whether women and household members stand to become further 'empowered' through greater participation within the management of herds or whether the changes amount to simply burdening women with greater labour responsibilities.

Finally, changes in the livestock economics after August 1996 has provided evidence for some disparity of interests at the intra-household level[119]. Attitudes to livestock were found to sometimes differ across generational divisions and also between different gendered perspectives.

In the first case, it was apparent that second generation householders (particularly those who held waged employment or had been raised in a sedentary environment) sometimes did not share the same commitment to livestock as their fathers, and many considered shepherding "old fashioned". As described, some of these were monetary contributors to the household or *beit* (and by extension to the herd). However, these differences of outlook were largely irrelevant before 1996, as sheep were widely recognised as being a good capital growth investment, regardless of what one thought of livestock. Divergence in attitudes to livestock only really emerged after the removal of feed subsidies diminished the capital growth rationale for livestock investments.

Similarly, some female researchers working with women in Badia area have noted how differences in male and female attitudes towards livestock have been accentuated by the removal of the feed subsidies. Oughton and Adas have quoted a female informant whose comments were typical of many; "*In this area men are clinging to livestock because it is a tradition. They cannot see that it is a losing investment. Men just think that you have to have sheep to be a Bedouin*" (1999:27).

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[119] Evidence for differing perspective within households were diffcult to garner, for heads of household rarely presented any other than their own views and usually failed to acknowledge those of others.

However, while opinions of this type may have been widespread among women, they were certainly not universal. My own observations of gendered conflict of opinions over livestock within herding households have been rather different. In the household of *Abu* Rashaid a conflict of interest had emerged and been resolved (the issue of the goat sales), but in that instance it had been *Umm* Rashaid who had appeared resistant to the idea of improving the gross margins of the herd through sales of low value animals. Likewise, when herd-owner *B* had wanted to abandon livestock in favour of more profitable business activities, his two senior wives had felt threatened. Management of a domestic herd had been an important symbol of the wives' participation in the economic life of the household. The move to business would have favoured the status of *B*'s youngest wife who was his partners' sister.

These examples indicate that important differences of opinion began to emerge in the way in which different household members valued livestock after the removal of feed susbsidies.

8.6 Conclusions

The removal of subsidies on barley and wheatbran livestock feeds in August of 1996 has had a major impact upon Bedouin communities producing livestock in the northeastern Badia. An accurate quantitative assessment of how this change in government policy has effected the livestock production economy has not yet been possible, in large part because neither livestock markets or producer-management behaviour have yet stabilised within the new parameters of production. However, initial observations, as well as the statements of Ahl al Jebel herd managers indicate that the impact has been severe and has largely removed (if not reversed) income incentives for the ownership of livestock under typical management.

In considering the responses of the *A-W* households to these changes in the livestock production economy, it is first worth noting the range of diversity that was observed in household behaviour. Although broad elements of consistency were discernible between households of common management type, (which have here been used for sake of convenience), individual household responses (even within management types) varied considerably. This observation further accentuates the importance of recognising agency in the behaviour of individual households.

Observed and reported household responses to economic change may be summarised within the two major theme areas:

8.6.1 Production strategies

Changes in herd management strategy were widespread through most of the A-W group of households following the removal of feed subsidies. Perhaps the most apparent of these was related to the widespread animal sales and down-scaling of herds, accounting for approximately a third of the 1996 *A-W* livestock population This behaviour is largely consistent with neo-classical notions of economic 'rationality' and was predominant amongst those herds in which

the monetary and income values of animals were emphasised, notably those oriented to market production (types one, two and three).

The majority of households within the study group reported an intensification of labour inputs into the production process. This intensification of domestic labour was needed both to replace labour that had previously been hired from others, and to undertake new tasks associated with more active resource acquisition and reduced feeds expenditures.

Changes in production strategies have exerted an influence on the socio-economic context of livestock management. The increasing importance of agricultural surpluses in the herding economy has prompted the majority of households to move towards greater association with sedentary agricultural communities, and in many cases to undertake barley cultivation themselves. In some cases, this has even effected the pattern of residential mobility and /or household division that characterised the household production system prior to August 1996.

At a societal level, changes in the herding economy have largely underpinned associations at kin-group levels but also encouraged further diversification in socio-economic associations and contacts away from traditional kinship structures and towards new sources of important resources. 'Business' relationships, formerly most prevalent among herders of type two and type three management become of increasing value to type one livestock managers. Likewise, kinship based socio-economic relationships were reported to have become increasingly important to at least one household that formally herded independently (*U*).

8.6.2 Attitudes to livestock

Changes in management behaviour after the removal of feed subsides have indicated a shift in the way that some households value livestock. This was perhaps most notable among type three households, where, after some restructuring, herds which had been previously been predominantly managed as sources of income and capital growth investments switched to being held as non-profitable long-term investments. These herds were also maintained for domestic supply and other non-monetary values. Reduced herds were held as household assets on the strength of these values, but their maintenance was not linked directly with the survival of the managing household.

Type one herd managers were hallmarked by a reluctance to sell from their herds and a widespread preference to accumulate debts rather than make large reductions in herd sizes. This demonstrated the perceived importance of symbolic, social and domestic supply values of animals, (together with their investment values), which were identified closely with the survival and continuity of the household and kin-group even after monetary incentives for ownership are removed.

By contrast, comparatively little change was evident in the way that livestock were valued in the very largest and smallest herds of the *A-W* group. After the removal of subsidies, group two

herders continued to predominantly emphasise the income value of the herds and made decisions accordingly.

Similarly, small herds (or parts of herds) managed non-commercially for domestic supply remained valued for their non-monetary values and consequently relatively less effected by changes within the livestock market economy: if anything, subsistence values were re-enforced by the worsening economic situation that many herd managing households faced in the post subsidy period.

Changes in the way in which livestock were valued among the *A-W* household group held clear implications for the way in which they were managed. The downscaling of herds was followed by a perceptible shift away from management predominantly within the monetary/market sphere of production towards a management system in which non-monetary values of livestock were increasingly emphasised. Efforts to maximise the use of domestically produced feeds and labour, together with the growing importance of domestic consumption relative to sales, brings herds closer to the domestic sphere of production. This shift has been reflected in the labour organisation and daily management of herding households, where women have taken a greater part in the management of herds as whole.

While this chapter has focused specifically upon changes in livestock herding behaviour following the removal of feed subsidies, it should also be recognised that important points of continuity have been evident in the management behaviour of some of the *A-W* households. This can be seen in the unchanging role that some herds have played in the domestic supply and provisioning of households and in some expectations that herds will underpin the continuity of their household and its economic reproduction. Related to these are the range of social and symbolic values which livestock may confer through their acquisition and transfer. It is further relevant to note that some herd-owners continue to attribute investment values to their animals, despite diminishing monetary worth, based on an expectation that livestock markets will ultimately recover.

In concluding this chapter, it is necessary to restate again that as of the time of writing, the livestock management situation in the northeastern Badia remained relatively fluid. Herd-owners were still contemplating their respective positions in response to continuing instability in the markets for both livestock and livestock feeds (Campbell pers.comm). As a consequence, the conclusions of this chapter need to be received with caution.

This chapter has highlighted inherent flexibility in the way that livestock are both used and valued by the Ahl al Jebel herders, indicating that production objectives and methods may modify in response to the changing circumstances of production. This observation challenges the assertion that the motives for herd ownership and management necessarily remain constant over time and raises the possibility of regularly (if incrementally) fluctuating management objectives on the basis of changes in the household, economic or physical environment.

Flexibility in the way that livestock are valued at a household level has important implications for pastoral livelihoods; in the contemporary Ahl al Jebel case, changes in the way herds were valued was related to changes in land-use, relations between and labour organisation within, households.

The livestock management behaviour reported within this chapter study has suggested that not only may changes occur in the way that herds are valued, but also that certain types of herds (or parts of herds) may be valued in distinct ways. This is perhaps best illustrated with reference to the subsistence and domestic supply functions of livestock which almost universally remained important (or possibly even increased in importance) despite the diminishing income values for livestock in commercial herds. This observation is entirely congruous with the notion developed through chapters 5, 6 and 7 that some animals may be subject to distinct types of management.

Chapter 9: Conclusions

9.1 Introduction

At the outset of this study, reference was made to the poor track record of development efforts amongst pastoral communities in the Middle East and Africa. It was suggested that part of this problem may be rooted in misunderstanding between outside development planners and the 'beneficiaries' of their development efforts. Specific reference was made to confusion surrounding the production objectives of livestock herders and the problems of identifying how pastoralists might be most effectively assisted to attain these objectives.

Using the north east Badia of Jordan as a case study of an area which is undergoing rapid socio-economic change, this study has investigated the ways in which pastoralists value their herds within a production system which was (at the commencement of fieldwork) predominantly oriented to market supply. This research has considered livestock production from a household perspective, relating management decision-making and economic behaviour to the longer-term objectives of individual households.

The research was undertaken within the context of the livestock component of the JBRDP, and as such has the specific value of providing a benchmark against which the appropriateness and direction of ongoing livestock development efforts might be measured, as well as suggesting areas of strength and weakness in the existing development strategy. Furthermore, the findings presented in this thesis are perhaps unique among JBRDP research outputs in that they represent a break from curt quantitative approaches to investigation and instead build upon the a prolonged study period and an enduring relationship between the researcher and the households participating within the research.

In this concluding chapter, the principal results of the study are first summarised before wider implications are drawn from it. Finally, the discussion builds upon the results presented by highlighting useful areas for further research.

9.2 Review of the research plan

A review of the relevant literature on pastoral societies assisted in the formulation the research plan.

Few elements of consistency could be gleaned from the existing literature on the role of livestock in pastoral systems; opinions were fundamentally divided between researchers who argued the applicability of neo-classical models of rational economic decision-making to

understand herder behaviour, and those who instead stressed the extent to which pastoral livestock values are embedded within and governed by social and cultural institutions.

However, new approaches in the contemporary literature of rural agricultural communities offered important implications for our understanding of pastoral behaviour (if not in the behaviour itself, then the methods used to study it). These approaches see producers as dynamic, innovative and adaptive at a wide range of political, social and economic levels. Accordingly, the economics of a modernising society can not be viewed as exclusively politically or socially structured. In application to pastoral societies this approach challenges a large part of existing theory about how livestock are valued and much recent research into pastoral systems seems to support this theoretical perspective. One important implication of this new thinking is that studies should be focused away from the level of community 'cultures' to the level of the individual household, where intra-household transactions become as important as those conducted between separate households.

These concerns were reflected in the four phase design of the study, which over a three year period investigated a sample of individual pastoral households, exploring livestock related decisions within economic and social contexts.

9.3 Overview of the research findings

9.3.1 Material values of livestock

Evidence demonstrated that by the middle years of the 1990's, most Ahl al Jebel livestock herding households in the Badia were deeply bound into market and monetary systems and heavily dependent on the purchase and supply of dry feed supplements to herds. However, despite this, many households, (particularly among those managing larger herds) practised mobile management, migrating to exploit seasonal pastures and other feed sources. Thus, owing to environmental factors and the reproductive characteristics of sheep, production remained largely governed by a seasonal cycle. The principal products supplied to markets were lambs, milk and wool. Economies of scale favoured large, (predominantly sheep) herds for market oriented production while smaller livestock holdings were more oriented to domestic supply and included a higher proportion of goats.

In many cases, livestock production was supplemented by other economic activities, including agriculture and cash incomes. Additional sources of income were found equally in households managing large (commercial) herds and those with smaller herds managed for domestic supply. However, the incidence of non-livestock incomes was higher among sedentary households than those that were mobile. These non-livestock incomes were perceived as offering important security for households and helping to smooth seasonal cash flows. In households which did not produce on a commercial scale, these non-livestock incomes constituted the basic source of revenue. Extra cash incomes also provided capital for further investment into commercially oriented herds.

Sheep herding was found to generate high incomes relative to the values of other incomes recorded among the study group. Management practice and flock structures strongly suggested that in commercial herds, the predominant objective of production was the maximisation of these monetary values.

However, in the absence of other investment opportunities offering comparable capital-growth potential, livestock were also perceived as a highly attractive investment option for pastoral households in the early 1990's. Indeed, during the years of the government feed subsidy, livestock were considered to constitute an important pathway for upward economic mobility in the Badia area.

At a household level, labour organisation within this livestock production system was largely gendered between domestic and market spheres of production, although, despite the widespread use of hired shepherds, female household members also made important contributions of labour to commercial production (notably during the milking season).

Balancing economic incentives for herd mobility against the need to access services, employment and other resources in village areas, many *Ahl el Jebel* households had developed complex and fluid residential forms to flexibly manage labour requirements, both gendered and absolute.

The study has further indicated that the domestic consumption of livestock products remained both nutritionally and economically important to all households, but particularly so to mobile households. In some of these, consumption of domestic products was considered an integral element in the production strategy of the unit, helping to facilitate residential mobility and providing an important store of value and security during periods of cash scarcity in the annual production cycle. For this reason, domestic oriented production could not be simply viewed as a subsistence activity, wholly unrelated to commercial activities; rather the two dimensions of production were enmeshed within the economic life of the household.

It also was noted that in all households, animals that were maintained for household supply (along with a few other categories of animal) fell largely within the domestic sphere of household economic activity and were thus were subject to different management than the commercially oriented herd.

9.3.2 Social and cultural values

The activity of livestock production was a socially and culturally embedded process among the Ahl al Jebel. It fell within a framework of prescribed behaviour, and this framework existed regardless of whether individual livestock owners and their households chose to observe it or not. The study revealed that in practice, there existed considerable variation in the degree to which households engaged in socially and culturally normative behaviour. This indicated the

important role of individual agency in the flexible negotiation of social structures and value systems.

Another finding of the research concerned the way in which livestock herding households and individuals chose to engage with these Bedouin social and cultural values. It was observed that the degree of participation within the Bedouin value system was not simply a function of market integration or monetarisation of the relations of production; while some large commercial herds were managed within socially structured aggregates and complex relationships of exchange, others were not.

Indeed, at many levels market and domestic oriented production, the accumulation and exploitation of social capital was considered an important strategy for negotiating both traditional (moral) and market economies. Thus, the Ahl al Jebel case clearly challenges the theory that economic development and modernisation necessarily imply the individualisation of economic activity and a break down of social and cultural value systems; instead it suggests a continuing role for traditional values and social structures within the market economy.

The activity of livestock herding was observed to have some (although not universal) implications for the structuring of pastoral society. Approximately a third of the households in the study group managed their herds within socio-economic associations, with the result of re-enforcing traditional kinship-based social groupings. The larger commercial herd owning households demonstrated a tendency towards the development of patrilocally extended households, with the possibility of the herd being managed collectively in the succeeding generation. The desirability of maintaining economies of scale in the inter-generational transfer of livestock wealth had the result of favouring collectivised herding or a single herder taking responsibility for the combined livestock wealth of his brothers (and maybe sisters).

Livestock were found to hold important symbolic values for both men and women in pastoral households, underpinning social relationships and cultural values that extended across both the market and domestic spheres of production. However, specific meanings were given to these symbolic values by the social and economic context within which the transactions were made. The acts of both gift-giving and slaughter (the most common symbolic expressions) could thus embody a range of very different social relationships.

In the Ahl al Jebel case, large herds were not of themselves found to confer status and prestige upon their owners. What was more important was the manner in which these herds were utilised socially and how the monetary values of animals were balanced against their social and symbolic values in the maintenance of social relationships. While the households of the study group were observed to prioritise these respective values in a wide range of different ways, livestock were universally valued in the expression of Bedouin identity.

9.3.3 Response to changes in the livestock economy

In August 1996, the removal of government subsidies on livestock feeds severely undercut the former income values of livestock production, through a combination of rising production costs and (through the dampening effect of the policy change on markets) diminishing revenues.

At an aggregate level, household responses to these changes (which resulted in a full third reduction in the livestock population of the study group) were broadly consistent with neo-classical notions of economic rationality. However, this aggregate data did not translate evenly through to behaviour at an individual household level.

Some commercially herding households, largely dependent upon livestock for their livelihood, described accumulating large debts to avoid sales from their unprofitable (in a monetary sense) herds. In the absence of strong income incentives for keeping livestock, other non-monetary values of the herds were emphasised.

In a range of households, notably those where livestock were managed as one element in a portfolio of economic activities, subtle shifts were identified in the way that many were valuing, using and managing their livestock. These shifts entailed the reorientation of herds formerly valued for their income and capital growth values towards a form of management more peripheral to the market economy and closer to the domestic sphere of production.

Management responses to the removal of feed subsidies were met with household adaptation at a variety of levels; not only in how livestock were valued and the management objectives of herding, but also at a social level (changing relations between households), at a household level (intra-household transactions), in livelihood strategies (the relationship between livestock and other economic activities) and in land-use (residential mobility and agriculture).

Only livestock managed principally for domestic supply were relatively unaffected by these changes in the livestock economy, consistent with the observations made in chapters 5 and 6 that animals at this scale of production were valued in different ways from herds under commercial management.

9.4 Discussion of research findings

9.4.1 Description of the ways in which livestock are valued in contemporary Badia households

The findings of this research suggest that pastoralist decision-making in the Badia is essentially rational with the objective of achieving the maximium good for the household. What this study has specifically aimed to achieve is to demonstrate the wide range of material and non-material utilitities which livestock offered to their managers, and thus indicate the range and complexity of choices open to decision-makers. Pastoralists balance household needs and wants with livestock utilities (taking account of the range of different values which may be realised from

their livestock) by evaluating the various outcomes and opportunity costs of different livestock use strategies.

The research has shown that most households used their herds in ways which emphasised combinations of different values. All households used their herds to create monetary incomes, all households consumed something of what they produced and all (to some extent) utilised livestock symbolically through extending hospitality etc. It seems apparent that to successfully construct a pastoral livelihood in the Badia, livestock must be used in a range of different ways, as both social and economic assets.

Yet, the study has indicated at even greater complexity in this decision-making process. It has located the process of livestock herding within a range of different institutions, and subject to a range of different endogenous factors, which may modify the respective utilities of livestock or conversely, modify the livelihood needs of the household[120].

9.4.2 The extent to which livestock values remain constant at different levels of production and in different socio-economic circumstances

In section 9.4.1 decisions about the use of livestock were characterised as complex and multi-dimensional in which herd-owners seek to balance the various utilities of livestock against both the perceived needs and wants of the household, and endogenous factors which may effect these utilities.

The study has demonstrated how different levels of production and different socio-economic circumstances constitute factors which may (or may not) alter the relative utilities of herds. For example, it has been noted how pastoralists attribute great value to the creation or maintenance of economies of scale in herding, particularly with respect to production for market supply. The implication of this observation is that as sheep herd sizes increase, so too does the monetary utility of herds (and therefore the incentive for managers to emphasise this particular utility).

However,the research further suggests that the non-monetary values of livestock differ less at different scales of production. Effective symbolic and social use of livestock did not require large herds (indeed the possibility was noted that large herds could even detract from the symbolic worth of individual slaughters). Likewise, once the threshold meeting household consumption needs is crossed, there seems to be little incentive for herders to increase the number of animals producing for domestic supply.

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[120] The assertion that herding objectives aim at achieving 'maximal good' for the household is in itself problematic. The study has raised substantive evidence for the plurality of interests within Badia households , and it is clear that the 'maximal good' for the household may be perceived differently by different individuals within it. Pragmatically then, decisions about how livestock are valued and used are tied to who is responsible for making decisions within the household or how decisions might collectively be reached. Therefore, the decision making-process will of itself be a factor in shaping the values attributed to livestock.

The utility of livestock could also be evaluated differently under different socio-economic circumstances. For example, it has been observed that mobile households utilised livestock products for domestic consumption more than sedentary households or alternatively, that some households capacity to maximise monetary and non-monetary material values could be affected by factors such as household constitution and access to labour.

The study shows that under different circumstances of production the various utilities of livestock could differ, and therefore receive greater or lesser emphasis in the rational management choices of herd owners. An important consequence of this is that livestock values and the strategies of their use are clearly bound in with the socio-economic circumstances of production.

9.4.3 How livestock values may change and how this change is expressed

With the assertion that under different circumstances of management the relative utilities of livestock may differ, it clearly follows that livestock values will change as the circumstances of their management does.

The study has offered evidence for this conclusion in a number of ways but perhaps most clearly in the changes that followed the removal of feed subsidies. In that case it became clear that falling monetary values of livestock induced many herders to emphasise alternative non-monetary values, with the result that a shift occurred in the way which livestock were being used

Livestock utilities could be affected by a diverse range of factors in pastoral life. Changes in climatic factors and pasture availability could modify herd values, as could adoption of new production techniques, cooperation with other households, macro-economic change or even the natural growth of the herd itself. As household requirements evolved and changed and the utilities of animals themselves changed in response to the dynamic management environment, decision-makers reassessed their livestock strategies (which was of itself a source of change in the system). Change (or even the possibility of change) was therefore an important element influencing pastoralist livelihood strategies.

Change in livestock values was expressed at many levels. Apart from the economic supply response of modifying herd sizes, the study has shown that livestock managers could respond to change qualitatively, through emphasising different values of livestock. Furthermore, the study revealed that herders could innovate in their herd management or even modify the use of land, labour or social resources. Under such circumstances, changing utilities of animals could be reflected in household organisation, social relationships and land-use.

9.4.4 How livestock management decisions are influenced by the different utilities of livestock.

As stated in section 9.4.1, Badia herding households seemed to develop livestock-use strategies with the principal aim of 'maximising good' and livestock were managed to be consistent with this objective.

The study has demonstrated that in practice, pastoralists in the Badia pursued a wide range of different interests in which monetary, subsistence and social objectives were emphasised to different extents and that these objectives could alter as the relative utilities of herds changed. In this sense Badia pastoral households were heterogeneous.

A further consideration in how management decisions were affected by livestock utility lies in the observation that nearly all households were found to manage their livestock populations in distinct management groups, most commonly divided between animals which produced for market supply and monetary values, and those which produced predominantly for household supply and consumption values. As the social values of animals were not related to any specific type of production, but rather to the way in which animals were symbolically used and managed, there was little evidence for separate herds maintained specifically for these purposes (although sometimes individual animals were managed along with domestic herds).

Under this form of productive specialisation, different utiltities were emphasised within the distinct sub-components of herds and thus provided greater flexibility in the way in which overall management decisions could be made. This management system, defined by the twin spheres of market and domestic production was widely adopted in the Badia to allow households to take maximum advantage of the opportunities for monetary income and capital growth, while simultaneously satisfying other types of household requirements.

9.5 Implications of the research

The research findings raise a number of issues that warrant further elaboration. The first of these issues is the contribution that the current study brings to existing theoretical perspectives on the role of livestock in pastoral systems. Second, the discussion considers the implications that the study holds for livestock development planning, with special reference to the JBRDP livestock project. Finally, the discussion briefly considers the results of the study with reference to our current understanding of broader change in the Badia.

9.5.1 Theoretical implications: value and role of livestock in pastoral systems

One of the principal outputs of this research is to question the assertion that any single value or utility can be attributed to livestock within the Badia pastoral system. The existing literature of pastoralism acknowledges to only a limited extent that livestock might be simultaneously

valued in multiple ways. However, the case of the Ahl al Jebel develops this notion of complexity in herding objectives still further.

- The study has demonstrated that aggregations of livestock may be valued by their managers in a range of different ways and that that these values are subject to flexibility and adaptation over time, as the circumstances of production fluctuate in relation to social, political and economic change both internal and external to the individual household unit.

- The study indicates that the livestock holding of a pastoral household may be the composite of distinct parts, falling within separate spheres of management, subject to distinct management objectives, and maybe even under different ownership. It may therefore be appropriate to thus speak of 'herds within herds'.

For these reasons, attempts to assign 'universal' values to livestock in pastoral systems risks oversimplification of pastoralist behaviour. Among Ahl al Jebel pastoralists, the wide diversity in livestock utilities described by this research has been an indication of adaptation and heterogeneity in the economic behaviour and decision-making of herders. The extent and forms of this heterogeneity needs to be more fully recognised in the literature.

Furthermore, the research has drawn attention to the way in which many households extract non-monetary values from herds that are managed predominantly within the market economy. This was observed in distinct ways, and challenges the assumption that livestock values are necessarily polarised between market and non-market utilities. In essence, the study of the Ahl al Jebel provides evidence for areas of overlap between these two spheres of economic activity.

- The research has described how some market participant households choose to manage livestock in a way that emphasised inter-household economic reciprocity. Many households perceived the strategy of economic association as being an important asset in negotiating the market economy, and engagement with this economy may thus have the consequence of re-enforcing traditional social values.

- The study has demonstrated the continuing importance of domestic consumption of livestock products to Ahl al Jebel livestock producers, despite the high levels of market integration in their production. A supply of domestically produced food products was observed to be of particular importance to specialist herding households, notably during the winter months when livestock incomes were lowest. Livestock products underpinned household food security during this part of the annual cash flow, freeing capital for investment in the herd.

This evidence draws attention to the important non-monetary utilities that livestock may hold for households that are actively participant within commercial production and demonstrates that to some extent these 'traditional' utilities may even improve the households' competitive edge

within markets. Badia livestock herders utilised both traditional value systems and social structures in the pursuit of market objectives, and conversely elicited social and symbolic values from their engagements with the market economy. Contrary to some published work, the Badia case indicates that market integration does not necessarily equate with a termination of non-monetary values for livestock.

Finally, the study has produced some evidence consistent with theoretical models that posit parallel development between household and herd and stress the importance of livestock in social reproduction. However, within the context of the Badia market economy, distinct trends have been observed in the inter-generational transfer of livestock wealth.

- Particularly in specialist pastoral households without other incomes, livestock owners were concerned about losses of economies of scale if the herd was broken up. Furthermore essential herding equipment such as trucks could not economically be duplicated in separate herds and consequently, patrilocal extension of the household was favoured at marriage of sons, followed by some form of common management of livestock at inheritance.

This observation provides still further evidence for the extent to which contemporary livestock herding was embedded within social, political and economic context. Just as these contexts effected the way in which livestock were used and valued, so could use and value of livestock effect context. My studies of Ahl al Jebel households recorded many adaptations at a household level to changes in the production system (notably in the post subsidy removal period).

In overview, the results of the study have indicated that livestock production objectives in the Jordanian Badia are embedded with a complex range of social, cultural as well as economic factors. It is hypothesised that flexibility in the way that livestock are valued may be one of a range of mechanisms which pastoralists employ to both manage and adapt to change. The study has offered evidence for a complex multi-dimensional relationship between herds, their owners, and the distinct contexts within which they are managed. Herding activities of Ahl al Jebel pastoralists can be largely understood in terms of rational behaviour, but not necessarily rational by the same neo-classical economic standards which seem to predominate in the literature of pastoralism. Instead, it is necessary to relocate the notion of rational intent within diverse and interwoven social, moral and political economies. Perhaps the most important contribution that this work brings to the current theoretical understanding of pastoral systems in development is to emphasise the importance of relating the behaviour of livestock decision makers to specific social and cultural contexts, and acknowledging differences on the basis of these.

9.5.2 Practical implications: approaches to livestock development

If we understand Bedouin livestock strategies as adaptive and fluid systems, both responsive to, and initiating change at many levels of society and economy, this holds several important implications for pastoral livestock development generally and within the JBRDP area

specifically. As pointed out in section 9.5.1, placing production objectives within the wider, dynamic context of household livelihoods makes it difficult to attribute a single, static role or value to livestock; herding strategies cannot be isolated from changes in the household, society or production environment. What in practical terms can be done to solve this problem?

I would argue that to best understand pastoral decision-making and herding objectives, development facilitators must attempt to develop an appreciation of the wider universe and needs of pastoralists. Societal and household level investigations must be an integral component of planning livestock development assistance. The Ahl al Jebel case has demonstrated that it would be insufficient to simply 'plan development' with sole reference to market institutions (which are essentially external to pastoral society).

This was a lesson learned by the Badia Programme. In early stages of information gathering (1994-1996) the focus of data collection was almost entirely monetary and production oriented to establish costs, system outputs and gross margins[121]. As a result, initial development objectives were framed in the principally technical and monetary terms of 'improving productivity'. Later, following changes in the management of the JBRDP, and as part of a DFID funded project, this situation has been somewhat improved and livestock development planning now makes reference to a wider range of indicators and benchmarks (Oughton and Adas 1999:2).

The findings of the current research also suggest caution in indiscriminately applying neo-classical ideas of income maximisation as a guiding principal in development planning. This would restrict development to only a single aspect of the pastoral economy. More importantly, development efforts aimed at maximising profits from pastoral products supplied to markets would almost certainly marginalise small-scale herders and women who manage their livestock mainly outside the market economy. Development efforts geared to profit maximisation therefore risk excluding non-commercial producers from the benefits of development assistance while the (predominantly male) owners of large commercial herds benefit disproportionately. In this sense, development emphasising monetary values could even have undesired consequence of concentrating wealth in the hands of distinctive socio-economic groups.

The variable extent to which different groups of livestock producers stand to benefit from interventions directed to intensify productivity (or indeed any single herding objective) is a problem which has not yet been successfully addressed in the JBRDP area, although development planners have been aware of the situation for several years:

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[121] Review of the papers presented at the Jordan Badia Research and Development Programme 'Workshop on Population and Livestock related Studies in the Eastern Badia of Jordan' hosted by the Royal Scientific Society in Amman between the 22nd and 23rd September, 1996 provides substantial evidence for the predominantly technical and monetary orientation of research during this period.

> *"The degree of adoption [of new technologies] depends upon how commercially minded the farmer is in his own production aims. Certainly most of the Bedouin we work with seem to practise a mixture of commercial and traditional livestock management aims...." Campbell (1996:87)*

By contrast, recognition of a wider palette of livestock values could assist development facilitators to target development assistance with greater sensitivity, rather than employ a 'one size fits all' approach. To offer a hypothetical example, were a livestock development project to have the specific objectives of improving the food self sufficiency of households, resources might be better targeted to the domestic sphere of production.

The study of herding objectives among the Ahl al Jebel has identified a possible misassumption on the part of development planners in the JBRDP area. As stated in section 1.4.2 a working hypothesis of planners has been that enhanced productivity of livestock will encourage a reduction in livestock numbers. However, as argued in section 5.7, Ahl al Jebel herders highly valued the capital growth potential of livestock. Certainly by the early 1990's, the inflation of herd numbers was more a product of interest in capital growth than in concerns for herd security. When the incentives for capital growth investment diminished after August 1996, the livestock populations of the study group declined. The implication of these observations is that by attempting to increase profit margins, planners may inadvertently be encouraging livestock owners to invest further in their herds and thus produce a result contrary to the intended objectives of the interventions.

The rationale for assuming pastoralists would decrease herd sizes if profit margins could be improved seems to have no basis in research conducted within the JBRDP area and may have been the product of imported theories of pastoralist behaviour.

Finally, the continuing importance of traditional social structures within the modernising livestock economy of the Badia raises the possibility that development facilitators could build effectively upon these existing structures in the provision of extension services and other support for producers. As described in chapter 7, traditional structural forms have already been used as the basis for improving commercial management and marketing. This approach could prove more effective than imposing external systems of organisation upon communities.

The results of this study have portrayed the relationship between pastoral society and livestock as complex and fluid. It has been argued that the flexibility in this relationship can be an important element in household adaptation to change. On this basis, indigenous Ahl al Jebel responses to change may involve using their livestock in new and innovative ways or combinations of ways. Ideally, development interventions should be targeted to support these indigenous processes of adaptation. This clearly requires recognition of a fuller range of herding objectives than simply maximisation of monetary values and a comprehensive understanding of the universe in which herding decisions are made. In this sense at least, the findings of this study broadly echo those of Prior (1994) who asserts that:

> *"When considering pastoral development, no longer should the primary concern be the implementation of the western productivity improvement model in the pastoral sector. Nor should the design of development interventions continue to be driven by whatever western technology or model of development happens to be in vogue..." (1994:127)*

In the Badia, the introduction of new technologies has undoubtedly benefited many livestock producers. However the evidence of this study suggests that these should not constitute the sole basis of development assistance.

9.5.3 Flexibility in livestock values and Badia livelihoods

Developing the principal conclusions of this research further, it is notable that the findings of this study are broadly consistent with contemporary models describing the historical use of arid transitional zones in the Levantine Near East (section 4.2.6).

These models draw upon the evidence for historical fluctuations in population, settlement and land-use throughout the transitional zones of the Levant and emphasise that livelihoods in the semi-arid transitional zones must necessarily have been opportunistic and adaptive in response to changes originating both endogenously and exogenously. As concluded in chapter 4, this conceptual system implies flexibility in the role of livestock in the construction of livelihoods.

Among Ahl al Jebel pastoralists of the contemporary Badia, livelihood modes were found to be sensitive to change in many aspects of social, political and economic life. These types of changes could re-orientate the way in which households used livestock relative to other livelihood possibilities with implications for the social organisation of society and the way in which land and spatial resources are used. This was perhaps most clearly illustrated in the months following August 1996. Economic change at that time initiated a discernible reduction in livestock numbers and emphasised the non-monetary values of the remaining herds; at a societal level, these changes stimulated new forms of associations between herders and farmers and seem to have prompted an intensification and expansion of traditional unirrigated barley agriculture. If these new relationships endure, then the net result will be a minor shift in the way that the Badia is being used.

9.6 Directions for further research

While the current study generates a range of insights and conclusions into the relationship between pastoralists and their herds in the Jordanian Badia, the research has itself raised a range of further questions and highlighted areas in which further investigations might usefully be undertaken.

9.6.1 Longer term change in the post-subsidy environment

As stressed in chapter 8, final conclusions could not then be drawn from the economic behaviour of households in the post-subsidy period because in the 15 months after August 1996 neither livestock prices nor feed prices had completely stabilised. It would therefore be

interesting to make a further return visit to these households to investigate the longer-term outcomes of changes in livestock production systems:

- How have animal numbers changed over the past two years and what would these changes indicate? How long are herders prepared to maintain livestock without monetary incentives to do so, or would ultimately all herds be reduced to subsistence levels of production?

- How accurate were the early indications of a changing relationship between pastoralists and sedentary communities? Have households continued to engage in barley agriculture and how has this affected pastoral mobility or household residential forms?

- Has it been possible for a small number of highly specialised, rangeland based households (or groups of households) to continue herding commercially within the new economic environment? If so, would this indicate a polarisation of livestock values between these and other livestock-owning households?

Solutions to these questions would further our understanding of the ways in which livestock in the Badia are attributed values, and go some way to appraising the validity of the current study.

9.6.2 Gender issues within the household economy

Given the conclusions of the present study and the cultural constraints under which it was undertaken, it would be useful for researchers to return to the Badia with the objective of investigating the gendering of livestock management and the respective spheres of domestic and market oriented production, with emphasis on how these two spheres articulate together;

- What are the characteristics and specific objectives of production for domestic supply? Can the importance of animals managed within the domestic sphere be more accurately gauged (both quantitatively and qualitatively)?

- Can the relationship between production for domestic supply and production for market supply be explored more fully and with less gender bias than was possible in the present study?

- How have recent changes in the production economy affected specific members of households? Have (as early observations suggested) additional labour burdens been taken up by female members of the household?

An improved understanding of non-market production will be an indispensable prerequisite to effectively planning development assistance which can embrace a wider range of livestock values, and perhaps improve the targeting of interventions. Future research into gender issues would for cultural reasons be best undertaken by female researchers[122].

9.6.3 Inter-generational attitudes to livestock and other income opportunities

The current study has raised issues relating to the effect of modernisation on the inter-generational transfer of livestock but equally raised the possibility of differences in the way generations may view livestock. Taking this line of questioning further, it might be beneficial to direct further investigations into changing attitudes to livestock from a generational perspective.

- What are the livelihood expectations of the younger generations of Ahl al Jebel households and do these correspond with the expectations their parents have for them? What are the implications for the continuing management of herds or their future inheritance?

- Can changing attitudes to livestock be gender differentiated?

- How, (if at all) do those working outside the livestock sector differ in the value they attribute to animals herded commercially or for domestic supply?

[122] A gender sensitive study of livestock and household socio-economies is already underway in the JBRDP area as a component of a DIFD funded livestock development project (Oughton and Adas, 1999)

- What (if any) are the societal and intra-household consequences of a switch from livestock to predominantly non-livestock incomes

- An investigation of the social and economic incentives for, and consequences of, the shift from livestock rearing to livestock trading or importing and resale.

Such researches would have particular importance for the longer term planning of livestock development assistance. Not only would it indicate whether livestock will continue to deserve a special focus for development assistance in future, but also where such assistance might best be targeted.

9.6.4 Comparative studies

The results of the study might also be enhanced through comparative studies undertaken in other pastoral communities in other regions and at different levels of modernisation and market integration.

Appendices

Plates

Plate 4: Typical Badia landscape

Plate 5: A father with his children at a Badia herding camp (note the proximity of other tents of the encampment).

Plate 6: Waiting it out – a broken-down feed truck on the way to Azraq.

Plate 7: Weaving a shaqa

Plate 8: Watering sheep near the wadi *Sirhan using a motorised pump.*

Appendix 1: Timetable of fieldwork, Phases 2, 3 and 4

App. 1.1: Phase 2 Visits

ID	Jul.95	Aug.95	Sep.95	Oct.95	Nov.95	Dec.95	Jan.96	Feb.96	Mar.96	Apr.96	May.96	Jun.96	Jul.96	Aug.96
A	05.07.95	19.08.95	29.09.95	29.10.95		12.12.95	14.01.96	27.02.96		11.04.96	16.05.96	13.06.96	14.07.96	16.08.96
B	05.07.95	20.08.95	28.09.95	26.10.96		03.12.95	20.01.96	03.02.96	16.03.96	04.04.96	16.05.96		15.07.96	16.08.96
C	05.07.95	20.08.95	28.09.95	30.10.95		18.12.95	23.01.96	27.02.96		11.04.96	16.05.96	13.06.96	14.07.96	
D	08.07.95	19.08.95	30.09.95	29.10.95		08.12.95	23.01.96		11.03.96	11.04.96	16.05.96	20.06.96	19.07.96	25.08.96
E	16.07.95	22.08.95		02.10.95	02.11.95		21.01.96		02.03.96	03.04.96		10.06.96	07.07.96	16.08.96
F	06.09.95			01.10.95	01.11.95	12.12.95	11.01.96		15.03.96	26.04.96	25.05.96	24.06.96	24.07.96	29.08.96
G	03.07.95	23.08.95	25.09.95	28.10.95		05.12.95	13.01.96	16.02.96		12.04.96	19.05.96		30.07.96	30.08.96
H		09.08.95	22.09.95		26.11.95			01.02.96		06.04.96	03.05.96	12.06.96	21.07.96	06.08.96
I	29.07.95		14.09.95		11.11.95	18.12.95	14.01.96		02.03.96	05.04.96	06.05.96	12.06.96	08.07.96	30.08.96
J		09.08.95	30.09.95		07.11.95	01.12.95	15.01.96		02.03.96	06.04.96		06.06.96	06.07.96	06.08.96
K		21.08.95	30.09.95		07.11.95	11.12.95	14.01.96	22.02.96		06.04.96	13.05.96	12.06.96	09.07.96	08.08.96
L	30.07.95		20.09.95	16.10.95	26.11.95		10.01.96	22.02.96		11.04.96	13.05.96	12.06.96	09.07.96	08.08.96
M	30.07.95		25.09.95	21.10.95		02.12.95	10.01.96	14.02.96		03.04.96	06.05.96	21.06.96	21.07.96	30.08.95
N	03.07.95	20.08.95	22.09.95		02.11.95	02.12.95	08.01.96		31.03.96		04.05.96	20.06.96	16.07.96	25.08.96
O	01.07.95	21.08.95	25.09.95	25.10.95		02.12.95	14.01.96		01.03.96	15.04.96	19.05.96	23.06.96	23.07.96	
P	02.07.95	20.08.95	17.09.95	17.10.95		02.12.95	08.01.96	05.02.96	31.03.96		04.05.96	20.06.96	16.07.96	25.08.96
Q	24.07.95	22.08.95		16.10.95		02.12.95	14.01.96		21.03.96	23.04.96		11.06.96	21.07.96	26.08.96
R	16.07.95	21.08.95		02.10.95	01.11.95	09.12.95	21.01.96		03.03.96	03.04.96	04.05.96	10.06.96	14.07.96	16.08.96
S		08.08.95		12.10.95	01.11.95	07.12.95	26.01.96		10.03.96	17.04.96	19.05.96	23.06.96	19.06.96	30.08.96
T	11.07.95			12.10.95	01.11.95	07.12.95	23.01.96		10.03.96	25.04.96	23.05.96	30.06.96	23.07.96	21.08.96
U			03.09.95	22.10.95		02.12.95	14.01.96	27.02.96		21.04.96	14.05.96	22.06.96		26.08.96
V		13.08.95		22.10.95		02.12.95	14.01.96	27.02.96		21.04.96	14.05.96	22.06.96		26.08.96
W	04.07.95		08.09.95	01.10.95	07.11.95	11.12.95	15.01.96	14.02.96		08.04.96		21.06.96	06.07.96	06.08.96

App. 1.2: Phase 3 Visits

ID	Name	Visit 1	Visit 2	Visit 3	Visit 4	Visit 5
T	*Abu* Swelim	24.11.96	07.12.96	02.02.97	26.01.97	03.03.97
F	*Abu* Ward	01.12.96	09.01.97	24.02.97	19.02.97	29/02/97
S	*Abu* Rashaid	18.11.96	14.12.96	15.01.97	07.02.97	07.03.97
I	*Abu* Asima	09.11.96	29.11.96	21.01.97	24.02.97	12.03.97

(Duration of each visit was 4-5 days)

App. 1.3: Phase 4 Visits

ID	Visit date
A	12.11.97
B	11.10.97
C	12.11.97
D	12.11.97
E	12.11.97
F	17.10.97
G	10.11.97
H	05.11.97
I	05.11.97
J	05.11.97
K	11.11.97
L	05.11.97
M	05.11.97
N	10.11.97
O	05.11.97
P	11.11.97
Q	17.12.97
R	12.11.97
S	17.12.97
T	17.12.97
U	11.11.97
V	12.11.97
W	18.11.97

Appendix 2: Phase 1 Initial survey questionnaire

(Sept 1994–Jan 1995)

Initial pastoralist survey

1. Name of respondent.
2. Location of interview.
3. Usual place of residence.
4. Is respondent herd-owner?
5. How are flocks managed (Family/Shepherd)?
6. Where are your animals usually kept at the following times of the year?

Area/Season	Lambing	Dry	Early wet
Al Harra			
Al Hamada			
Villages			
Al Umri			

7. How many head of livestock are owned (goats/sheep)?
8. What percentage of your income does your flock provide you with?
9. Are you interested in increasing the milk production of your sheep?
10. If your flock had a good year (i.e. you had many lambs) would you sell the extra animals or keep them to increase the size of the flock?
11. Are you involved in any form of co-operative effort with other farmers?
12. What is the average quantity of feed concentrates you buy each month?
13. We have a program to improve livestock production through disease control and improved feeds. We are hoping to work alongside some herd owners whom we will be able to help with veterinary care and other things. Can we return discuss this with you further? (If yes, how can we contact you in about a month's time)

Appendix 3: Phase 2 monthly herd record sheet

App. 3.1: Production data sheet (July. 1995 - Aug. 1996)

Flock structure & production costs

Month of recording: _____

Date: _____

Name of respondent: _____

Place/area of interview: _____

Interviewer: _____

Part 1: Total flock inventory

Changes since last recorded:

Animal	Last	Current	Sales	Died	Births
Lambs (m)					
Lambs (f)					
Ewes					
Rams					
Castrations					

S: slaughter
D:died
1:celebration
2: dowry
3: for medicine
4: general sales
5: illness
6: buy feeds

Part 2: Livestock feeds

Supplementary feeds purchased during the past month:

Type	Quantity (tonnes)	Price (JD)

1:Whole barley
2: Wheat bran
3: Berseem
4: Cabbage
5: Tomato
6: Tomato pulp
7: Olive pulp

Have livestock been grazed on agricultural residues, or had access to privately owned land for grazing during the last month? If yes, give details below:

_____

_____

_____

Financial arrangements:

_____

_____

Total cost/day:_____ No. of days: _____

Part 3: Water

How often were livestock watered last month?

- Every second day ☐
- Daily ☐
- Bi-daily ☐
- Usual time ☐

How were they watered?

- Natural pool ☐
- Tanker truck ☐ (Original source of water: _____)
- Well ☐ (Owned: ☐ privately ☐ publicly)
- Household ☐

Total cost/day: _____ No. of days: _____

Part 4: Grazing

Areas livestock have been grazing	Leave (am/pm)	Return (am/pm)	Distance to area (km)	Walking distance (hours0

1: FMD *2: PPR* *3: Blue-tongue*
4: Sheep pox *5: Injury* *6: Pneumonia*
7: Lymphadinitis *8: Abortion* *9: Stillbirth*
10: Diarrhoea *11: Clostridial* *12: Bloat*

Did the respondent visit or employ the services of a veterinary surgeon?

No. visits	Circumstances	Cost
Total visits:		Total cost:

Has the respondent purchased any pharmaceuticals for the treatment of livestock during the past month?

Pharmaceutical (name)	Cost

Part 5: Transport

For what purposes has motor transport been employed during the past month?

Purpose	No.of times	Distance travelled (km)
Transport feeds		
Transport water		
Transport animals		
Camp movement		
Livestock related		

Type of vehicle used:

Fuel expenditure for month (estimated):

Additional vehicle maintenance costs:

Have additional vehicles been used? Yes ☐ No ☐ Cost: _____

Part : Labour costs

Has the respondent employed the services of any livestock-related labour (outside of the household) during the past month?

Hired shepherd ☐ Driver ☐

Wool shearer ☐ Other ☐ What:_____

Professional milker ☐

What were the financial arrangements with this person?

_____

Wages/day: _____ Number of days: _____

Part 7: Animal health and other services

How many animals have been sick in the last month?

No. animals	Disease	Symptoms

Part 8: Technical production data

Week of month	Production (litres)	Prices (at which sold)
Week 1		
Week 2		
Week 3		
Week 4		

Ewe (Tag-No.)	Weight (kg)	Lamb (Tag-No.)	Weight (kg)
1		1	
2		2	
3		3	
4		4	
5		5	
6		6	
7		7	
8		8	
9		9	
10		10	

Comments: _____

_____

App. 3.2: Supplementary household data sheet (Sept. – Oct. 1995)

Record of supplementary household data gathered through observation and informal discussions during September and October 1995, during Phase 2 of fieldwork.

Constitution of the household

Name of head of household: _____ Age: _____

Category	Male	Female
No. Adults (>15 yrs)		
No. Children (< 15 yrs)		

Regular household incomes from other sources (than livestock)

	Describe income(s)	Approx. monthly value (JD)
Waged income*		
Rental		
Agriculture		
Pension		
Trade/business		

**Including remittances*

Monthly foodstuff purchases

Purchases	How are purchases planned?

Domestic consumption of livestock products

	Quantity
Slaughters made (last 12 months)	
Milk based meals (last 7days)	
Animal fibres used	

Animals at household

Animals kept at household	Reason

Appendix 4: Phase 4 Visit Data Sheet

(Nov. 1997–Dec. 1997)

Record of data collected via final interviews (Nov.-Dec. 1997)

Interview details:

Head of Household	
Name of Interviewee (if different from above)	
Date of Interview	
Place of interview	

Household livestock ownership since August 1996:

Animals	Current herd population
Sheep	
Goats	

Reasons for any major changes in herd size or structure:

_____

_____

_____

_____

_____

When did these changes occur?

_____

_____

_____

_____

_____

Livestock feeding strategies since August 1996:

No. of sacks	Sept.- Nov.	Dec.- Feb.	Mar.- May	June – Aug.
Barley (fed daily)				
Wheatbran (fed daily)				

What additional types of feeds have been purchased?

Additional feed types purchased

Has agricultural land been grazed? Yes ☐ No ☐

Has household attempted barley cultivation? Yes ☐ No ☐

References

Abu Jaber, K. Gharaibeh, F. and Hill, A. 1987, *The Badia of Jordan: the process of change.* Amman: University of Jordan

Abu Rabia, A. 1994, The Negev Bedouin and livestock rearing: social economic and political aspects. Oxford, Berg

Adams, W. and Mortimore, M. 1997, "Agricultural intensification and flexibility in the Nigerian Sahel". The Geographical Journal, Vol.163, No.2 pp.150-160

Agrawal, A. 1993, "Mobility and cooperation among nomadic shepherds: the case of the *Raikas*", *Human Ecology*, vol 21, No.3 pp. 261-279

Agrodev 1998, Sustainable rangeland management project Jordan: Final inception report. Quebec:CIDA.

Allison, R., Higgit, D., Kirk, A., Warburton, J., Al-Homoud , A., Sunna, B., and White, K. 1998, "Geology, Geomorphology, Hydrology, Groundwater and Physical Resources", in Dutton, R. Clarke J. and Battikhi, A.(eds) *Arid Land Resources and their Management: Jordans Desert Margin.* pp. 21-44, London: Kegan Paul International

Al-Oun, S. 1997, *Livestock marketing in the Jordanian Badia.* Unpublished Ph.D thesis, University of Durham

Al-Sirhan, S. 1999, Managing rangelands: Learning from institutional experience in order to promote Bedouin participation in the Badia of Jordan. Unpublished MSc. dissertation, University of Durham

Al-Srour, M. 1999, Geographic patterns of pastoralists mobility: a study of Bedu in north-east Jordan. Unpublished Ph.D thesis, University of Glasgow

Al- Tabini, R. 1996, Wool production and marketing in the Jordan Badia livestock system. A paper presented at the Workshop on Population and Livestock related studies in the Eastern Badia of Jordan, 22nd -23rd September 1996. Royal Scientific Society, Amman, Jordan

Amanor, K. 1995, "Dynamics of Herd Structures and Herding Strategies", *Africa,* Vol.5 pp. 351-393

Barfield, T. 1993, *The Nomadic Alternative.* New Jersey: Prentice Hall

Barham, N., and Mensching, H. 1988, "Pressure upon the pastureland environment in Jordan", *Applied Geography and Development,* Vol 31. pp.37-53

Barth, F. 1964, "Capital Investment And Social Structure In A Pastoral Nomad Group In South Persia", in Frith, R. (ed.), *Capital Savings And Credit In Peasant Society.* pp. 69-81, Chicago:Aldine

Barth, F. 1964a, *Nomads of South Persia: The Basseri Tribe of the Khamseh Confederacy.* London: Unwin and Allen

Bartlett, P. 1989, "Dimensions and Dilemmas of Householding" in Wilk, R (ed.) *The Household Economy.* pp.3-10, Boulder: Westview Press

Bar-Yosef O. and Khazanov 1992, "Introduction" in Bar-Yosef, O. and Khazanov, A. (eds)*Pastoralism in the Levant: Archaeological Materials in Anthropological Perspectives.* pp. 1-9. Madison: Prehistory Press

Baxter, P. 1954, *The Social Organisation of the Boran.* Unpublished PhD. dissertation, Oxford University

Baxter, P. and Hogg, R. (eds.). 1990, *Property, Poverty and People.* Department of Anthropology, University of Manchester

Bebbington, A. 1997, "Social capital and rural intensification". *The Geographical Journal,* Vol.163, No.2 pp. 189-197

Behnke, R. 1980, *The Herders of Cyrenaica.* Urbana:University of Illonois Press

Behnke, R. and Scoones, I. 1993, "Rethinking range Ecology: Implications for rangelandmanagement in Africa". In R. Behnke, I.Scoones, and C. Kervan (eds) *Range ecology at disequilibrium,* pp. 1-15. London: Overseas Development Institute

Betts, A. 1998, *The Harra and the Hammad: Excavations and explorations in Eastern JordanVol.1* Sheffield: Sheffield Academic Press

Black-Michaud, J. 1974, "Ethnographic Survey of Luristan", *Middle East Studies,* Vol.10. pp.210-228

1986, *Sheep into Land.* Cambridge: Cambridge University press.

Bocco, R. and Tell, T. 1995, "Frontieres, Tribus, et Etats en Jordanie Orientale a l'Epoque duMandat" in Bocco, R. and Velud, C. (eds) *Tribus, Tribulismes et Etats en Moyen-Orient* pp. 26-47

Bossen, L. 1975, "Women in Modernising Societies", *American Ethnologist,* Vol.2 No.4pp.587-601

Bradburd, D. 1990, *Ambiguous Relations: Kin, Class and Conflict among the KomachiPastoralists.* Washington: Smithsonian Institute Press

Brandenburg, C. 1998, "Development anthropology:A primary survey", in Dutton, R., Clarke,J. and Battikhi, A. (eds) *Arid land resources and their management: Jordan's desert margin.* pp. 247-265. London, Kegan Paul

Burckhardt, J. 1822, *Travels in Syria and the Holy Land,* London: John Murray

Burgess, R., Pole, C., Evans, K. and Priestley, C. (1994) "Four studies from one or one studyfrom four? Multi-site case study research" in Bryman, A. and Burgess, R. (eds) *Analysing Qualitative Data.* pp. 129-145. London: Routledge

Campbell, D. 1996, *A review of Sheep and Goat production in the Eastern Badia of Jordan.* Apaper presented at the workshop on population and livestock related studies in the Eastern Badia of Jordan, 22nd -23rd September 1996. Royal Scientific Society, Amman, Jordan

Campbell, D. 1998, *Gross margin calculations for sheep productivity in the JBRDP area.*Unpublished working paper of DFID Livestock Project, JBRDP, Amman

Campbell, D. and Roe, A. 1995, *Preliminary Survey of livestock owners*, Unpublished report, JBRDP Amman

1998, "Results of a preliminary survey of livestock owners" in Dutton, R. Clarke J.and Battikhi A. (eds) *Arid Land Resources and their Management: Jordans Desert Margin*. pp. 189-196. London: Kegan Paul International

Cancian, F. 1989, "Economic behaviour in peasant communities", in Plattner, S. (ed)*Economic Anthropology*, pp. 127-170. Stanford: Stanford University Press

Casley, D. and Lury, D. 1987, *Data collection in developing countries*. Oxford: Oxford University Press

Chambers, R. 1997, *Whose Reality Counts? Putting the last first.* London: IntermediateTechnology Publications.

Chatty, D. 1974, *From Camel to Truck: A study of the Pastoral economy of the Al Fadl andAl Hassana in the Beqaa valley of Lebanon.* Unpublished PhD. Dissertation, University of Californa

1986, *From Camel to Truck: The Bedouin in the Modern World.* New York: Vintage Press

1996, Mobile pastoralists: Development planning and social change in Oman. New York: Coulmbia University Press

Chayanov, A. V. 1966, *The Theory of Peasant Economy*. Homewood, Illinios: Irwin

Cheal, D. 1989, "Strategies of Resource Management", in Wilk, R (ed.), *The Household Economy: Reconsidering the Domestic Mode of Production.* pp.11-22, Boulder: Westview Press

Clarke, G. 1989, "Separation between trading and home for Asante Women inKumasai central market, Ghana", in Wilk, R (ed.), *The Household Economy:Reconsidering the Domestic Mode of Production.* pp.91-119 Boulder: Westview Press

Cole, D. 1975, *Nomads of the Nomads: The Al Murrah Bedouin of the Empty Quarter.* Chicago: Aldine

Cole, D. and Altorki, S. 1998, *Bedouin, Settlers and Holidaymakers: Egypt's changing northwest coast.* Cairo, American University in Cairo Press

Crehan, K. 1992, "Rural households making a living" in Bernstein H., Crow, B and Johnson H. (eds), *Rural Livelihoods, Crisis and Response.* pp. 87-109. Oxford: Oxford University Press

Cribb, R. 1991, *Nomads in Archaeology*. Cambridge: Cambridge University Press

Dahl, G 1987, "Women in pastoral production. Some theoretical notes on roles andresources". *Ethnos*. Vol. 52, pp.246-279

Dahl, G. And Hjort, A. 1976, *Having Herds: pastoral herd growth and the household economy.*Stockholm, Liber Tryck

Dalton, G. 1969, "Theoretical issues in economic anthropology: problems in theory, method and analysis". *Current Anthropology* vol.10, no.1 pp. 63-102

Dalton, W. 1978, *Lunch with Abdallah: An account of patronage politics in the Fezzan region of Libya.* Proceedings of the African Studies Association, Brandeis University

1990, "Some considerations in the sedentarisation of nomads: The Libian case", in Salzman, C. and Galaty, J. (eds.), *Nomads in a Changing World* pp.139-163, Naples: Istituto Universitario Orientale

Davis, J. 1992, *Exchange.* Buckingham:Open University Press

DOS (Department of Statistics), 1994, Hashemite Kingdom of Jordan external trade statistics1993, Amman

DOS (Department of Statistics), 1995, Hashemite Kingdom of Jordan external trade statistics 1994, Amman

DOS (Department of Statistics),1996, Hashemite Kingdom of Jordan external trade statistics 1995, Amman

Dercon, S. 1998, Wealth Risk and Activity Choice: Cattle in Tanzania. *Journal of Development Economics.* Vol. 55 pp. 1-42

Dever, W. 1992, "Pastoralism and the End of the Urban Early Bronze Age in Palestine" in Bar-Yosef O. and Khazanov A. (eds*) Pastoralism in the Levant: Archaeological Materials in Anthropological Perspectives.* pp. 83-92. Madison: Prehistory Press

Direction Du Service Des Reseignements Du Levant, 1930, *Les Tribus Nomades et Semi–Nomades des Etats du Levant.* Beyrouth: Haut Comissariat de la Republique Francais

Dutton, R. 1998, "Population, Environment and Development" In Dutton, R., Clarke, J., and Battikhi, A. (eds) *Arid land resources and their management: Jordan's desert margin.* pp. 3-20, London: Kegan Paul International

Dutton R., and Shahbaz, M., 1999, "The Badia Programme: defining and overcoming constraints on sustainable development" *Applied Geography* vol. 19, no.4, pp. 275-281

Dyson-Hudson, 1972, The Study of Nomads. *Journal of Asian and African Studies.* Vol.7 pp.2-29

Donham, D. 1990, *History, Power, Ideology: Central Issues in Marxism and Anthropology.* Cambridge: Cambridge University Press

Encyclopedia of Islam, 1960, Leiden: Brill

Epstein, H. 1985, *The Awassi sheep with special reference to the improved dairy type.* Animal production and health paper 57, F.A.O. Rome

Escobar, A. 1991 "Anthropology and the development encounter: The making and marketing of development anthropology". *American Ethnologist* no. 18, pp. 658-682

Evans-Pritchard, E. 1940, *The Nuer: A description of the mode of livelihood and political institutions of a Nilotic tribe.* Oxford, Clarendon Press

Fabietti, U. 1986, "Control and Alienation of Territory Among the Bedouin of Saudi Arabia" *Nomadic Peoples* vol 20, pp. 33-39

FAO (Food and Agriculture Organisation of the United Nations) 1991, *Sub regional seminar on the dynmaics of pastoral land and resource tenure in the Horn of Africa.* Rome, FAO

1994, *Agricultural trade policy in a changing trade environment: Issues of importance for the Near east region.* UN, New York

Findlay, A. and Maani, M. 1998, "Population fertility trends", in Dutton, R. Clarke, and BattikhiA. (eds) *Arid Land Resources and their Management.* pp. 197-213. London, Kegan Paul

Findlay, A. and Maani, M. 1999, "Development implications of demographic trends and projections for an arid region: The case of the Badia Research and Development Project area of Jordan". *Applied Geography*, Vol.19 No.4 pp. 283-298

Finkelstein, I. 1995, *Living on the Fringe: the archaeology and the history of the Negev, Sinai and neighbouring regions in the Bronze and Iron ages.* Sheffield: Sheffield Academic Press

F.O. (Foreign Office) 195-595, cited in Jabbur, J. 1995, *The Bedouins andthe Desert: Aspects of Nomadic Life in the Arab East.* New York: State University of New York Press pp. 552-622

Foster, G. 1965, "Peasant society and the image of the limited good". *AmericanAnthropologist* vol.67, pp.293-314

Fratkin, E., Galvin, K. and Roth, E. 1994, "Introduction", in Fratkin, E., Galvin, K. and Roth, E. (eds) *African Pastoralist Systems* pp. 1-16. Boulder: Lynne Rienner

Galaty, J. and Johnson, D. 1990, "Pastoral systems in Global perspective", in Galaty, J. and Johnson, D. (eds) *The World of Pastoralism* pp.1-31. New York: Guildford Press

Garnet, A, 1995, *Milk production in the north east Badia.* Unpublished report, JBRDP, Amman

Glubb, J., 1948, *The story of the Arab Legion.* London, Hodder

Goldschmidt, W. 1979, "A General Model", *Pastoral Production and Society.* Proceedings of the International meeting on nomadic pastoralism. Cambridge, Cambridge University Press

Gubser, P. 1983, *Jordan.* London: Croom Helm

Gulliver, P. 1955, *The Family Herds.* London: Routledge and Kegan Paul

Haaland, G. 1977, "Pastoral Systems Of Production", in O'Keefe, P. And Wisner, B. (eds), *Landuse And Development.* pp. 179-192. International African Institute

Halstead, P. and O'Shea, J. 1989, Introduction: Cultural reponses to risk and uncertainty. in Halstead, P. and O'Shea, J. (eds) *Bad Year Economics,* pp. 1-7. Cambridge: Cambridge University Press

Harbeson, J. 1991, *Post drought adjustments among Horn of Africa Pastoralists: policy and institution-building dimensions.* Paper delivered at the Sub-regional seminar on the dynamics of pastoral land and resource tenure in the Horn of Africa. Rome: FAO

Harris, G. 1958, *Jordan.* New Haven: Hraf Press

Harris, O. 1981, "Households as Natural Units", in Young, K. *et al* (eds.) *Marriage and the Market.* pp.136-155

Heap, S. 1989, *Rationality in Economics.* London: Basil Blackwell Ltd

Helms, S. 1990, *Early Islamic Architecture of the Desert: A Bedouin Station in Eastern Jordan.* Edinburgh: Edinburgh University Press

Herskovits, M. 1926, "The Cattle complex in East Africa", *American Anthropologist,* Vol. 28 pp.230-72, 361-380, 494-528, 633-664

Hiatt, J. 1984, "State formation and the encapsulation of nomads: Local change and continuity among recently sedentarised Bedouin in Jordan". *Nomadic Peoples*, vol. 15, pp.1-12

Hirsch, S. 1933, *Sheep and goats in Palestine.* Bulletin of the Palestine Economic Society no. 6

Hobbs, J. 1989, *Bedouin Life in the Egyptian Wilderness.* Cairo: American University In Cairo Press

Horowitz, M. and Jowkar, F. 1992, *Pastoral women and change in Africa, the Middle East and Central Asia*, IDA working paper no. 91, Binghampton: NewYork

Huss-Ashmore, R. 1996, "Livestock, nutrition and intrahousehold resource control in Uasin district, Kenya", *Human Ecology,* vol. 24, no.2, pp.191-213

Hutteroth, W. and Abdulfattah, K. 1977, *Historical Geography of Palestine, TransJordan and Southern Syria in the Late Sixteenth Century*, Erlangen

Ibrahim, K. 1992, *The Geological Framework for the Harrat Ash-Sham basaltic super-group and its Volcanotectonic evolution.* Natural Resources Authority, Amman

IFAD (International Fund for Agricultural Development), 1993, *National programme for range rehabilitation and development: Formulation report.* Amman, Jordan

1995 National programme for range rehabilitation and development: Baseline survey of socio-economic and animal production data: Main Report. Amman

Jabbur, J. 1995, *The Bedouins and the Desert: Aspects of Nomadic Life in the Arab East.* New York: State University of New York Press

Janzen, J. 1991, *The revival of traditional pastoral systems in the Near East.* Keynoteaddress presented at the FAO/CARDNE workshop on Pastoral Communitites in the Near East: Traditional systems in evolution. Amman, Jordan

Jaubert, R. and Bocco, R. 1994, *The reintroduction of traditional dryland managementsystems: A critical analysis of the Hema project in Syria.* Paper given at the UNESCO/IUSSP/IGU conference on Population and environment in arid regions. Amman: University of Jordan

JBRDP (Jordan Badia Research and Development Programme), 1993, *Summary of demographic and socio-economic survey for the JBRDP area.* Unpublished Report. Amman: JBRDP

1994, *Patron's document: JBRDP Stage One Safawi.* Amman, JBRDP

Johns, J. 1992, "Islamic Settlement in Ard al Kerak". *Studies in the History and Archaeology of Jordan*, Vol.4 pp. 363-369

Jones, K. 1996, *Diseases and parasites of livestock in the eastern Badia of Jordan.* A paper presented at the Workshop on Population and Livestock related studies in the Eastern Badia of Jordan, 22nd -23rd September 1996. Royal Scientific Society, Amman, Jordan

Joy, L. 1969, "Diagnosis, prediction, and policy formulation", in Whorton, C. (ed), *Supply Responses And The Modernisation Of Peasant Agriculture*

Juneidi, M. and *Abu* Zanat, M. 1993, *Jordan agricultural sector review: Low rainfall zone.*Agricultural Policy Analysis Project Phase II (Technical report). Amman

Katakura, M. 1977, *Bedouin village: a study of a Saudi Arabian people in transition.* Tokyo: University of Tokyo Press

Khazanov, A. 1984, *Nomads and the outside world.* Cambridge: Cambridge University Press

Kirk, A, 1998, "A Synthesis of Climatic Data with Specific Interest in the Precipitation Record", in Dutton, R., Clarke J. and Battikhi, A. (eds) *Arid Land Resources and their Management: Jordans Desert Margin.* pp. 47-66. London: Kegan Paul International

Klenck, J. 1995, "Bedouin animal sacrifice practices: case study in Israel", in Ryan, K. and Crabtree, P. (eds) *The symbolic role of animals in archaeology.* University of Pennsylvania Museum of Archaeology and Anthropology. Research papers in Science and Archaeology, vol.12, pp.57-72

Knoess, K. 1984, *Production of camel, sheep and goats on the range around Sakaka-al-Joufin the north of Saudi Arabia based on a limited survey.* Working paper no.5, Range and Animal Research Development Centre. Sakaka-al-Jouf

Kohler-Rollefson, I. 1993 "Camel pastoralism" *Biblical Archaeologist*, vol. 54, no.4, pp.180-188

LaBianca, O. 1990, *Sedentarisation and Nomadisation: Food System Cycles at Hesban and vicinity in TransJordan, Hesban 1.* Berrien Springs: Andrews University Press

Lancaster, W. 1981, *The Rwala Bedouin Today.* Cambridge: Cambridge University Press 1998

"People of the Dhweila Area Today and in the Recent Past" in Betts, A.(ed) *The Harra and the Hammad: Excavations and Explorations in Eastern Jordan Vol.1* pp. 225-227, Sheffield: Sheffield Academic Press

Lancaster, W. and Lancaster, F., 1986, "The Concept of Territoriality among the Rwala Bedouin" *Nomadic Peoples* vol. 20, pp. 41-48

1988, "Thoughts on the Bedouinisation of Arabia".*Proceedings of the Seminar for Arabian Studies*, vol.18, pp. 51-62

1990, "Desert Devices: the pastoral system of the RwalaBedouin", in Galaty, J. and Johnson, D. (eds) *The World of Pastoralism* pp.177-194 New York: Guildford Press

1991, "Limitations on sheep and goat herding in the Eastern Badia of Jordan: an Ethnoarchaeological enquiry" *Levant* vol.23, pp. 125-138

1997, "Jordanian village houses in their context: growth decay and rebuilding" *Palestine Exploration Quarterly*, No. 129, pp.38-53

1999, "People, land and water in the Arab Middle East: Environments and Landscapes in the Bilad ash-Sham". New York: Harwood Academic Publishers

Laslett, P. 1984, "The family as a knot of interests", in Netting, R, Wilk, R. and Arnould, E. (eds) *Households: Comparative and historical studies of the domestic group.* pp. 353-382. Berkeley, University of California Press

Layne, L. 1989, "The dialogics of tribal self representation in Jordan". *American Ethnologist*, Vol.16, No.1 pp.24-39

Layne, L. 1994, *Homeland and homeland: The dialogics of tribal and national identity in Jordan.* Princeton:Princeton University Press

Levy, T. 1992, "Transhumance, Subsistance and Social Evolution in the Northern Negev Desert" in Bar-Yosef O. and Khazanov A. (eds) *Pastoralism in the Levant: Archaeological Materials in Anthropological Perspectives.* pp. 65-82. Madison: Prehistory Press

Lewis, I. 1975, "The Dynamics of Nomadism", in Monod, T. (ed.), *Pastoralism in Tropical Africa.* Oxford: Oxford University Press

Lewis, N. 1987, *Nomads and Settlers in Syria and Jordan 1800-1980.* Cambridge:Cambridge University Press

Leybourne, M. 1993, *Links between the steppe and cultivated areas through migration:The socio-economic organsiation of the semi-nomadic agro-pastoral society of the Syrian steppe.* Unpublished Diplome de recherche, L'institut Universitaire D'etudes du Development, Geneva

1994, *The dynamics of the agro-pastoral population of the northern Syrian Steppe.* Paper presented to the 'Conference on population and environment in arid regions' at the University of Jordan 24-27th October 1994

Livingstone, I. 1977, "Economic Irrationality Among Pastoral Peoples: Myth Or Reality?", *Development And Change*, Vol.8, pp. 209-230

1991, "Livestock Management And Overgrazing Among Pastoralists", *Ambio*, Vol. 20. pp.80-85

Lockwood, V. "Tubuai women potato farmers and the political economy of intra-householdGender relations" in Wilk, R (ed.), *The Household Economy: Reconsidering the Domestic Mode of Production.* pp.197-221 Boulder: Westview Press

Long, G. 1957, *The Bioclimatology and Vegetation of Eastern Jordan.* Rome FAO

Maani, M., Hunaiti, H. and Findlay, A. 1998, "Demographic Change and PopulationProjections 1976-2013", in Dutton, R. Clarke, J. and Battikhi, A. (eds) *Arid land resources and their management: Jordan's desert margin.* pp.216-246. London, Kegan Paul

Mace, R. 1993, "Transitions Between Cultivation and Pastoralism", *Current Anthropology,* Vol. 34, no.4 pp. 363-382

Mace, R. and Houston, A. 1989, "Pastoralist Strategies for survival in unpredictable environments", *Agrictultural Systems*, Vol. 31, pp.185-204

Marx, E. 1978, "The Ecology and Politics of Nomadic Pastoralists in the Middle East" in Weissleder W. (ed) *The Nomadic Alternative:Models and Modes of Interaction in African-Asian Deserts and Steppes*. pp.41-74. The Hague: Mouton

1990, "Economic Change Amongs Nomads of the Middle East", in Salzman, C. and Galaty, J. (eds), *Nomads in a Changing World,* pp. 107-122. Naples: Istituto Universitario Orientale

1992, "Are there pastoral nomads in the Middle East?" in Bar-Yosef, O. and Khazanov, A. (eds), Pastoralism in the levant: Archaeological materials in anthropological perspectives, pp.255-59. Wisconsin: Prehistory Press

Maxwell, S. 1986, "The Role of Case Studies in Farming Systems Research", *Agricultural Administration* Vol. 21

Meir, A. 1997, *As Nomadism ends: The Israeli Bedouin of the Negev* . Boulder: Westview Press

Meir,A. and Tsoar, H. 1996, "International borders and Range Ecology: The case of Bedouin trans-border grazing". *Human Ecology* Vol.24, No1 pp. 39-64

Mellor, J. 1969, "The Subsistance Farmer In Traditional Economies" in Whorton, C. (ed), *Supply responses and the modernisation of peasant agriculture*

Meteorological Department, 1988, *Jordan climatological data handbook.* Hashemite Kingdom of Jordan

Meteorological Department,1997. *Precipitation Data from Safawi, Ruweishid and South Azraq stations*

Millington, A. al Hussein, S. and Dutton, R. 1999, "Population dynamics, socio-economic change and land colonisation in northern Jordan, with special reference to the Badia Research and Development Programme Area". *Applied Geography*, Vol.19 No.4, pp.363-384

Milne, J. 1971, *The problem of patrilateral parallel cousin marriage, with special reference to a southern Jordanian village, El Ji.* Unpublished dissertation:University of London

Michie, B. 1994, "Re-evaluating Economic Rationality", in Acheson, J. (ed.), *Anthropology and Institutional Economics.* pp. 391-418. Maryland:University press of America

Minnis, P. 1985, *Social adaptation to food stress: A prehistoric southwestern example.*Chicago: University of Chicago Press

MOA (Ministry of Agriculture), 1991, *National livestock census*. Hashemite Kingdom of Jordan. Amman

1997, Ministry of Agricultural Annual Reports 1970-1996, Hashemite Kingdom of Jordan. Amman

Mulder, M. and Sellen, D. 1994, "Pastoralist decisionmaking: A behavioural ecological perspective", in Fratkin, E. Galvin, K. and Roth, E. (eds) *African Pastoralist Systems: An integrated approach* pp. 205-231, Boulder: Lynne Rienner

Musil, A. 1928, *The Manners and Customs of the Rwala Bedouins*. New York: American Geographical Society

Nash, J. 1977, "Women and Development: Dependency and Exploitation", *Development and Change*, vol. 8, pp.161-182

Nelson, B. 1973, *The Azraq Oasis.* London: Allen Lane

Nesheiwat, K. 1991, *Socio-economic Aspects of the Traditional Hema System of Arid Land Management in Jordan*. Rome: FAO

North, D. 1990, *Institutions, institutional change and economic performance.* Cambridge:Cambridge University Press

Oakeley, R. 1997, *Economic and policy trends affecting the production and marketing systems of small ruminants in the north east Badia of Jordan*. Amman, JBRDP

Okely, J. 1997, "Thinking through fieldwork" In Bryman, A. and Burgess, R. (eds) *AnalysingQualitative Data.* pp.18-34. London, Routledge

Ostrom, E. Schroeder, L. and Wynnt S. 1993, *Institutional Incentives and Sustainable Development*. Boulder: Westview Press

Oughton, E. and Adas, W. 1999, *A socio-economic study of the role of livestock in thedomestic economy of households in the north east Badia*. Amman, JBRDP

Oughton, E. and Wheelock, J. 1995, "Market lives and non-market livelihoods" in Gorlach, K. and Zygmunt, S. (eds), *Family farming in the contemporary world*, pp. 32-41. Krackow

Papadopulos, V. 1996, *Household food supply systems and milk marketing arrangements in the north east Badia region of Jordan*. A paper presented at the workshop on population and livestock related studies in the Eastern Badia of Jordan, 22nd -23rd September 1996. Royal Scientific Society, Amman, Jordan

Papadopulos, V. 1999, *Response by sheep milking pastoralist households in Jordan to the withdrawal of an input subsidy and related market, environmental, social and policy implications*. Unpublished PhD. Thesis, University of London

Pape, A., Doppler, W. and Nordblom, T. 1994, "The contribution of women to labour and the decision-making process in Bedouin farming systems in Northern Syria" *Pasture, Forage and Livestock Programme Annual Report.* ICARDA

Palmer, C. 1998, "Following the Plough: the Agricultural Environment of Northern Jordan" *Levant* vol. 30, pp.129-165

Plattner, S. 1989, *Economic Anthropology.* Stanford:Stanford University Press

Prior, J. 1994, *Pastoral Development Planning.* Oxfam development Guidelines

Redding, R. 1981, *Decision-making in subsistence herding of sheep and goats in the Middle East*. Unpublished PhD. Dissertation, University of Michegan

Rigby, D. 1969, *Cattle and Kinship Amongst the Gogo.* Ithaca: Cornell University Press

1990, "Pastoralist Production And Socialist Transformation", in Salzman, C. and Galaty, J. (eds), *Nomads In A Changing World* pp. 233-289. . Naples: Istituto Universitario Orientale

Roberts, P. 1991, "Anthropological perspectives on the Household", *IDS Bulletin 22*, No. 1 pp. 60-64

Roe, E., Huntsinger, L. and Labnow, K. 1998, "High Reliability Pastoralism", *Journal of Arid Environments,* Vol. 39, pp. 39-55

Roe, A., 1996, *Inputs into the Badia livestock production system*. Paper presented at the workshop on population and livestock related studies in the Eastern Badia of Jordan, 22nd -23rd September 1996. Royal Scientific Society, Amman, Jordan

Roe, A., Salti, R., Al-Sirhan, and Audi, A. 1997, *Pastoralists of the lower Dana Reserve area: Attitudes to and prospects for integration into the Reserve management strategy.* Unpublished Report. Amman:Royal Society for the Conservation of Nature

Roe A., 1998, Bedouin livestock management and socio-economics in the JBRDP area. Amman: JBRDP

1999, "The exploitation of an arid landscape by a pastoral society: The contemporary Badia of Jordan". *Applied Geography*, Vol.19 No.4, pp. 345-361

Rogers, E. 1983, *Diffusion of innovations,* Free Press: New York

Sahlins, M. 1972, *Stone Age Economics.* Chicago:Aldine

Salzman, C. 1999, Is Inequality Universal? *Current Anthropology*, vol.40, no.1 pp. 31-62

Salzman, C. and Galaty, J. 1990, "Introduction", in Salzman, C. and Galaty, J. (eds.), *Nomadsin A Changing World.* Naples: Istituto Universitario Orientale

Sandford, S. 1983, *Management of pastoral development in the third world.* London: Overseas Development Institute

Schneider, H. 1990, "Development and the Pastoralists of East Africa", in Salzman, C. and Galaty, J. (eds), *Nomads in a Changing World.* pp. 179-209 Naples: Istituto Universitario Orientale

Schneider, H. 1959, " Pakot resistance to change", in Bascom, W. and Herskovits, M. (eds) *Continuity and change in African cultures*, Chicago: University of Chicago Press

Scott, J. 1976, *The Moral Economy Of The Peasant.* New Haven: Yale University Press

Shoup, J. 1990, "Middle eastern pastoralism and the Hima system" in Galaty, J. and Johnson,D. (eds) *The World of Pastoralism* pp.195-215 New York: Guildford Press

Smith, A. 1992, *Pastoralism in Africa.* London: Hurst

Spencer, P. 1990, "Pastoralism And The Dynamics Of Family Enterprise", in Salzman, C. and Galaty, J. (eds), *Nomads in a Changing World,* pp. 211-231 Naples: Istituto Universitario Orientale

1965, *The Samburu.* London: Routledge and Kegan Paul

Spicer, N. 1999, "Pastoral mobility, sedentarisation and accessibility of health services in the northeast Badia of Jordan". *Applied Geography*, Vol.19 No.4, pp. 299-312

Sweet, L. 1965, "Camel Raiding of the North Arabian Bedouin: a mechanism of ecological adaptation". *American Anthropologist* 67, pp.1132-1150

Swift, J. 1975, "Pastoral Nomadism as a form of land-use", in Monod, T. (ed) Pastoralism in Tropical Africa, pp.443-454. Oxford: Oxford University Press

1988, *Major Issues in pastoral devlopment with special emphasis on selected African countries* Rome: FAO

Thompson, E., Bahhady, F. and Martin, A. 1988, *Sheep husbandry at the cultivated margin of the north-west Syrian Steppe.* Aleppo: ICARDA

UNESCWA (United Nations Economic and Social Committee for Western Asia)/FOA. 1996, *The impact of population growth and urbanisationon on food consumption patterns in Jordan.* United Nations

van der Veen, J. 1964, *Some aspects of plant succession in the Wadi Al-Aazib range station and surrounding areas*. Proceedings of the 5th week of sciences, High Council of Sciences, Damascus, pp. 1-10

Wallman, S. 1986, "The Boundaries of the Household", in Cohen, A. (ed) *Symbolising Boundaries*, pp. 50-70. Manchester: Manchester University Press

Warren, A. 1995, "Changing Understanding of African Pastoralism", *Transactions of the Institute of British Geographers,* Vol. 20, pp.193-203

Wattenbach, H. and Stroebel, H., 1992, *Macro-economic aspects of small ruminant production in Jordan*. Triesdorf Consult for GTZ

Webster, R. 1991, "The Wahiba Bedouin: Bedouin values in an oil economy", *Nomadic peoples*, no.28, pp.3-17

Western, D. And Finch, V. 1986, "Cattle And Pastoralism: Survival And Production In Arid Lands", *Human Ecology,* Vol.14, No.1, pp. 77-94

Widstrand, G. 1975, "The Rationale Of Nomad Economy", *Ambio*, Vol.4, No.4, pp.146-153

Wilk, R. 1989, "Decision-making and resource flows within the household" in Wilk, R. (ed.), *The Household Economy: reconsidering the demestic mode of production.* pp.23-52. Boulder, Westview Press

1994, "Inside the Economic Institution" in Acheson, J (ed.) *Anthropology and Institutional Economics*. pp.365-389. Lanham MD: University Press of America

1996, *Economies and Cultures.* Boulder: Westview Press

Wilson, G. 1991, "Thoughts on the co-operative conflict model". *IDS Bulletin 22*, No.1 pp.31-36

Wolf, E. 1957, Closed corporate peasant communities in Mesoamerica and Central Java. Southwestern Journal of Anthropology vol.13, pp. 1-18

Yin, R. 1994, *Case-study research: Design and methods.* London, Sage.

Zakariya, W. 1948, *Asha'ir ash Sham*, 2 vols, Damascus

Zohary, M. 1966, *Flora Palestina*, Vol. 1. Jerusalem: Israel Academy of Sciences