Farming In Transition? An Exploration of Agricultural Experience in the North East of England

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ABSTRACT

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Through the lens of complexity theory, this thesis seeks to establish an argument for agriculture to be viewed as a complex system which is based on a representative case study of mixed lowland farming in County Durham. The discussion encompasses an investigation of the notion of crisis within this system and the main factors producing this point of change/ phase shift, be they from within the system (endogenous) or from outside of the system (exogenous).

This thesis contends that agricultural systems are complex, combining human and biological elements that link together diverse people, places and processes through multiple product flows and intermediaries. They are characterised by emergent properties and non-linear dynamics, due in part to highly articulated interactions at numerous levels. On occasions small occurrences can produce large effects, but large events can produce complete and massive change and phase shift. This is particularly evident in several recent crises in agriculture.

Empirical data is gathered through extensive and in-depth interviewing of a sample, which is representative of this lowland mixed farming community and autoethnography. This was combined with an extensive review of government publications, official statistics, academic writing and media reports to frame the entirety of the issue. This thesis finds that there is much evidence of novel change, and therefore, phase shift within the complex socio-production system of mixed lowland farming. This change emanates from both internal factors (endogenous) such as BSE and foot-and-mouth disease and also from factors external to the system (exogenous) such as reform of the Common Agricultural Policy and investment in agricultural land by those from outside the industry. The lowland mixed family farm is at a time of change; especially vulnerable are those on tenant farms and the next generation wishing to follow their parents into farming.

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1. INTRODUCTION

Much of the application of complexity is implicit in this discussion. Indeed, unless the reader is well versed in complexity, he or she risks failing to appreciate the fact that complexity themes absolutely permeate this entire thesis. In order to bring complexity out more, a paragraph to this effect making it explicit that the thesis is written in this style will be greatly beneficial.

The story of this thesis is change, change brought about by crisis: the change in a way of life in British agriculture which has existed in its essence and in its particular form for nearly two centuries. This is not an investigation of the British farming system as a whole, however, but more a look at a specific area of farming life, that of the lowland mixed farming community in the North of England. This change is contextualised by reflexive analysis of the development of the industry and so affords a particular account of change, which purposely takes into account the voices of a small number of actors involved in the system.

Much has been written and published about recent changes in British agriculture, and particularly about the influence of farming practices on animal welfare, food quality, the landscape and wildlife. Most of these publications have implied that British Agriculture is essentially damaging, with perceptions of the industry's activities ranging from large-scale hedgerow removal to produce so-called 'prairie farming' and huge mega-farms such as the recent mooted dairies. However, those who live and work in the countryside know that this is not the case. In reality there are very wide regional variations, and much of the countryside is well farmed, ethically treated, visually attractive, and supports thriving wildlife. Nostalgic and often whimsical portrayals of farming in the media further erode wider social perspectives. There has been a rise in the number of television programmes such as the BBC's *Escape to the Country* series which show city dwellers longing to move to the 'perfect' rural home with views overlooking farmland, promising a quieter and slower way of life. Children's literature also promotes a fantastic and idealised view of the farming way of life and its practices to young readers: "The images use their emotive dimension to evoke a romantic and nostalgic image picture of farming" (Hillyard, 2007a, p146). Such media imagery is based on a

form of lowland mixed farming where animals and crops are produced together on the same holding by a farming family.[1]

In order to maintain supplies, food products are sourced from large-scale producers, either here or overseas, who are able to meet the demands of the supermarket buyers. Carter and Stansfield (1994) highlight this issue: "today 72% of food is purchased in large supermarkets which require regular supplies of high-quality produce and of produce which will be available all the year round, for today's consumer no longer recognises the rhythm of the seasons, although these still impinge on the producer" (Carter and Stansfield, 1994, p15). Food production, marketing and consumption are big business, involving large amounts of food and a complex storage, transport and distribution system with large capital investment. Farming of today, like many other industries, is increasingly influenced by regulations, controls and restrictions, most of them quite recent. Farmers in the past had more freedom of action but we now live in a more complicated, complex and regulated world. There is a proliferation of rules, regulations, codes of practice, guidelines and advice. The modern farmer therefore requires an awareness of all these factors in addition to all of the farming knowledge and procedures he needs to maintain his own farming system. The farmer is frequently involved in providing capital sums to modify the farm facilities in order to meet the needs of the changing regulations – with adverse and sometimes even terminal effects on his business. A good example of these facilities are the highly expensive slurry systems required in Nitrogen Vulnerable Zones (NVZs), which are only cost-effective on large-scale farms.

Farming over the generations has become increasingly complicated and complex, networks and markets have expanded and stricter regulations have brought contemporary farmers to a point of the greatest complexity which is coupled with highly

[1] The general account of this thesis will be based on the socio-production system of such lowland mixed agricultural practices which has until recently resembled these nostalgic views and which has been for many decades the representative form of agriculture across the British Isles. It is the changes that have occurred following a phase shift or crisis in this farming system that I will investigate.

mechanised and scientifically-driven farming practices. Many farmers and landowners struggle to get to grips with what looks like an 'alphabet soup', and this has a direct bearing on their farming practices. It was once said that if a farmer had two children, one should be trained in modern farming and the other in accountancy to ensure the future success of his farming business. Today the farmer might be well advised to have one child trained in the law and one in PR as well!

Origin

This thesis was undertaken in response to the multiple stimuli provided by the recognition of the mounting 'farming crises'. It was also informed by my own interests and experiences as a 'farmer's daughter' during a period of upheaval and change. I began my PhD research in the geography department, adopting a theory-driven approach to examine health risks in the food system. However, examining a set of theories did not address the fundamental problems in agriculture as I was beginning to see them. While risk paradigms and, latterly, complexity theory have helped me to understand the situation, it became obvious early on that a reflexive, historically based autoethnographic approach would better suit the subject.

A break from my studies while I had my first son allowed me to reassess the thesis and then deconstruct and reconstruct it in the following form which provides a coherent narrative and still fulfils my original desired research goals. I see this work, and my personal interests, sitting more within social anthropology, taking precepts from Ronald Frankenberg (1966) and Stockwell and looking at the situation in farming at a point of change and attempting to document it, while also living through the situation as it changes.

The Crisis

The Oxford English Dictionary defines 'crisis' as: "a crucial stage or turning point especially in a sequence of events or a disease… an unstable period especially one of

extreme trouble or danger" (Collins Concise Dictionary, 1999). I contend that British agriculture is in such a condition. Crucially, British Agriculture is in an unstable situation, and that one cannot remain the same.

Agriculture and the farming industry in the UK have become increasingly complex over time. Indeed, consider a recent local newspaper article (Northern Echo, 29th September 2011) entitled "Complexity [in UK farming] leads to rule breaches" (Brigden, 2011, p24). The article relates to an interview with Edward Boon, a County Durham agricultural Land Agent with Young's Chartered Surveyors. Boon contends that "Farmers and landowners are unwittingly finding themselves in breach of cross compliance regulations due to the growing complexity of the system…" (Brigden, 2011, p24). Boon's assertions also touch on the complex nature of the record keeping and administrative aspects of compliance with such regulations and schemes as cattle movement records, the Environmental Stewardship Scheme, single payment scheme and general record keeping. It continues: "The claims system has become so complicated it is very easy to make a mistake without meaning to and there are [ibid] a whole host of issues… a loss of payment is definitely something to take seriously" (Boon in Brigden, 2011, p24).

Lowland mixed agriculture, which is the focus of this study, is a very complex system. Such an agricultural system is prevalent in the majority of County Durham and, as such, farming in County Durham has been used as a representative case. This thesis is about explaining what the crisis is, as well as exploring how people 'live through the crisis', and their perceptions and experiences of it. This includes the dawning realisation in the early 1990s that agricultural support – the mainstay of rural policy since the 1940s – had become unsustainable and was no longer justifiable.[2] In the form of the European Union's Common Agricultural Policy (EU CAP), support had become too costly, had generated production surpluses and impacted on the rural environment. In the United Kingdom, the evident difficulties were made worse by: the collapse of farm incomes;

[2]According to his research of Cabinet minutes, the origins of post-war UK agricultural policy were twofold: agricultural self-sufficiency and balance of payments deficits. It was the current account deficit which secured Treasury support for substantial investment in agriculture. Smith, M. (1992) "The Agricultural Policy Community: Maintaining a Closed Relationship" IN Marsh, D., and Rhodes, R A W. (eds.) *Policy Networks in British Government,* Oxford, Clarendon Press.

the strength of sterling;[3] BSE, which challenged the notion of the purity of British produced food; and foot-and-mouth disease (FMD) which was complex, caused a decline of the national flocks and herds, and the perception of the National Farmers' Union (NFU) and Ministry of Agricultural (MAFF) as self-serving, untrustworthy and incompetent custodians of the British farming industry. These factors have combined to destabilise the farming system. As North points out, "Agriculture is not ready for a dignified and timely delay. It has many, many years of good and faithful years left in it. It will not just die. It will have been destroyed by incompetence, neglect, stupidity and error, compounded by a measure of conspiracy, corruption and political opportunism" (North, 2001, p15). The failure of agriculture was reflected in and highlighted by the growth of conservation movements - especially of the National Trust and Royal Society for the Protection of Birds (RSPB) - whose memberships dwarfs that of the political parties and most trade unions. This shift in emphasis was mirrored in the CAP reform policies. Subsidies to farmers were 'decoupled' from production and payments based on land 'stewardship'. This heralded a definite movement away from production maximisation to one of 'custodian of the land'.

This is further exacerbated by the bizarre situation that has developed in the agricultural land markets. While agricultural incomes have fallen, farmland prices have increased rapidly. This is discussed in much greater detail later in this piece, but it raises a number of questions, including: 'Is the countryside now an affluent consumer good?'

Aims and Objectives

Ultimately the arguments of this thesis are based around the notion that this is a time of change within the agriculture industry. The central aim of this dissertation is to identify the causes and consequences of the recent 'crises' affecting British Agriculture. This dissertation is concerned with the realities of farming as they were experienced by those in the industry and in the countryside. The study was confined to lowland English mixed farming because of the wide range of issues stemming from the crisis that affected businesses. Mixed farmers were able to comment on both stock and animal

[3]The issue here is the negative effect that the strength of the Pound had on export markets for British produce.

husbandry issues as well as the effects of the reforms of the Common Agricultural Policy (CAP). The study also concentrates on the effects and impacts on the individual, also addressing the effects on farmers in general.

To develop my argument that points to a 'crisis' or 'phase shift' occurring in farming in the British Isles, I have asked myself the simple questions: "What is different?" and if there is a difference, "Does this demonstrate a time of change?" Finally, I was interested in exploring "Which pressures and changes are internal and which external?" From this relatively basic start, more in-depth questions followed and allowed me to address the 'change' concept. I asked myself "What is incremental change verses novel change?" (that is, which changes result from normal processes and interactions, unaffected by any issues of 'crisis' or that may be characteristic across any industry or farm family relations, and which changes are the result of factors generated from, or emanating through, the 'crisis in the industry' as contended in this thesis?) For example, sons falling out and family ties fracturing constitutes the same phenomenon in family farms as it does in capitalist family firms. Families now face the same pressures that they did hundreds of years ago. This is not as a result of crisis but a continuous issue, whereas, incidents such as BSE or the foot-and-mouth outbreak are producers of novel change because of their singular nature.

Assumptions and Research Question

The core belief tested and underlying the research is that farming in the United Kingdom is at a point of major change or phase shift. What this study will document is an industry at a point of significant transformation, a point of change affecting every aspect of the farming industry and indirectly impacting on rural life in general.

The primary research question was, simply stated: *Is British agriculture at a point of major transition?*

Themes of complexity run through this thesis and set the foundations for the examination of crisis in the farming system. In essence, this thesis illustrates how complexity thinking and narratives can be used as tools to describe and illuminate a

sense of crisis in the farming community. The notion of crisis will be developed through an understanding of how people are living and experiencing events and how the elements of crisis have impacted upon their own lifeworlds. The farming world, like many other complex situations, can be described and understood in terms of a system. There are inputs, processes and outputs – but farming is also 'open' to influences from other surrounding systems (such as society, economy, politics, nature and the biosphere) which govern its parameters and cause change. These changes, both endogenous and exogenous factors, govern the path the industry takes in the present and future, but this path requires knowledge of the historical journey that farming has made to date.

It can be said that complexity is the "...domain between linearly determined order and indeterminate chaos" (Byrne, 1998, p1) and provides a means of understanding social and organisational features of the world which appear to be more complicated (Wheatley, 1992; Byrne, 1998). Complex systems develop as a result of "...rich interaction of simple elements that only respond to the limited information each of them are presented with" (Cilliers, 1998, p5).

Even minute alterations in the state of the system will, and can, feed back and affect other present factors. This altered state again feeds back into the system, producing yet another, different condition. Numerous small changes in factors over an extended period can promote differences between seemingly similar initial systems leading to the emergence of change. As a result, while conditions may appear similar, fluctuation or even small differing details will produce very varied effects (Byrne, 1998; Haynes, 2003). Feedback reveals the interaction which exists between variables (illustrating the non-linear evolution of the system) and so illustrates the system dynamics at work. As a result, external circumstances promoting change are just as important as the internal condition (Haynes, 2003).

Complexity theory offers a perspective on the role of time and history in determining emergent properties of complex systems; this is related, in particular, to the feature of nonlinearity. Understanding the historical development of British Agriculture is fundamental to fully grasping the interactions and relationships present in the

contemporary industry: this again makes the use of complexity theory in the thesis essential as a tool for further understanding.[4]

The history of an event or development (the lowland mixed farming system in the case of this thesis) is also of great importance to complexity. What is currently happening in a particular system has resulted from changes and responses to conditions in the past. Only by reflexively addressing these changes over time can we fully understand the existing observed complex system (Byrne, 1998; Coveney and Highfield, 1995).

A representative case study sits at the heart of the thesis. The farming system as a whole is too huge and too complex to be appropriately undertaken as part of a doctoral thesis. In addition, narrowing the field down to a familiar group of farming individuals involved in mixed County Durham lowland farming gave me greater scope with which to investigate the notion of change. This case is set in particular circumstances and exists in a specific context. It is not a typical case; it is fairly general for much of the UK farming world; away from the Less Favourable Areas (LFAs) of hill and uplands and away from the big grain barons of the South East of England. While the individual cases and narratives of those in the study are personal to those interviewed, the themes that emerge, I believe, are universal and should be acknowledged.

I should also like to address my use of the titles ‘farmer’ and ‘farm woman’ (or ‘farmer’s wife’) throughout this monograph. I believe there is a valid justification for this. I define ‘farmer’ as a masculine role for several reasons. Until very recently, even during the process of mechanisation, farming has required heavy physical labour. While women have always worked in agriculture, jobs such as calving a cow, stacking bales by hand and even working early machinery such as threshers required great physical

[4] Two social theorists that espoused the importance of history in shaping present human activities were Karl Marx and Max Weber. Swingewood (1984) explains that Marx's writings interpreted history in terms of a class struggle for survival, which determines everything else in human affairs. Focusing on class, Marx’s interest was in the historical basis of inequality, and specifically inequality under capitalism. Marx argued that the capitalist system's tendency towards crises produced the necessity of inequality (Ritzer & Goodman, 2003). In other words, economic crises such as recessions and depressions are an integral feature of capitalism.

strength. Women in agriculture have traditionally provided a more supportive role: raising children, working in the dairy, and providing additional labour at the potato harvest or lambing time, and there is a degree of socialisation of gendered roles within farming communities which is occurring even today (this is discussed later in Chapter 6.4 and again in the conclusion, Chapter 7). The highly mechanised nature of farming in the twenty-first century means that the necessity for this gendered division of labour, on the grounds of physical labour, has been removed. Indeed, at 5'4" and 9 stone I can do all the work that my much taller and much stronger father does by virtue of my skills on the versatile pieces of farm machinery we employ in contemporary farming. That said, there is still a massive imbalance with mostly men holding the role of farmer as the patriarchal structure of the industry and farming society may take time to catch up with this change.

Setting the Scene

I feel at this point a brief explanation of the history and nature of mixed farming will be beneficial to explain in more detail my chosen study area and how it 'sets the scene' for the chapters which follow.

Mixed farming reached its apogee in the period of Victorian prosperity, and indeed was more or less synonymous with what the Victorians called 'High Farming'. It had taken, however, some two centuries for this type of farming to develop. On the medieval farm, livestock and crops were kept, but their production was not integrated (Grigg, 1989); in the Victorian period most farms raised both crops and livestock for sale, but their production was organised in order to be mutually beneficial (Jones, 1974).

First, more than one product is for sale: strictly speaking, specialised farming implies only one product mixed or diversified farming two products or more. In practice the production on most English farms has always been far higher; in East Anglia in the 1930s a majority of farms produced ten or more commodities and sold at least five off the farm (Grigg, 1989). This diversification had several advantages. Where only one product is sold off, the farmer is at great risk both from price fluctuations and the hazards of climate and disease. If livestock commodities such as eggs, milk and meat

are produced, income does not come once a year as it does with crop monoculture, but at regular intervals. Keeping livestock and growing crops also evens out the use of labour. Crops have seasonal peaks in spring and late summer and early autumn; keeping livestock utilises labour in the slacker periods of the year.

But there is more to mixed farming than the diversification of production. Central to most definitions of mixed farming is that such farms produce both crops and livestock, and that the two enterprises are integrated. This is reflected in the land-use pattern. Most mixed farms have some permanent grass – about one-third – and arable, which occupies between one third and two thirds of the total area. However, because in the past temporary grass was an important part of the arable acreage, there was generally an approximate balance between grass and crops (Astor and Roundtree, 1946).

The practice of keeping crops and livestock was mutually beneficial. Arable land grew crops to feed to animals; temporary grass provided hay and grazing, and the clover in the sward added nitrogen to the soil. Fodder root crops could be fed in situ to sheep or lifted and fed to cattle kept in stalls (Kirk, 1974). The animals provided a liberal supply of dung and farmyard manure, which maintained the yield. Cereals, roots and clover were grown in rotation and this allowed thorough weeding during the year in roots and limited the spread of plant disease. By-products were utilised, thus straw could be used as litter in stalls as the basis for farmyard manure and as a feed, while poor quality grain could be fed to livestock, as could sugar beet tops and poor quality potatoes (Carslaw, 1935).

Structure and Contents

This thesis combines a documentary and literature-based review of the present situation of mixed lowland farming in County Durham with an interview and autoethnographic investigation of actors' responses and attitudes to that situation. Data collection in this study was not solely reliant on the accounts of individual farmers and country business people, and also utilised a diverse range of source data, both primary and secondary, to add depth and breadth to the work.

The dissertation has been divided into seven chapters. Chapter 2 provides the historical context. This chapter will 'set the scene' of the farming industry, and place the research in a historical context to allow a reflexive analysis of the data. The chapter deals with the evolution of farming from a pre-capitalist, highly labour intensive, inefficient and simple semi-subsistent system to the low labour intensive, 'high tech', industrial agriculture of today. The main argument from this historical investigation is that despite the extensive technological and social changes detailed, the actual practice of farming – of making a living from the land – has changed very little. This chapter therefore sets the scene for determining which transition(s) may occur in agriculture in the short, medium and longer terms.

Chapter 3, entitled *British Agriculture as a Complex Socio-Production System*, puts forward the case for using complexity thinking to analyse notions of change within mixed lowland farming in Britain. This chapter looks, in detail, at the social, economic and ecological systems within farming and notes the cyclical and seasonal nature of the industrial process. From this analysis and a comprehensive look at the complexity paradigm, a case is constructed to use the theoretical complexity perspective as a means of better understanding what is occurring in farming at a point of change (phase shift) initiated by internal and external system stressors.

Chapter 4, *Methods*, provides a detailed account of and justification for the methods adopted in this thesis. This combines an in-depth qualitative examination of local farming experiences in County Durham through semi-structured interviewing, an autoethnography and the use of quantitative data in the form of official statistics to corroborate and validate findings and emergent themes.

Chapter 5, entitled *The Crisis That Destabilised The System*, investigates the notion of crisis as it would affect a complex socio-production system of mixed lowland farming. The foot-and-mouth disease outbreak of 2001, the BSE epidemic of the late twentieth century, the strength of Sterling, and the influence of the supermarkets and the price of agricultural land are analysed in terms of their contribution to the change in farming livelihoods in Britain. This is, in effect, another context chapter and provides an opportunity to frame the issues that will be discussed in the following *Agricultural Voices* chapter.

Chapter 6: *Agricultural Voices* documents the views, feelings and attitudes of the individual farmers and country people who took part, and is a key section in this study. An extended introduction to this section allows for the exploration of appropriate thematic material. The first *Voices* section, *Agricultural Voices 1: The Nature of Farming*, details the farmers' attitudes to issues of hazard, uncertainty and change within their industry. This is followed in *Agricultural Voices 2: BSE and FMD* which discusses the respondents' feelings regarding the major disease outbreaks that hit and shook the industry, namely BSE and foot-and-mouth disease (FMD). *Agricultural Voices 3:The Decline of Farming* deals with the farmers' own reflexive evaluation of the trajectory of the industry to date, whether farming has ever had a 'Golden Age', respondents' views on the European Dictat, UK Government policy, union influence and the impact of the supermarkets.

Agricultural Voices 4: Changing Attitudes and the Future deals with the most contemporary issues facing the individual farmers and how this affects the farming industry as a whole. It does so by examining the views of respondents on: their community networks; family and friendships ties within the farming community; farming as a business versus a lifestyle; and the futures they predict for themselves and the industry as a whole.

This chapter ends with *Agricultural Voices 5*: *Autoethnography*, which details my own experiences of farming as well as my current struggles to buy a farm and begin my farming life with my husband. This autoethnography provides a different perspective to complement the theoretical discussions, as well as allowing me to acknowledge my own place within this study and within the farming system in this research.

Finally, the dissertation concludes with Chapter 7 by answering the question posed in the introduction: *'Is British agriculture at a point of major transition?'* It will also address questions which emerged in the 'doing' of the research (arising from a Grounded Theory Lite approach). The chapter discusses the case for farming as a complex system and the exogenous and endogenous factors involved in the changes which have been noted in the study. There is also a discussion of which changes are novel and which are incremental, and the chapter concludes with a *Synthesis* section which discusses the need in complexity theory to view the whole system in order to acknowledge all the facets and their individual and cumulative impact.

2. THE DEVELOPMENT OF THE AGRICULTURE INDUSTRY: HOW DID AGRICULTURE BECOME A COMPLEX SYSTEM?

Introduction

The purpose of this chapter is to place contemporary farming issues in context by examining British agriculture's development over time. Doing so highlights certain timeless themes which occur in farming and the wider agriculture system regardless of historical period, highlighting recurring issues. The historical assessment goes back as far as the mid-eighteenth century: this is the point in the development of the agricultural system when mixed lowland agriculture, that forms the focus for this study, began to develop and therefore charts the trajectory of the contemporary farming world. The chapter is intended to provide an understanding of the history of the British farming industry that not only sets the scene but also allows for the reflexive assessment of contemporary issues required in later chapters. This assessment is carried out by applying complexity theory to establish an argument for viewing agriculture as a complex system based on the representative case study of mixed lowland farming in County Durham. The discussion includes an examination of crisis within a particular farming system and the main factors which have promoted change.

This thesis contends that the system of lowland mixed agriculture is complex, combining human and biological elements which are characterised by emergent properties and non-linear dynamics; through the processes of positive and negative feedback the system is either stabilised or changed. Small events can lead to large changes, but large incidents can effect a complete alteration in the system's trajectory and produce ultimate change or phase shift. This is no more apparent than in some of the contemporary crises in British agriculture.

The Development of the Agriculture Industry is semi-chronological and deals briefly with the economic and social issues connected with agriculture from the first agricultural revolution of the mid-eighteenth century and on to the Second World War, and the period of food insecurity that immediately followed. The chapter then goes on to address the most recent agricultural history, setting the scene and bringing forth the

prevalent issues within the industry at the point when I contend that the transitional phase/crisis/instability within farming occurred. This is completed by a brief explanation of the position of County Durham and the North East of England in the development of farming in Britain; the purpose of this discourse is to place the history and nature of North East farming within the context of the wider farming community and to further justify my use of the area for the research population.

Social and Economic History

The agricultural revolution in England is thought to have ensued after 1750, due to three major changes: the selective breeding of livestock; the removal of common property rights to land; and new systems of cropping, involving turnips and clover, with the expanding population during this period largely feeding on home produce. One reason for increased production was the rotation of turnips and clover, among other new farming systems. Nitrogen is an essential element to plant growth and is especially necessary for cereal crops which strip it from the soil, making it progressively less fertile. Clover contains, in its root structure, nodules holding nitrogen-fixing bacteria. These bacteria 'fix' atmospheric nitrogen and incorporate it back into the soil, making it available to crops which follow a clover lay. This programme of crop rotation, involving clover, improved the quality of the soil and allowed a greater volume of food to be produced from the same area of land. Further improvements in productivity came from the land reclamation from the seventeenth century, for example the draining of the fenlands of eastern England. Other examples include the clearing of woodland and the reclamation of upland pastures. The mix of crops also changed, low-yielding types (such as rye) being replaced with higher-yielding types (such as wheat or barley) and more productive arable land replacing permanent pasture. Wheat yields increased by around a quarter between 1700 and 1800, and then by around half between 1800 and 1850. The early nineteenth century was a time of crucial change. Key to this was nitrogen, which it is now known to have been the 'limiting factor' in maximising cereal yields prior to the 1830s (Overton, 1996). Available nitrogen was conserved by feeding cattle in stalls, collecting nitrogen-rich manure and spreading it on the land. Nitrogen was also added to the soil using legumes which convert atmospheric nitrogen into nitrates in the soil, and are available to crops for the following few years.

This new system of farming was remarkable because it was sustainable; the output of food increased dramatically, without endangering the long-term viability of English agriculture. However, just as a sustainable agriculture was achieved, the development of chemical fertilisers and other external inputs undermined this sustainability. An essentially ‘organic’ agriculture was gradually replaced by a farming system that depended on energy-intensive inputs and the exploitation of fossil fuels.

The High Farming period, 1850-73, is one of massive technical progress, in which agriculture, like most other industries, enjoyed a generation of prosperity. The basis of that prosperity was a shift in mixed farming practices from grains to livestock production. This occurred due to changes in relative prices and a rising demand for meat and dairy produce. Collins and Jones (1967) describe this as ‘the high water mark of the Agricultural Revolution'. Here output and productivity increased greatly resulting from increasing expenditure on manures (fertiliser), feeding stuffs, and barn and harvesting machinery. This was complimented by an improving understanding of crop and animal nutrition based on the theoretical work of Liebig and the practical experiments of Lawes and Gilbert at the Rothamsted research facility.

Despite its technical achievements, this 'Second Agricultural Revolution' of the mid-nineteenth century may have failed to live up to expectations and would appear to have lost momentum long before the onset of the Great Depression. Agricultural growth rates between 1850 and 1875 averaged, according to Collins (2000), 0.8 % per annum at most; substantially lower than in the previous quarter century, but not dramatically higher than growth rates in the Great Depression. The reason for this, Collins (2000) contends, was as much economic as technical; up to the Second World War, large sections of British agriculture were trapped on a ‘technological plateau’, and were caught up in a vicious circle of diminishing returns, static output and low profits (Collins and Jones, 1967; Thirsk and Collins, 2000).

Rural Depopulation

Between the censuses of 1871 and 1901, the number of individuals engaged in agriculture fell by 346,000, or nearly a third of the farming population. While the

numbers of both men and women employed showed modest increases in the following census of 1911, they fell again thereafter (Collins, 1981). Collins also suggests there was a significant fall – up to 75 per cent – in the number of women and girls in agriculture which was caused by a number of changes that were occurring in the countryside. In particular, the mechanisation of what were previously women's tasks such as the hoeing of root crops, haymaking and the binding and 'stooking'[5] of the sheaves behind the reapers made women to some extent surplus to requirements,, and by the end of the eighteenth century, the mass of women helping on farms had disappeared (Collins, 2000).

Mechanisation also meant fewer male farm workers were needed. The labour could be carried out by fewer workers operating new specialised machinery such as reapers, mowers and threshers. Redundant male farm workers took town professions involving horses such as that of coachmen, grooms and carters and some found employment in town gas works or water works, the police force, the army, the railways and the post office. Many larger farmers, seeking to cut costs, were employing fewer regular hands and relying more on casual labour. In addition, the switch of some two million acres of wheat and barley land to pasture between 1878 and 1903 again reduced local labour demands substantially.[6] However, the late nineteenth century saw a significant growth in dairy farming, which was almost exclusively a family operation.

The large outflow of farm workers exerted an increasing pressure on farm wages, although this was offset by the decline in arable acreage as grain prices fell. Money wages, although still varying widely from one region to another, and particularly between the high-paid north and the low-paid south, advanced in the 1870s (when the first large-scale unions of farm workers ran their brief course, which is discussed later in this chapter). These generally decreased slightly in the 1880s.[7] Nevertheless, money wages do not tell the whole story. In addition to the cash payments, labourers had such benefits as free or cheap cottages, free fuel, potato patches and produce given to them

[5]*Stooking* is a colloquial term for the stacking of any form of agricultural produce, used within the agricultural community throughout England and Scotland.

[6] By approximately 70,000 in total (Mitchell and Deane, 1962, p489).

[7] Between the early 1890s and 1907 the rise resumed, with some regions showing substantial gains, in some cases by as much as 2 shillings a week. This sounds insignificant enough, but in the worst affected areas (such as west midlands, southwest and the southeast) it represented a rise of 17-20 per cent (Mitchell and Deane, 1962, p490).

by the farmer or sold at a reduced price to subsidise his workforce. In some districts, the illegal allowance of a daily supply of beer or cider was also occurring. On the other hand, farm workers lost pay through illness and accidents, and were liable to loss of earnings in bad weather, with a proportion of farmers paying no wages when there was heavy frost, snow or rain. Towards the end of the century, however, a rise in earnings was accompanied by a substantial fall in the prices of food, clothing, boots and simple household necessities: the articles most regularly consumed by farm workers and their families (Burnet, 1981).

World War One

The First World War began without any immediate effects on agriculture; however, the needs of the army soon began to weaken the industry's resources. Skilled farm workers, together with estate workers and village blacksmiths, wheelwrights and carpenters, were allowed – indeed encouraged – to join up, and horses were taken from the stables of manor houses and farms to satisfy the demand for remounts and haulage animals. It was not until almost the end of 1916 that indiscriminate recruiting was seen to be a mistake, and the urgency of expanding home production of food was appreciated.[8] The harvest in North America was poor that year, but a more immediate problem was the effect of the shipping losses that threatened to starve the country of food and essential war supplies. At the outbreak of war, Britain was importing four fifths of its cereals, two fifths of its meat and three quarters of it fruit, to say nothing of all the sugar and colonial produce and large proportions of other foodstuffs. The German U-boats found the slow, unarmed merchant vessels easy targets, and although the belated introduction of convoys guarded by war ships reduced the losses, shortages of food, fuel and other vital imports had a critical effect on the fighting of the war.

Soon after the war ended, the Government removed the subsidies and farmers were abandoned to the market once again. Cheap foreign meat and grain flooded into Britain once more. This resulted in the price of wheat falling sharply, bringing economic hardship for arable farmers, who felt betrayed considering the demands made upon

[8] By 1916 the conventional labour force had fallen to 91 per cent of the pre war level, and subsequently declined to 89 per cent (Mingay, 1990, p 200)

them during the war. Rents, which had risen during wartime, stayed high whilst farm income tumbled. Wheat production slumped to an all-time low by 1931 (Philips, 1989), whilst the majority of people welcomed a cheaper food bill. These factors combined to force many farmers out of business while others drastically cut the wages of their farm workers. This provoked a strike of farm workers in the spring of 1923.[9]

The Great Depression of the 1930s

At the end of the war, farmers were prosperous and farm workers somewhat better paid. Agriculture had expanded and the country was a little less reliant on imports, with home production now capable of feeding the population for 155 days in the year instead of the 125 days at the time war broke out (Martin, 2001). In addition, the Agriculture Act of 1920 – though attacked by the leaders of both the farmers and the farm workers – seemed to promise a peace time era of greater stability and prosperity than the countryside had known since the 1870s.

Farming suffered greatly during the years of the Depression in the late 1920s and early 1930s. Many arable farmers gave up growing grain and tried livestock farming, dairying or poultry, diversifying in ways seen today. It was often more profitable to leave the land uncultivated than trying to grow crops. The countryside appeared neglected with weeds and thistles growing in fields that had formerly grown corn. Some farmers gave up farming completely, especially the small farmers who had bought their holdings with mortgages and were now burdened with large debts on properties which they could not sell and which were worth less than the money they had paid for them. 'For sale' signs were a common sight in the 1920s and early 1930s: a problem not confined to Britain as many of the farmers of the American prairies also saw their income plunge. One of the few attempts to help solve the crisis in farming came in 1924, with a government attempt to establish sugar beat farming in Britain. Subsidies were granted to farmers who grew sugar beat. This gave the arable farmers of eastern England a welcome alternative cash crop to corn.

[9] In the end the farmers backed down, guaranteeing their farm workers 25 shillings (£1.25) for a 50-hour week and an assured, weekly, half-day holiday (Grida, 1994).

The collapse of the New York Stock Market in 1929 marked the start of a worldwide depression and a rise of worldwide unemployment. World wheat prices fell sharply – dropping by 50% in the space of two years. In 1931, the new British Government took the first constructive steps to aid the farmers. The old principle of Free Trade was abandoned and quotas were imposed on foreign imports, restricting the availability in Britain of cheap foreign food. In return for this protection, the Government took steps to make British farming more efficient with the aim of lowering prices and therefore lowering the levels of tariffs on foreign imports. This resulted in the implementation of the Agricultural Marketing Acts of 1931 and 1933, which set up the Milk Marketing Board.

The main effects were that dairy farmers had to sell to a Milk Marketing Board in return for a share of the profits made by the board (based on the amount of milk sold). The Milk Marketing Board sold the milk at a fixed price to the consumer. This was based on the fact that the Milk Marketing Board held a monopoly which meant that there was one price for milk throughout Britain. Fixed prices gave farmers a steady, regular income, and prevented them from trying to undercut one another. The Milk Marketing Board also promoted the sale of milk with advertising campaigns: in the 1930s, the slogan "Drink daily your protective pint of milk", and after the Second World War, "Drinka Pinta Milka Day". The Milk Marketing Board was also able to insist on uniform standards of cleanliness and hygiene. Hand-milking was replaced by the electric milking machine, which reduced the labour requirements and ensured a higher quality of milk for the consumer. It meant that dairy farmers sacrificed some control over their farms in return for a guaranteed income and it reduced competition. In the end the consumer paid more for food.

Other marketing boards with similar powers to restrict and control production included the Meat Marketing Board, the Egg Marketing Board, the Potato Marketing Board and the Bacon Development Board. The Wheat Act of 1932 gave farmers a guaranteed price for their wheat followed in 1937 by similar guarantees for barley and oats. Meat imports were controlled and reduced by as much as a third. Preference was given to food imports from the Empire and Free Trade was abandoned.

This reversal of policy was to affect agriculture for the rest of the century, since the Government now acknowledged that it had a part to play in controlling the level of food

prices in peacetime as well as at a time of war. This resulted in a small but significant swing away from dairying and livestock farming back to arable farming. By 1939, British farming had begun to recover. Farmers were guaranteed an income from their land; farm values increased and wages increased; and farm workers diminished in numbers during the inter-war years[10] – the consequence of farmers' reduced demand for labour, low wages and the attractions of better pay and conditions elsewhere (Brown, 1987). It is not surprising to find that between 1921 and 1931 numbers of bailiffs and foremen reduced by a quarter, workers with horses fell by nearly two fifths, while workers with cattle increased somewhat and the number of shepherds fell only slightly. Low wages and diminished numbers of jobs accompanied an increase in hours.[11]

Second World War

The outbreak of war in September 1939 threatened food supplies, especially since the early stages of the war were mainly fought at sea. German U-boats targeted food convoys bringing North American grain to Britain. Again, the Ministry of Agriculture and Fisheries took steps to increase food output from UK land; the statistics show that they achieved significant results.[12] The emphasis was on increasing productivity: particularly of foods, which provided the maximum output of energy. More people could be kept alive on cereals and potatoes than on milk, butter, cheese and meat; so the emphasis was placed on growing crops rather than rearing livestock. The Government, gave this high priority, allocating scarce resources to make the most of the land: fuel for tractors and combine harvesters, and grants to drain the low-lying fields and bring new land into cultivation. Government scientists devised and fostered the development of fertilisers, pesticides and weed killers to help increase crop yields. The high subsidies

[10] The 685,000 regular male workers of 1921 had fallen to 511,000 by 1939 (Brown, 1987).

[11] By 1932 an increase, generally of two hours a week, had been instituted in 15 English and Welsh counties; and in eight counties the minimum weekly wage for the general farm worker had fallen below £1, 10s (Whetham, 1978).

[12] In 1939, British farmers satisfied only 30% of Britain's food requirements. By 1945, that proportion had increased to 80%. Farmer incomes grew fourfold, from £55 million in 1938-9 to £230 million in 1943-4, and twice as many tractors were being used at the end of the war as at the beginning (Martin, 2001).

paid by the Government for these improvements made it economically viable to cultivate marginal land, which had been uneconomical before the war.[13]

As in the First World War, labour was a major problem. To an extent, machinery could be substituted for labour, but skilled labour was in short supply as numbers of young farm workers were mobilised in the Territorial Army at the outbreak of war and more of them were called up as the needs of the forces became pressing. Some farm workers were mistakenly allowed to change occupations before the direction of labour was imposed, and as a necessity, farmers were required to rely on other kinds of labour. The Women's Land Army played a much bigger role in the Second World War than in the First,[14] with later recruits directed to munitions factories. The most common farm tasks of the Women's Land Army were milking, working in the fields on the labour-intensive sugar beet crop and clearing derelict land. More than 50,000 prisoners of war were used for heavy work; farmers also had to rely on casual workers and part-timers, village women, school children and adult volunteers from the towns. Schools arranged their half-term breaks to allow for the employment of children in the lifting of potatoes, as they had in the First World War. In 1942, 50,000 troupes helped gather in the grain harvest, along with 250,000 school children and 100,000 adult volunteers who lived in specially organised harvest camps. The farmers themselves worked longer hours and greater use of machinery was an important factor in raising output per man hour. Yields increased due to more intensive use of fertilisers, especially a greater use of new artificial varieties.[15]

After the First World War, farmers felt that the Government had betrayed them when their efforts to increase productivity were rewarded with the scrapping of the guaranteed prices policy in 1921. In 1945, British farmers were increasingly sceptical that the new Labour Government, with its electoral support mainly lying in urban areas, would be any more sympathetic to farming interests. Cheaper food could be produced in North America and, by 1947, 75% of Britain's meat was being imported (Holderness, 1985). However, there was a different type of price being paid for food imports at this time.

[13] By the end of the war, arable land in Britain had increased by 50%. Farmers in 1945 were growing twice the amount of cereals and potatoes produced in 1939 (Thirsk and Collins, 2000).

[14] Numbers rose from 19,000 in 1941 to a peak of 87,000 in 1943 (Brown, 1987, pp 136-7).

[15] By 1943-44 three times as much nitrogen was being used and twice as much phosphate as in pre-war days (Brown, 1987, p139).

Every pound spent on foreign meat and cereals took money away from Britain and added to the country's growing financial crisis. The need to redress the balance was noted in 1947, and the Labour Government took decisive action to persuade British farmers to increase the amount of home-produced food. In return for governmental control of the industry, farmers were given guaranteed prices for their produce. Demand for food was still high and food rationing was still in force. One Labour Minister, Stanley Evans, even went so far as to say that the British farmer had been 'feather-bedded' (Holderness, 1985), a derogatory phrase which is still used today to mean cosseted and over-protected.

By then subsidies to farmers were running at over £300 million a year. Nevertheless, the British Government, mindful of wartime food shortages and the outflow of currency to pay for foreign food, felt that the price of these subsidies was more than justified. Dependence on foreign food would have reduced the value of the pound even further and affected the ability of the country to purchase other much-needed imports, such as oil and vital raw materials for manufacturing industries. This is why the Conservative Government, which came to power in 1951, continued the same policy. The only difference was that many of the controls on farming and food production were removed, including food rationing. Since farm produce could be freely sold, the Government substituted a new method of ensuring that the farmer got an adequate return for goods produced (Martin, 2001). Deficiency payments were made to farmers to bridge any gap which existed between the market price and the price guaranteed by the Government. In this way, cheap foreign food could be imported without harming the British farmer. The main exception to this system of deficiency payments was milk, which was still supported by the Milk Marketing Board.

In time, government policy on guaranteed prices changed as farming became more efficient. As the cost of subsidising farming increased, the Ministry of Agriculture began to restrict its support on farm prices. There was to be a limit to the public funding of agriculture. This new efficiency also came as a result of government action. The Agriculture Act of 1957 gave grants to help farmers erect new buildings and make other improvements to their farms. The increased prosperity of the farmers encouraged manufacturers to develop new products to increase productivity (Martin, 2001). New machines were devised and new fertilisers and new strains of crop were introduced. British farming between 1945 and 1980 underwent a revolution every bit as drastic and

as effective as the Agricultural Revolution between 1700 and 1850. Farm output shot up. Fields, which had produced two to three tonnes of wheat per hectare in 1945 (Holderness, 1985), were producing five to eight tonnes per hectare in the 1980s. Overall, wheat yields doubled between 1950 and 1980 (Holderness, 1985). Milk yields also rose from an average of 2,000 litres per cow to as much as 5,500 litres in some cases: double the output achieved 30 years earlier (National Dairy Council, 1996).

The total number of farmers in Great Britain remained relatively static at between 260,000 and 270,000 from the 1920s to the 1960s, and by 1982 they still totalled 258,869, when both full-time and part-time farmers, together with partners and directors of farms are included.[16] The figures show, however, that over five years in 1978-82 the number of part-timers was increasing while those of full-timers was falling (Agricultural Statistics of the United Kingdom, 1982). Part-time farmers (which included so-called 'hobby farmers') could of course supplement their farm incomes from other sources, and no doubt many of them were very glad that they could do so: they could not have stayed in farming otherwise. However, the average income of medium-sized units of 150-200 acres worked by full time residents was rising considerably. Before the Second World War it was only around £250-300 a year.[17] Farms also tended to be better managed and run, partly because farmers now had access to a wealth of informed technical advice from the sales representatives of the big fertiliser and animal feed manufacturers, from farming magazines, radio and TV broadcasts, and due to attending courses at farm institutes and agricultural colleges. Farming itself was more scientific. Microcomputers were increasingly applied to the study of farm problems: controlling the quantity and quality of feed to dairy herds, allocating fertilizers, controlling farm accounts and maintaining records. The Government also played its part in the development of the new scientific agriculture. The Agricultural Development Advisory Service (ADAS) conducted various experiments, the Ministry of Agriculture ran experimental farms such as Cockle Park and Kenton Bar in Northumberland, and gave farmers invaluable economic help as well as scientific advice.

[16] Required due to changes in the type of Agricultural Census data that was being collected by MAFF.

[17] By 1955-56, the figure had risen to an average of £1278 on a unit of 193 acres. By 1966-8, the average income had increased to about £2000 rising steeply to reach £6000 in 1972-74, and £9500 in 1980-81 (Census Data, Holderness, 1985 pp 7, 10-11).

The many benefits of modern technology have included:

- The development of chemical sprays, weed killers and pesticides to prevent diseases and kill insect pests;
- The development of high-yielding strains of wheat, barley and other crops;
- The introduction of many new fertilisers – to the extent that many arable farmers no longer rotate their crops but continue to grow cereals year-on-year in the same fields;
- The development of new techniques in veterinary medicine- not only prolong the lives of animals, but also artificially stimulating the production of fatter animals;
- The development of more powerful tractors and of many new machines capable of picking peas, potatoes and sugar beat, ploughing several furrows at a time, making huge round bales of hay or straw, making silage from green grass, spreading manure and fertilisers, and spraying chemicals;
- The bringing of mains water and electricity to outlying farms so that farming communities no longer feel isolated from society (Holderness, 1985).

More Recent History

Of the problems faced by farming over the centuries, those previously discussed have been of a market-driven nature: a glut of production or a failed harvest, a war preventing imports or excessive cheap imports have resulted in problems for the producers. In recent years, as I shall now argue, there have been additional factors in the market equation: the media and its effect on food scares and the harnessing of public opinion.

As has already been discussed, during the eighteenth and nineteenth centuries there were enormous changes in food production and supply accompanying the Industrial Revolution. The depopulation of the countryside and the urbanisation of the new working class established a new style of 'human/food relations'. For the first time very large numbers of people became increasingly absent from sites of food production. Burnett (1989), Tannahill (1988) and Wolf (1982) all describe how the British

population became dependent on sources of food not only from outside the new cities, but also from outside Britain itself.

While the new food system provided nourishment for the cities, it also created new cultural and economic issues for food safety. In forcing the majority of the population into a reliance on and trust of 'middle men'– the urban food suppliers – a crisis of food corruption emerged. This resulted in such practices as adding brick dust to cocoa, alum to bread, cyanide to wine and vitriol to beer, in a cynical plot to maximise profits by diluting expensive agricultural commodities (Tannahill, 1988 and Burnett, 1989).

Food safety, quality and urbanisation have had a long and frequently unhappy history. By contrast, the scientific approach to food production and processing, often criticized today due to contemporary concerns about GM food production, for example, was the means of alleviating the crisis in food corruption associated with the Industrial Revolution. During the food corruption crisis, the role of scientists was seen as that of 'public saviours', providing a basis for the regulation of industrial food practices: "Science/culture made food safe. Paradoxically, concerns for food safety were soon derived from the opposite. The increasing involvement of scientifically sanctioned technologies from irradiation to genetic modification is now the source of distrust. The scientist, in some quarters, has changed from cultural hero to villain" (Burnett, 1989, pp 216–239).

Since the Second World War, successive Administrations have looked to increase domestic food production in order to reduce reliance on imported food, and to promote rural economies. This policy was developed by providing guaranteed returns to farmers under the Agriculture Acts of 1947 and 1957. Simultaneously, the Government extended the provision of advisory services to farmers, funded research and development, and provided grants to encourage investment in more effective and efficient production systems. Statutory bodies promoted the marketing and distribution of certain agricultural products.

These measures helped bring about significant increases in crop yields and livestock production from the late 1940s onwards. In the livestock sector, productivity gains resulted from genetic improvement of existing breeds, the introduction of new breeds from other countries, improved nutrition and reductions in disease and parasitism.

After the UK joined the European Economic Community (EEC) in 1973, there were further increases in the UK's agriculture output, not only in response to various Common Agricultural Policy (CAP) support regimes but also because of the development of exports to other Member States. Reforms to the CAP since the early 1980s, such as the introduction of milk quotas in 1984, sought to curb the production of some surplus agricultural commodities (National Dairy Council, 1996).

From 1986 to 1995, the UK was nearly 60 per cent self-sufficient in food and feedstuffs (National Dairy Council, 1996). By contrast, it was only 50 per cent self-sufficient in the 1960s, before the UK joined the EEC. Between 1986 and 1995, the agricultural workforce declined as a result of changes in farming practice in the form of greater mechanisation and a shift towards larger holdings which were more productive. In 1986, 11% of holdings accounted for 55% of output, while the smallest holdings, making up 44% of farms, produced only 3% of output (DEFRA, 2002).

In the mid-1980s, farming in the UK was relatively prosperous. Government-funded advisory was available, as were veterinary and marketing services that had long assisted farmers to increase output, and to improve animal health and welfare. It had a long tradition of financial support from both the UK Government and the EU, in the form of market support schemes and compensation payments. Between 1986 and 1995, as well as coping with the impact of the BSE epidemic, farmers had to come to terms with significant changes to their traditional relationship with government. In 1987, the Government largely withdrew the provision of free advisory services to farmers, cut back near-market research and in 1993 abolished the Milk Marketing Boards. During this period, farmers also faced significant reforms of the EU's CAP. In particular, the CAP reforms of 1992 sought to reduce over-production of the main agricultural commodities (e.g., cereals, oil seeds, beef and milk) by cutting support prices and reducing access to intervention (MAFF, 1988).

This historical overview reveals that any contemporary ‘crisis’ of food safety has precedents that are a couple of centuries old. Case studies of margarine in the US (Ball and Lilly, 1982) and irradiated food have had disquieting effects on food consumers. Even before the foot-and-mouth (FMD) outbreak of 2001, UK agriculture was already in the midst of a serious economic recession that was having far-reaching social and environmental consequences on the structure of the countryside. While few sectors of

the industry were invulnerable to the financial situation, the Labour Government continued to impose regulations that exist nowhere else yet carry burdensome costs to UK producers. The industry was in crisis.

The gross contribution of agriculture to the economy continues to decline. A weak Euro has made exports to continental Europe more difficult and generally world prices for agricultural commodities have fallen. In the UK a succession of problems with BSE, swine fever and foot-and-mouth have hampered UK agriculture's ability to export with resultant pressure on prices. By 2001, total income from farming had fallen by 60% since 1996 (DEFRA, 2002) and many complete regions and sectors of the industry were generating zero or negative return (DEFRA, 2001). Contemporary surveys have shown that even medium-sized family farms in productive areas were no longer producing a net income. Small farms, and those in more marginal areas, were facing hardship and many existed only with income support. It was not just collapsing incomes that were forcing farmers and their workers out of the industry. With the increasing age profile for farmers – the average age was 58 in 2004 (DEFRA, 2005) – many were retiring and no longer being replaced by their sons and daughters, who apparently had little interest in a career in farming. The DEFRA (2005) EC Farm Structure Survey analysed this age profile and its change in recent years (1993 to 2004). Based on this DEFRA data, Figure 1, below, illustrates the increasing proportion of older holders (farmers) within the English population.

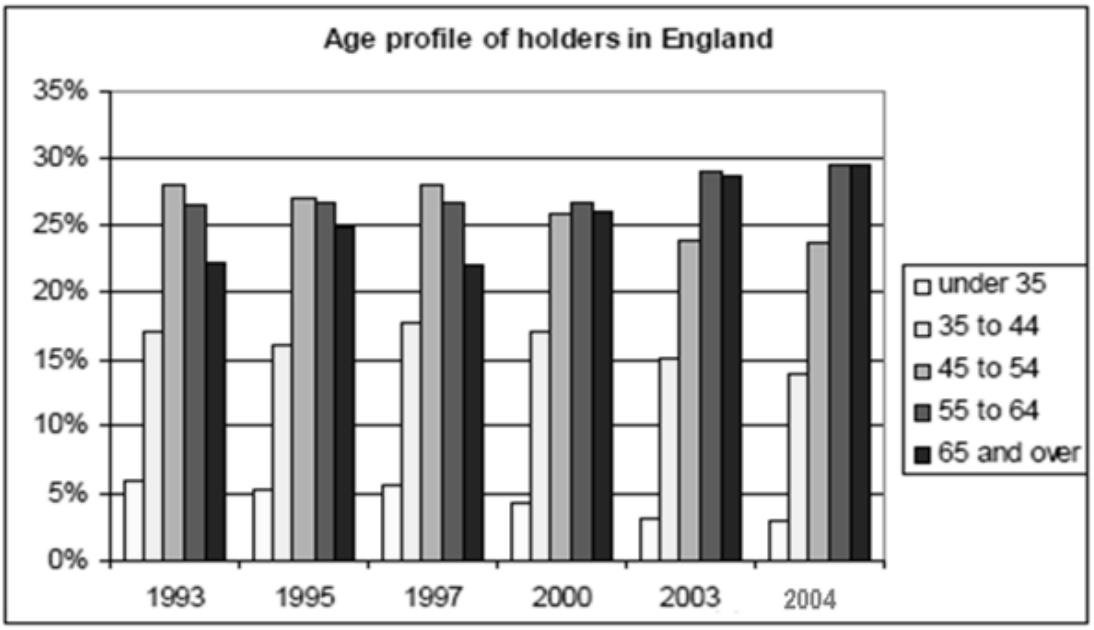

Figure 1: Graph to show the changes in age profile of farmers/holders between 1993 and 2004 in England. Source: DEFRA (2005) EC Farm Structure Survey; Focus on: Holders in the UK.

As a result of the declining workforce, skill shortages in many key areas were now developing (DEFRA, 2002). This was the highly destabilised position of the agriculture system immediately prior to the outbreak of foot-and-mouth in 2001.

The EEC

As has been discussed earlier, post-war British governments have encouraged agricultural output and rewarded efficiencies and growth; such policies provided guaranteed returns to farmers under the Agriculture Acts of 1947 and 1957. After the UK joined the European Economic Community (EEC) in 1973, there were further increases in the UK's agricultural output, not only in response to various CAP support regimes but also because of the development of exports to other Member States. Reforms to the CAP since the early 1980s, such as the introduction of milk quotas in 1984, sought to curb the production of some surplus agricultural commodities.

As has been discussed earlier; between 1986 and 1995, the UK was nearly 60 per cent self-sufficient in food and feedstuffs (National Dairy Council, 1996) compared to only 50 per cent before joining the EEC in the 1960s. In 1986, 11% of holdings accounted for 55 per cent of output, while the smallest holdings, making up 44 percent of farms,

produced only 3% of output. From 1986 to 1995 the agricultural workforce declined due to changes in farming practice, greater mechanisation and a move to more efficient extensive holdings (DEFRA, 2002).

EU membership, through the CAP, also influenced farmers' decisions on what to produce and the type and numbers of livestock to keep. The CAP supported EU agriculture in two ways: through commodity support measures and through measures to improve agricultural structures, including improvements in efficiency and environmental management. The aim of assistance to agriculture under the CAP, prior to the 1992 reforms, was to safeguard the level of producers' returns by supporting market prices at predetermined levels.

A number of devices were used. When prices of the main commodities (principally cereals, beef, butter and skimmed milk powder) fell below levels predetermined by the EU, the intervention authorities (the Intervention Board in the UK) bought the goods and stored them for later resale. Beef was frozen before storage in the Board's intervention stores, and stored carcasses could be held for a considerable amount of time before disposal. Intervention stocks were exported or disposed of within the EU, if this was achieved without disrupting internal markets. Exports to non-EU countries, either from the market or from intervention stocks, attracted export refunds to meet the gap between EU and world prices. Imports from outside the EU were subject to levies to ensure that they did not undercut the EU's support price (Department of the Environment, 1994).

By removing the discipline of market forces, the CAP support regime tended to encourage surplus production and the cost of support was heavy for the taxpayer. A series of initiatives were taken to redress the balance, a cause adopted by the UK Government as a main arm of its European policy. In 1989, and again in 1992, the CAP was reformed in an effort to control agricultural surpluses and thereby reduce the cost of support to the taxpayer. The strategy behind the reforms was to shift support from end prices towards direct income support (MAFF, 1996).

In addition to the general support mechanisms of intervention, export refunds and import tariffs, the EU provided two schemes to help maintain the incomes of beef producers: the Suckler Cow Premium Scheme (SCP), under Council Regulation (EEC)

805/68, which paid subsidies on suckler cows forming part of a breeding herd for rearing calves for beef production. Payment was made per cow using EU funds. Claims were limited by individual producer quotas and stocking density limits and the Beef Special Premium Scheme, introduced in most Member States in 1987, and fully funded by the EU. It was payable on male cattle only, and could be claimed twice for each animal, after it reached 8 months of age and again after 21 months. This scheme replaced the Beef Variable Premium Scheme, which ended in 1989/90.

In addition, since 1976, the UK had provided the Hill Livestock Compensatory Allowance (HLCA) scheme as a support measure for farmers in less favoured upland areas (i.e. where land quality was poor) to ensure the continuation of farming, maintenance of the population, and conservation of the countryside in these areas. The allowances were paid on cows that primarily produced calves for beef production, subject to stocking density limits; the EU funded 25 % of this scheme (MAFF, 1997).

Major changes to the CAP beef regime came into effect in April 1989. This included a new limit for sales of beef into intervention, an extension of the Beef Special Premium, and an increase in the rate of the Suckler Cow Premium. The changes reflected the view that "the intervention system is designed to offer support to the market when it is needed, but not to create intervention as a market in its own right to which operators have unlimited access" (MAFF, 1997).

The further round of CAP reforms in 1992 introduced changes to the beef regime: in particular a cut in support prices by 15 per cent over three years, new restrictions on access to intervention, and further increases in the Beef Special Premium and Suckler Cow Premium. Both premiums continued to increase gradually up to 1996, to compensate producers for reductions in intervention support. However, eligibility specifications and controls, in the form of quotas at producer level or obligations to 'set-aside' land (i.e. to take it out of production), were placed on producers receiving payments under these various arable and livestock schemes, in order to limit overall government expenditure on them (MAFF, 1997).

The Ministry of Agriculture, Fisheries and Food (MAFF) commissioned an evaluation of the Beef Special Premium Scheme and the Suckler Cow Premium Scheme in 1995. The evaluation concluded that while the schemes had indeed supported and increased

the incomes of beef producers, overall the production control measures contained within them had not been successful (MAFF, 1997).

Agriculture and society today face changes that are likely to push traditional farming systems out of their existing forms. Industrialisation, mass communication and the internet have changed social life, while increased international travel and trade place traditional values under stress. Agriculture faces immediate changes. Some of these are due to the reflexive assessment of past success, while others result from free trade issues that concern business, patents and landholding rights more than basic access to food. Simultaneously, diseases such as foot-and-mouth recur and new diseases like BSE appear and produce phase shift, further increasing the complexity of already complex systems.

All but the most remote rural areas have experienced a net in-migration of households. There has been an increase in demand for rural leisure goods and a growth of rural tourism with the number of visits to the countryside growing by 69% between 1990 and 1999, for example (English Tourism Council, 2001). Amongst other things, this latter trend has created valuable opportunities for the more traditional rural sectors, in particular farming, to diversify and, in principle, has helped to cushion the impact of their long-term structural decline.

History of Farming in County Durham

Before concluding this chapter, it is necessary to introduce the specific history of the County Durham and wider North Eastern agriculture industry. Not only will this establish some of the differences in nuance between the region and others in the UK but it will also show the factors contributing to the wider development of the agricultural system by North Eastern farming innovation. Finally, while there are slight variations, this section is intended to show the similarities in development and trajectory between County Durham and the rest of the country when compared with the general historical account of agricultural development in the UK (presented earlier) as a whole. Such similarities provide the basis for my use of the region as a typical case for much of lowland, mixed agriculture in the British Isles.

The history of agriculture in County Durham strongly reflects the contrast between West and East, between the high moorlands and foothills of the Pennines on the one hand (with its greater altitude, higher rainfall and a growing season one to two months shorter than in the lowlands which has inferior soils) and the lowlands of the rivers Wear and Tees together with the East Durham Plateau on the other. According to the Department of Environment Farming and Rural Affairs (DEFRA), there are five types of land quality: the thin soils derived from Millstone Grit and Calcareous Sandstone in the Dales and those of the peaty moorlands are classified as the two lower grades, 4 and 5 respectively (DEFRA, 2006). The bulk of the medium-to-heavy soil in the eastern half of the county is largely derived from glacial drift (grade 3) with smaller areas of grade 2 confined to the middle of the Tees, west of Darlington, and areas near Durham and Chester le Street (there is no grade 1 land in the county). As soil quality directly impacts upon the type of agriculture which can take place, this physical background denotes the persistent contrast between pastoral activities in the west and arable or mixed farming in the east of County Durham.

Agricultural systems and related settlement patterns in the county were largely established by the twelfth century (Thorold, 1980). In the east, these were regularly spaced, small nucleated villages, surrounded by open fields, where the strips and furlongs of scattered holdings were worked communally. Each village or township consisted of 'town fields' of arable with meadow and pasture intermixed, and beyond, town meadows, pastures and commons. The former was measured in bovates or oxgangs, i.e. the area which one ox could plough and make ready for sowing in one season. Such a unit was varied from place to place according to the type of soil but averaged 12 to 15 acres (Grainger, 1974). There was much bondage land, with tied cultivators. Boldon, after which township Bishop le Puiset's land survey of 1883 (the Boldon Book) is named, which provides an example of labour services demanded. Twelve cottages were registered from which work was due two days a week, while twenty-two villages owed three days a week together with carting services and extra labour at times of ploughing, harrowing and harvest, plus dues of oats, hens and eggs (Pacock and Norris, 1990).

The Dales provided fingers of sheltered lowland, extending into the Pennine moorlands where there were a few clustered hamlets and isolated farmsteads. Here small enclosed fields evolved in severalty, not communally. A variant of the infield-outfield system

operated, the proportion of arable town field of each township being very small compared with extensive areas of unenclosed and unimproved waste beyond. Pastoralism prevailed, and the land was predominantly exchequer land, providing rent for the bishop, although services might be required in the bishop's hunting preserve (Bell, 1856). In Teesdale, which did not constitute part of the bishop's estate, colonisation was aided by monks from Rievaulx, who were given privileges in the twelfth century by Bernard de Baliol (William II had granted much of Teesdale to the Baliol family in 1093) for pasture and timber rights, with permanent dwellings provided for lay brothers in assarts (clearings). Here, as in Weardale, the demand for charcoal for local smelting contributed to the wasting of woodland (Smailes, 1960).

The general contrast in land use between east and west at this early date is indicated by the pattern of arable land, calculated from the returns from the surveys of their lands by Bishop le Puiset and Hatfield (Peacock and Norris, 1990). Both clearly show higher densities confined to the East. While both surveys cover only lands belonging to the Lord Bishop, the fewer blanks on the latter census of Hatfield reflect its more comprehensive nature. The largest proportion of the area left blank on the two maps constituted land belonging to the priory and monastery of Durham, although a few Barons also controlled large estates: Brus of Hartlepool, the Baliols and, by the fourteenth century, most notably the Nevils of Raby, Brancpeth and Teesdale. From the western dales there was a steady upwards encroachment- with, in Weardale, the Bishop's licence to complete the medieval penetration of the Pennine moorlands (Thorold, 1980). As early as the thirteenth century effective use was being made of some of the high fells (those higher than 2000 ft.) by the seasonal transfer of animals. Circular sheep folds dating from this time are still visible, but evidence suggests that this form of transhumance was less strongly developed in Westmoreland and Northumberland (Grainger, 1974). A related – but more extensively developed and flexible – system of common pasturing of animals on fell land evolved. It was known as stinting, and became an important component of moorland farming over several centuries. Overstinting was prohibited and punishable, with an impounder employed to oversee and seize surplus animals (Grainger, 1974).

Agriculture in late medieval lowland Durham suffered not only from periodic plagues, but also from incursions from across the Scottish border. The latter brought devastation to standing crops, especially in the fourteenth century, while on occasion animals were

driven south across the Tees to the safety of the Cleveland hills (Dickinson and Fisher, 1959). Corn yields were generally low as a result of the slow exhaustion of heavy soils from years of grain being grown on the open fields. The ultimate break with the feudal world has been attributed to an external stimulus and London's demand for coal. It was definitely the emergence of activity connected with the mining and transport of coal which boosted the rise of a capitalist economy in the north east (McCord, 1979). Political events in the turbulent years from the mid-sixteenth to the mid-seventeenth centuries such as the dissolution of the monasteries, the Rising of the North, the Civil War, the Commonwealth, and the Jacobite Rebellion saw large estates confiscated by the crown in many parishes. The consequent changes in land ownership saw the entry of new, mercantile families (Peacock and Norris, 1990).

An important factor for the economic working of the land was the introduction of short-term leases at a realistic rent. Previously there had been the widespread custom of 'tenant right' whereby tenants had copyholds of inheritance at nominal rent in return for border services in the event of a Scottish invasion. Land engrossment (amalgamation) and enclosure were crucial organisational adjustments among farm holdings. The enclosure of common fields and pasture to form compact farmsteads began in the mid-sixteenth century but was a particular feature late in the following century, well ahead of enclosure in the English midlands (Fox and Butlin, 1979). The process was confined to the east of the county. Although two fifths of enclosures concerned the enclosure of common pasture in the two centuries leading up to 1750, they were characteristically much smaller than the majority, which enclosed large town fields, formally divided into strips and in permanent cultivation. All enclosures were accomplished by agreement among the interested parties although half were confirmed by chancery decree – usually in the court of the Bishop of Durham – to legalise the division made. Hodgson calculated that at least 75,000 acres (12% of the total area of the county) were enclosed between 1550 and 1750 (Hodgson, 1979 in Fox and Butlin, 1979, p88). Even this figure may be an underestimate since some enclosures almost certainly escaped documentation, while others were recorded in bishops' acres, which were larger units than standard acres.

Enclosure permitted land exhausted by cropping to be turned into pasture land in order to supply the increased demand for wool, meat and dairy products. There was also a demand for extra hay to support the growing number of horses who served the

spreading network of coal wagonways (McCord, 1979). The new emphasis on pastoralism led to the dwindling or disappearance of some fifty villages, particularly in the south-eastern quarter of the county. At the same time, cattle fairs were established in Durham, Darlington, Barnard Castle, and Sedgefield and, just across the boundary in Newcastle and Yarm. Dairy produce was stimulated in the vicinity of the largest centres, notably Newcastle. Butter was being exported through Newcastle and Stockton by the end of the seventeenth century (Thorold, 1980).

The era of change also produced its own agricultural 'improvers'. Most prominent was George Culley, born in Denton in 1734, who earned a national reputation. He and his brother Matthew, who visited Robert Bakewell, learnt the trade on their father's farm, but had to go to Fenton in Northumberland to acquire an appropriate holding (Peacock and Norris, 1990). A variety of innovations followed. The efforts of another two brothers whose farming careers were spent entirely within the county, Charles and Robert Colling, are remembered above all for the breeding of the Durham short horn. It was a beast noted for its sturdiness and its yield of beef and milk; its sheer size meant that much fat was available for soap and candle making (Fox and Butlin, 1979). The initial increase in the size of cattle in the mid-eighteenth century is said to have come from a few Friesians imported to the Sedgefield area (Smails, 1960). Charles (at Ketton, just North of Darlington) and Robert (at Brampton, nearby) subsequently proceeded by selective breeding to produce prodigiously heavy animals. The 'Durham Ox' of Charles and the 'White Heifer' of Robert were both taken on tour around England at the beginning of the nineteenth century as wonders of the age. The transport of the heavy beasts – the 'Durham Ox' weighed 270 stone – in special carts was no mean feat. They were immortalised in contemporary engravings and prints, and also in the naming hostelries (Grainger, 1974).

A second phase of enclosure in the county began in the mid-eighteenth century. It complimented the irony of the earlier phase in the lowland eastern half of the county, when enclosing of arable townfields gave a boost to pastoralism. Upland fell enclosure somewhat surprisingly brought about an increase in cereal production. Grain prices had risen throughout the eighteenth century from the demand of an increasing industrial population; during the Napoleonic Wars the cost of importing grain rose dramatically (Pocock and Norris, 1990). As a result, the upland areas were reviewed for their potential contribution to this market. On the more suitable commons of the foothill

zone, the newly-enclosed land was rented and leased for up to ten times its former value and put under the plough. Patterns of ridge and furrow, such as those above Wolsingham and St John's Chapel, however, are lasting evidence that barley and oats were widely grown at altitudes of 1,000-1,200 ft. Part-time farming, undertaken for subsistence or standby among an increasing number of lead miners, contributed to what today appears either optimistic or foolhardy cultivation (Hodgeson, 1979).

The process of enclosure from the mid-eighteenth century onwards contrasts markedly with the earlier period, not only in its western distribution and husbandry. It was achieved not by individual agreement but by Parliamentary acts and awards, many of which covered very extensive areas. Enclosure of Lanchester Common and Weardale Park both involved more than 15,000 acres; Wolsingham was more than 10,000; several others exceeded 2,000 acres (Hodgeson, 1979). Although over 110,000 acres (17%) of the county was enclosed in the period 1750 to 1870, all but a mere 5,000 included common, moor, fell, or waste. It is from this time that the landscape of the western half of the county received its distinctive mantle of stone-walling aligned in a regular grid-pattern uphill and across fell (Fox and Butlin, 1979).

The provision of a mosaic of compact, more manageable holdings was not accompanied by the commensurate advance in husbandry techniques which the new organisational framework might have suggested. In his tour of 1769 Arthur Young had summarised Durham agriculture as simple and primitive, apart from a few large, well-managed units (in Peacock and Norris, 1990). Bailey drew the same distinction in his *General Account of Agriculture* in 1810 (in Fox and Butlin, 1979). Innovation was confined to the educated managers of a few large farms; the majority, particularly on short-lease holdings, still persisted with the traditional and monotonous rotation of two crops and bare fallow. There was no proper appreciation of preserving soil fertility to the extent that most arable ground often received only lime, apart from lying fallow, while at the same time manure might be stacked on pasture land. In short, there was no beneficial integration of crop and livestock. The Crop Returns of 1801 with the dominance of traditional grains and restricted coverage of turnips and potatoes are a statistical confirmation of Bailey's observations. The livestock itself was provided with inadequate accommodation on most farms. Lack of capital was a handicap to small farmers, whose lives, according to Bailey, were onerous to the extent that he deemed them "…greater slaves than their servants" (Fox and Butlin, 1979).

Bell (1856), in his mid-century review of the county's agriculture, repeated some of the same points, by which time a further handicap to efficient agriculture was evident. According to Bell there was not a parish in the county that was not scared of mining: of lead in the west and coal elsewhere. Over large areas colliery owners either bought or farmed land in order to meet claims for surface damage and compensation for loss of crops from tenant farmers. When paid, compensation often provided a return twice the rental or commercial value of the land – hardly an incentive for dedicated farming. However, the rapid spread in the second half of the nineteenth century did provide an incentive for hay and oat production in order to support the growing number of pit ponies (Bell, 1856). The colliery districts also provided a market for pigs which were fattened in the back yards of miners' cottages before slaughter and allowed a shared distribution of cuts among the neighbouring families (McCord, 1979). The miners themselves also provided their own form of market gardening on the edge of pit villages. Their allotments, notable for their distinctive sheds and pigeon lofts, also became the impetus for fruit and vegetable competitions, especially the growing of leeks. Durham County Agricultural Society, founded in 1786, encouraged competition on a wider basis (Bell, 1856).

The second half of the century saw a decline in wheat acreage, which was more than offset by a rise in pasture and meadow for increased cattle numbers. Earlier there had been the decline in and cessation of cultivation of two specialised crops. Mustard had been grown only for a relatively short period following the manufacture of the country's first condiment in Durham City in the late seventeenth century. Flax, on the other hand, had a long history of cultivation, and was the basis for linen manufacture in several towns (Thorold, 1980). For a brief period towards the end of the late eighteenth century, the concentration of mills in Darlington, along the River Skern was the highest of any town in England. Indicative of the position the town held was John Kendrew of Darlington's application for a patent for a water-driven flax spinner in 1787 (Smails, 1960). The yarn was dispatched to weavers in Durham, Cleveland, and Yorkshire. In the first part of the nineteenth century, however, the greater textile resources of west Yorkshire were exploited while Darlington entrepreneurs, with Quaker influence prominent, turned to other manufactures (McCord, 1979).

Farming of the twentieth century has seen an increased application of science, the most obvious summery index of its success being reflected in the reduction of the number of

workers engaged in agriculture. At the beginning of the nineteenth century, 18,000 were employed full-time in agriculture: by far the leading occupation group; a hundred years later, the figure had declined by one quarter. Today under 6,000 – 1.2% of the total – earn their living from the land (Grainger, 1974). Cereal cultivation, with its progressive mechanisation, had spearheaded this trend. Horse-drawn reaping machinery was introduced in the 1870s and binders in the 1890s. The mechanisation of threshing began earlier, in 1876, when the fist mill was powered by a harnessed horse walking a circular path to drive a thresher in an adjacent barn (Peacock and Norris, 1980). Circular wheel sheds which housed these former 'horse-gins' remains a distinctive feature of many lowland farms. Steam power was widely applied by the middle of the century; mobile threshers, drawn by traction engines, came into use before the end of the century.

The twentieth century also saw two new land uses in the west of the county: forest plantations and reservoirs. The former, predominantly of spruce and larch, are the work of the Forestry Commission from 1919 onwards (Smails, 1960). Hamsterly Forrest in Weardale is the most extensive plantation. In contrast, Teesdale, apart from Egglestone Parish, has withstood the commission's advances. The explanation lies in land ownership and the policy of the Raby and Strathmor estates, which have continued to foster pastoral activities in the dale and maintain higher moorland for sheep and grouse (Grainger, 1974). A dozen reservoirs have been built to trap the headwaters of western valleys. By far the biggest are two most recent constructions: Derwent (1967), on the tributary of the River Tyne, and Cow Green (1970) on the Tees. Around the margins of the former, more land has been used for picnic areas and a yachting centre. The damming of the Tees, just above Cauldron Snout, was achieved after a public inquiry. Controversy raged, not because the area was valuable agriculturally but because it was botanically unique, being part of the Teesdale assemblage of alpine and arctic flora on Widdybank Fell, survivors of the last Ice Age (Peacock and Norris, 1990).

A more recent aspect of land use competition is the intertwining of agriculture and mining for a second time on the exposed part of the coalfield. In some instances it is only a few decades since the land has been physically restored from colliery workings and reclaimed for agriculture. A second wave, this time of open-caste workings, requires whole areas to be taken out of production and the land stripped to expose the seams beneath (Peacock and Norris, 1990). History also repeated itself when farmers anxiously accepted the compensation offered rather than continuing to work what might

have been marginal land in the present context of national – and international – quotas and restrictions.

Despite the increasing application of science in all aspects of production, and despite changes in scale and context, the basic physical endowment of the county has ensured that the contrast between East and West is arguably as strong as at the time of the first colonisation when, according to an early monk of Durham, the county was transformed from "…nothing but a hiding place for wild and woodland beasts" (Dickinson and Fisher, 1959, p4). A pastoral West and a mixed arable and stock-rearing East form the basis for the simple arrangement of land use: two fifths of the county which are devoted tillage and temporary grass are predominantly in the east; one fifth devoted to rough grazing is entirely in the west; two fifths devoted to permanent grass are shared (Thorold, 1980, p16).

The Current State of County Durham Agriculture

Finally, to conclude and fully contextualise what follows in this thesis, there will now be a short summary of the state of farming in lowland Durham at the time that this research began in 2004 (source: DEFRA statistics, 2005). This is included to provide further contextual detail with which to assess the narratives supplied by the respondents in this study.

Cattle and Sheep farms in the Less Favoured Area (LFA) and lowland

Cattle and Sheep farms in LFAs (Less Favoured Areas) are the predominant farm type in the region. The average stocking on these farms in 2004/05 was 39 beef cows and 420 ewes, and the average farm area was 184 hectares (ha). Lowland livestock farms averaged 26 beef cows and 159 ewes on 87 ha. Net Farm Income (NFI) averaged £15,376 on the LFA farms and £6,833 on lowland farms. Interest payments were higher on lowland farms (£4,700) than LFA farms (£1,033). Net investment in machinery was twice as high on lowland farms at £18,321 compared to £7,612 on LFA farms.

Cereal and General Cropping farms

In 2004/05, the average farms size on cereal farms was 232 ha with arable crops accounting for 70% of the area. One half of the cropped area was wheat. General cropping farms averaged 158 ha with 68% of the area devoted to arable cropping. For cereal and general cropping farms, the NFI averaged £17,592 and £22,174 respectively. Interest payments were higher on cereal farms (£7,319) than general cropping farms (£4,575). Net investment was considerably higher on cereal farms at £19,881 compared to £10,969 on general gropping farms.

Dairy farms

On average these farms had a dairy herd of 77 cows on 88 ha. NFI at £15,607 was lower than for dairy farms in other GOR regions, perhaps reflecting a smaller farm size. Interest payments averaged £6,059 per farm. The net investment in machinery was £8,408.

Mixed farms

In 2004/05, the size of the average mixed farm was 130 ha with arable crops accounting for 37% of the area. Livestock output, both grazing and non-grazing, was a significant feature on these farms. The NFI averaged £19,284. Interest payments averaged £3,566 per farm. The net investment in machinery was £11,113.

Conclusion

Farming and the farmer are subject to many diverse and changing influences which combine to illustrate the complexity of the farming system. This chapter puts the present farming transition in a historical context and allows for reflexive analysis of the industry in future chapters. Agriculture in Britain developed into the industry of today because of its close and direct relationship with social and economic changes; for example, the move to industrial agriculture and the specialisation of the role of farmer

or food producer which began with the industrial revolution and the mass movement of workers from the land into mills and factories. The new farmers sold their food to mill workers and the steam train could deliver fresh food quickly. This is by no means a simple relationship, and indeed some of the crisis now evident in farming arguably stems from the separation of the population from food production.

This chapter also shows the influence of the two World Wars on UK farming: in particular the wider social implications of labour shortages and the inability to import food which resulted in women being brought into the wider workforce (and the rise of the Women's Land Army in the Second World War). The drive for production to alleviate rationing and ensure food security for future generations in the decades immediately following the Second World War resulted in the European Union's Common Agricultural Policy (CAP). Discussion of the historical influence of the CAP is necessary to understand the agriculture industry's protection of the current generation of farmers until the crisis emerged. Would farmers be coping better with the crisis today if the CAP had not come into being? There is an argument that much of the crisis in mixed lowland farming, which will be detailed in Chapter 5, has come about as a result of the continuation of the CAP long past the point at which its necessity and benefit had passed.

Although there has been a major change in the way that agricultural practices are carried out, there has been little change in the way farmers actually make a living from the land. Seed is sown, tended and harvested; animals are bought and sold, and there is breeding and herd development as ever. Milk is collected, as are eggs, and ultimately success or failure is determined by the weather and the cycle of the seasons, to varying degrees. To summarise: farming has changed little, but the practice of farming has changed considerably. This chapter charts significant alterations in farming practice from feudal agriculture to modern day industrial methods. The chapter also shows how agriculture has grown, through a myriad of changes and developments, from being a rather simplistic localised activity into a nationwide and even international system full of complexity and nuances, incorporating social, economic and political changes with environments and seasonal norms and the application of hard science and mechanical development. In fact, the essence of modern agriculture stems from complex stimuli. In recent years, there has been a need for food security following World War Two and food security has been desired by successive post-war governments. The agricultural

system is not isolated: rather, it nests among the systems of the wider world. This has only come about because of agricultural systems' ability to adapt to the shifting influences around them such as economic and societal changes. There was a significant rural depopulation to industrial towns and cities during the Industrial Revolution, a trend that continued in the following decades due to the increased mechanisation of the industry and rising wage requirement of the agricultural labourer. Even during the two World Wars of the last century, farmers continued farming in the way they always had: crops were planted and animals bought, sold, bred and fattened. The land is prepared by tilling, the seed is sown and the crop tended. The resultant harvest is collected, a small proportion is perhaps kept by the farmer and the remainder sold for a profit. In the case of stock, the animals are fed, medicated when necessary, and a profit is gained from the sale of a healthy animal or its milk. What I contend is happening in contemporary agriculture is that a stage has been reached where the processes I have described are no longer adequate to keep a farm profitable: farming itself is no longer a sole occupation, it needs financially underpinning or subsidising by means external to the farming system.

3. BRITISH AGRICULTURE AS A COMPLEX SOCIO-PRODUCTION SYSTEM

Introduction

Farming is a process that has developed over many thousands of years in which humans have progressively increased their influence upon the natural world and natural processes. Ultimately, farming is the harnessing of an ecosystem: its gradual modification and extensification. Indeed, our landscape looks the way it does because of this measured human activity. As is suggested in Chapter 2, while farming has mechanised and changed over the centuries, the ultimate cycles and systems which govern it have remained the same. The farmer is still working with plants and animals, the seasons follow their annual pattern, and productivity and success remain a result of the understanding (and correct application) of the basic principles of good husbandry. In addition to this, there are social and economic systems in the form of the farming community and rural society as well as the development of sophisticated bureaucratic systems of governance and regulation which have developed alongside the progression of the farming industry. Consequently, the argument to consider agriculture/farming as a Complex Adaptive System (CAS) is credible. This chapter is intended to provide a discussion of British farming as a complex socio-production system, with specific reference to County Durham.

While the aim of this thesis is not to identify all of the systems at play in the farming CAS, it is important to contend that a CAS exists, which is subject to the processes and susceptibilities of change displayed by other, similar systems, which are divided into the following smaller groups. Physical systems include ecosystems, weather systems, nutrient cycles, hydrological cycles and yearly seasonal cycles; economic systems include individual farm businesses, local, regional, national, diversified activities (tourism, farm shops etc.), food production and supply networks (Marsden, 2010). Political/legislative systems include local councils, national governments (including

DEFRA, EU), and unions and organisations such as the NFU[18] and TFA;[19] social systems include farming families and workforces, farming communities (local and regional, national) and diversified activities (farm shops, tourism).

Over many decades, changes in the character of farming have occurred which are detailed in Chapter 2. Developments in farming involving crops and livestock, increased mechanisation, increased use of agricultural chemicals and the furtherance of drainage and irrigation have all led to considerable increases in yield. Briggs & Courtney state that "at the same time, social economic and political changes have occurred. The agricultural labour force has declined, farms have been consolidated and amalgamated, the character of tenure has altered as agricultural consortia have grown up and large commercial institutions have taken over farms for investment proposes" (Briggs and Courtney, 1989, p3). They go on to note the multi-faceted, multi-systemic nature of the farming industry: "agriculture is, and always has been, an activity involving a close interaction with the environment. Soil, climatic, topographic, hydrological and biological conditions together exert a major control upon farming operations and upon the profitability of agriculture [within the complex agricultural system]" (Briggs and Courtney, 1989, p3).

Many of the developments that have taken place in agriculture were intended to overcome the limitations imposed by such environmental factors, but the deterministic influence of these effects nevertheless remains. "In addition, however, agriculture modifies the environment; the history of man's use of the land for agriculture has been a history of environmental modifications. Forests have been cleared, wetlands drained, heath lands and wastelands enclosed, and taken into cultivation" (Briggs and Courtney, 1989, p3). Recent changes in agriculture have thus been grafted onto generations of farming practice, and the effects upon the environment have merely continued or accelerated effects which have been felt for many centuries.

The farm itself is a CAS: it is an open system in that external influences initiate change, but it is constrained and 'held in place' by physical boundaries such as fencing and animal numbers. It is also bound by other physical, social, economic and

[18] National Farmers Union.

[19] Tennant Farmers Association.

political/legislative parameters. Any farm needs inputs or resources to allow the farm to operate. The processes on a farm include the day-to-day work and organisation. The outputs are the products of the farm but also include waste. Some outputs like fodder crops may be used to reduce the cost of inputs. This highly simplified diagram (Figure 3) shows the farm system, including both the physical inputs from the biosphere and human and economic inputs, the flows within the system and the eventual outputs.

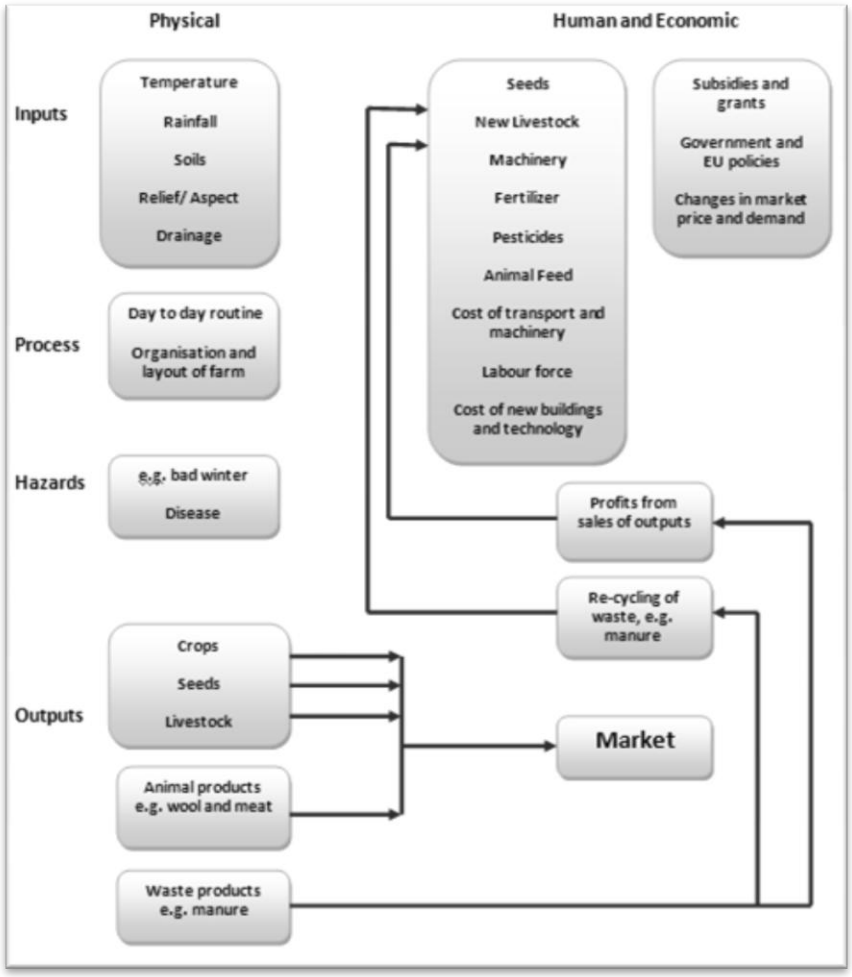

Figure 2: The Farm System (Adapted from Jarman and Sutcliffe, 1990, p2).

A Systemic Approach

In essence, farming mostly involves a family, group or individual using a set of skills to combine the land, labour and capital they control to produce agricultural commodities. Often an unrealistic, romantic notion is held by non-farming 'urban folk' that farming is an easy way to make a living. Farmers require a broad knowledge of many different

disciplines. Farming involves much routine with repetitive menial responsibilities which cannot be neglected, and these efforts come with highly uncertain results or benefits. There are hard times and there are good times; a reasonable living can be made by those who are adroit and/or those who can persevere. Farming can be an uncertain and difficult game: long-term survival and prosperity depend on more than an efficient performance of the very important technical side of things. Makeham and Malcolm suggest a 'Whole Farm Approach' when analysing agriculture: "...thoughtful analysis of the human, technical, economic, financial, risk and institutional ramifications of alternative actions makes for success in [farming] businesses" (Makeham and Malcolm, 1993, p3).

Before I go any further, there are certain aspects about farming which need to be acknowledged and addressed. I have spent a good deal of time compiling the following list. This overview is drawn from my own experiences as part of a farming family, and from the testimonies of the respondents in this study (see Chapter 6). The following points are some enduring 'truths' about farming:

a) Farming is a human activity – with all of the individuality, idiosyncrasies and layers which that implies. It starts with the farmer.
b) Being a good farmer involves having to continually confront changes in climate, as well as accepting the price paid for input and price paid for output and the need to be aware of changes in technology and external regulations.
c) Farming requires individuals and their families to perform repetitive, sometimes menial tasks without breaks or deviations from the pattern. The cyclical and seasonal nature of farming means that daily, weekly, monthly and yearly responsibilities must be understood, appreciated and carried out to a standard and in a timeframe often imposed by others (e.g. by the animal: a farmer's duty of care, by the crop, consumer preferences, banks or regulators).

Planning ahead and budgeting for uncertainties is also essential. Due to the changes detailed in b) and the cyclical nature of the industry detailed in c), farmers must also be able to implement, control, learn, adapt and revise their plans as the world around them changes.

As mentioned earlier, farmers need a broad knowledge of many different disciplines due to the myriad of different tasks required to be undertaken on a daily, weekly monthly and yearly basis. A few examples suggested by my respondents include: vet, accountant, agronomist, mechanic, builder, hedger, environmentalist, employer, administrator and driver. These are traditional tasks, but when you add diversified enterprises to a farm, this list can swell to include: host, retailer, cleaner, butcher, tour guide, and so on. The length of the list is determined by the number of diversification strategies.

However, this just takes the individual farmer or farming family into account. As I will argue in this chapter, there are many systems at play in the agriculture/farming industry. These individual systems, be they economic, social, technological or natural, range from the small to the very large in size and influence. The farming industry is multi-layered with myriad nested systems overlapping and influencing one another; these have grown in a co-evolutionary manner over time to produce the industry as it stands at the time of writing. The purpose of this chapter is to set the complexity of the farming industry in a theoretical context: to explore complexity theory as a means of understanding the farming world.

Complexity Theory and Farming Systems

How do such systems fit with complexity science? The discussion will now provide an explanation of the ways in which agriculture and farming can be viewed through the lens of complexity theory.

The wide range of nested systems that establish agriculture as a complex system are worthy of further study and are the subject of this thesis investigation. The first step in tackling this issue is to adopt a theoretical framework with which such an intricate relationship between human decision-making and action, natural cycles and policy change can be understood. These systems do not occur in isolation but instead work simultaneously; they are interrelated and interconnected and influence each other's trajectory. Following on from the observations above, such a theoretical framework, as Gerrits (2008) suggests, should take three things into account.

Firstly, isolating the object of research from its environment decreases its explanatory power. Change within the farming system is driven by many developments, which can include the individual decisions made by actors. Unintended changes may occur as a result of an incorrect decision but can also be caused by external regulation, a physical development elsewhere or by a combination of these factors. The relationship between these things is multi-faceted and therefore requires a systemic approach for analysis, with the understanding that isolating the object of research from its context is unhelpful as the context is needed for a full understanding of the complex relationship.

Secondly, such a systemic framework must take into account the fact that there is common interaction between diverse systems as well as between the various elements within systems: "the causal relationship between these components can be one-sided but is more often circular. With circular causation, the interaction between the physical system and the policy system is mutual, i.e. the physical system responds to the changes made by the policy-makers and in turn creates a situation to which the policy-makers are compelled to respond" (Gerrits, 2008, p8).

Thirdly, as Gerrits suggests, the 'complexity of causation' does not stem only from the multiple causes and effects but also from unpredictable change. Therefore, the relationship between cause and effect could change through the incidence of events, or could lead to different developmental routes if repeated elsewhere in excessive or unfavourable ways to the objective. This is also true for unintentional change or change that takes place outside the influence of the actor(s). Although it is possible to understand complex non-linear change theoretically, in practice, as Gerrits (2008) argues, "causality is probabilistic". Any change made to the physical system may or may not lead to the desired outcome and if repeated, could produce different results.

Gerrits (2008) has laid down three provisions as a starting point of a theoretical framework: "…it should be of a systemic disposition, it should regard relationships as mutual interactions and it should take into account that the nature of change may be erratic" (Gerrits, 2008, p10). However, his suggestion also lends itself to another physical and social system, that of the agriculture industry. By combining these requirements and remembering that systems and elements within systems can be of a diverse nature rather than homogeneous entities, all the basic components are now in place to better understand farming. These components describe the basics of complex

adaptive systems (Flood & Jackson, 1991; Gell-Mann, 1995; Hartvigsen, Kinzig & Peterson, 1998; Levin, 1998). Complex adaptive systems are at the core of the approach called complexity science or complexity theory.

Introducing Complexity Theory

Attempting to explain developments through a universal approach is by no means a new idea. François (1999) suggests that ideas about the nature and workings of what he terms 'happenings' within systems date back to the seventeenth century. Since then, multiple variants of systemic theories have been developed and indeed are still evolving. One of these systemic approaches is complexity theory. Goldstein (1999) argues that the use of the term 'theory' is debatable, as complexity thinking draws upon many fields for its central notions, including wide-ranging theories such as evolutionary biology, game theory, cybernetics and catastrophe theory. Therefore the term 'complexity science' has been proposed as a more appropriate term to use when discussing this group of theories. However, the term 'complexity theory' is used here in order to conform to the established classification.

As for its theoretical dictat, complexity theory has not developed in a linear fashion due to its varied background. However, it is beyond the scope of this research to produce a definite chronology of its development. Central to complexity theory is the fundamental understanding that simple systems, for example those consisting of a small number of elements or a limited set of behavioural rules, can lead to complex emergent structures and processes. The viewpoint of Newtonian advocates, which in essence assumes "…that the mechanisms producing developments are mechanical, that is; causality is fixed and that developments are stable, time-reversible and replicable, has long dominated science. Some developments, however, have been found to behave time-irreversibly, even if the origins of these developments were of a simplistic disposition" (Prigogine & Stengers, 1984, p59). In addition, the simple nature of these beginnings does not explain the outcome. Thus, as Byrne (1998) argues, the Newtonian worldview can be replaced partly by a thermodynamic perspective which recognises that systems are interrelated and interconnected and that the properties of systems cannot always be traced back to the properties of their constituent elements (Byrne, 1998).

While these explanations for system developments appear throughout the literature on complexity, there seems to be less agreement on what complexity actually means (Rescher, 1998) and what it is that sets it apart from the certainty of mechanical order and the complete unpredictability of chaos. There are, as Byrne (2005) notes, several accounts in which some universal aspects exist, while other features are not shared. The fact that in common conversation the words 'chaos' and 'complexity' are often used interchangeably and 'order' is seen as their antithesis does not help, Gerrits (2008) suggests.

The adjective 'complex' is usually used when one comes across something that is difficult to grasp, such as Single Farm Payment application forms or the criteria required to join the Entry Level or Higher Level of Environmental Stewardship Schemes. However difficult it is to deal with such things, they nevertheless represent order because their shared associations are predetermined and the products are predictable. Gerrits (2008) suggests that 'chaos' is often used in common phraseology if something is viewed as complicated and people do not look favourably upon it. The term 'chaotic' is used when the complicated subject is viewed negatively, such as the process of trying to separate a small number of specific animals from a larger herd. However difficult sorting animals may be, the term 'chaos' itself does not have this negative connotation. As a scientific term, Gleick (1987) suggests that chaos is not the absence of order, but rather randomness as determined by its constituent components that are stable in terms of their composition and disposition. Chaos as a concept, however, will not recur in the remainder of this thesis.

Complexity, then, is neither complicated nor chaotic. Both order and chaos emerge from the same type of systems described above, i.e. systems that are of a stable nature. Complexity is: "the boundary phase between order and chaos where stability and randomness are entangled in a tense state" (Waldrop, 1992). However neat this definition is, it is difficult to handle in empirical research as it requires one to be able to establish the state of systems as being orderly, chaotic or complex. This research departs from a more practical choice, and takes a path similar to Gerrits' (2008) research on decision-making in European estuary dredging, namely that complexity is experienced by agents as the erratic properties described earlier, but it differs from chaotic systems in that complex systems are open instead of being limited by boundaries. "Thus the composition and nature of the constituent parts are cellular and dynamic instead of

being static. Rather than explaining erratic change as a result of enclosed systems, which is a simplistic premise, it is understood that such changes stem from systems that are themselves dynamic with regard to composition and disposition, thus closing the theoretical loop between erratic dynamics and complex adaptive" (Gerrits, 2008, p152).

Due to its varied background, complexity theory coveys a multitude of ideas, some of which have similar meanings under different titles. Furthermore, much of the terminology of complexity theory is entrenched in natural science which brings with it ideas that have common ground in science but that are striking in social sciences. To incorporate this diversity into a coherent framework, elements of structure and elements of process need to be separated, with the latter describing the activities within structures without, as Cilliers (1998) puts it, the condition that structure can exist without activities. A discussion of these two dimensions of complexity will now follow.

Structure

The previous section showed that erratic dynamics and complex adaptive systems are closely linked concepts. The complex adaptive system lies at the heart of complexity. Gell-Mann (1995) uses the word 'complexity' to mean associations between both simple and interlinked systems, which suggests that the multiple connections that form a network are not separate from the concept of complexity. In order to appreciate where non-linearity comes from, the basic features of such a network or complex adaptive system must be understood. Theoretically speaking, Marion (1999), contends that a complex adaptive system is a system consisting of diverse components that are connected and interacting with each other: "this diversity is in terms of form, capabilities and consequent behaviour" (Holland, 1995, p55). These diverse components affect one another through interactions and their variety can elicit a large number of different responses.

There is an obvious difference between human agency and physical agency: while physical agency lacks the reflexive capacity to act purposefully on information, human agency can plan, forecast, anticipate and act deliberately. While this characteristic is important for an analysis of complex dynamics, these differences do not render the idea

of connected agents of diverse dispositions outdated. This radical point of departure, Gerrits (2008) suggests, is equal to that assumed in actor-network theory, namely that humans are connected in assorted networks of interactions in which all objects are diverse but not dissimilar enough that they should be treated as different categories. Networks or systems are interactions between components or agents and the meaning of these components or agents stems from the interactions (Law, 1996, 1997; Latour, 2003); therefore there is no hierarchy between physical systems and social systems. The (often assumed) anthropocentric and one-sided relationship between the two, which places policy-makers and farmers in control of the physical farming system, for example, has to be discarded for a multi-faceted model of interactions in which all agents are occupied in a complex pattern of actions and responses.

The physical farming system is as much a driver of change as the human agents, thus rendering the anthropocentric perspective obsolete: both horizontal and vertical connections between agents exist. Holland (1995) suggests that the vertical connections come from the idea that what constitutes a system at one level may comprise a driver in a larger system at another, hence the concept of *nested systems.*

While myriad connections can be made in theory, in practice there is a limit. According to Kauffman (1993), each set of agents interacts with a subset of the total number of other sets of agents, thus establishing the network-style properties of complex adaptive systems. Maguire and McKelvey take the concept of agents further by adding that agents act in a locality: "…they are not omnipresent nor can they deal with all available connections. Agents can become unconnected or new connections can be established over time" (Maguire & McKelvey, 1999, p4), although these may not necessarily be intentional actions. Gerrits argues that "…the complex adaptive system as the basic structure is a network of interactions between agents in which the connections do not extend to all agents and in which these connections can be of a temporal nature" (Gerrits, 2008, p32).

The complex adaptive system becomes dynamic through the ongoing actions and responses from agents. An important condition for the existence of these dynamics is that agents are required to have the capacity to process information. According to Gell-Mann, the basic information that passes through the network includes information about the system, its environment and the interactions between the two that allows agents to

draw up an image of the system and the environment, and from that to predict the future in order to act accordingly (Gell-Mann, 1995; Parker & Stacey, 1994).

Boundary Judgements and Agency

The perspective on agency described here departs from human agency as it assumes that agents have the ability not only to receive information but also to act accordingly: that is, they have a reflexive capacity. Such a statement may lead to a discussion on whether non-human agency has similar features, and if not, whether it is able to act in response to incentives. Agents that are able to respond actively are adaptive agents, while agents that respond passively are merely adopting information. However, the limitations of time and space imposed on this thesis do not allow for a further exploration of this debate. Based on the empirical accounts presented in this monograph, the foundation of the arguments here is that physical social and economic farming systems are complex adaptive systems whose constituent components can respond to change and crisis that can lead to non-linear dynamics.

There is one important assumption about the existence of complex adaptive systems described here that is often made but less often reconsidered, namely the assumption that such systems exist as entities in reality. Gerrits (2008) argues that many accounts of complexity have their foundations in sciences such as physics and chemistry. He contends that systems are assumed to exist outside the perception of the observer. Rosenhead (1998) maintains that this is at times reinforced through ambiguity about whether it is a physical or a social system that is being described.

In this way, complex adaptive systems have much in common with the systems theory that was developed in the 1970s. Although there are many distinctions between these two approaches (which are discussed later), some argue that a system can and must be defined incontestably. One of the failures of first generation systems theory was this agenda and Gerrits (2008) warns against complexity theory inheriting this flaw. Following the further development of systems theory, that point has developed into the idea that systems' boundaries must be set through dialogue with agents that have partial knowledge about the boundaries of systems (Midgley, Munlo, & Brown, 1998; Ulrich,

2005). This approach acknowledges that system boundaries are relative and depend on the agents' perception while, on the other hand, making the assumption that systems do exist. Cilliers (2001) suggests that underlying this is the notion that for a system to be recognisable as such, it must have boundaries that set it apart from other systems or its environment. In any case, this requires an observer who is able to determine a boundary. However, as he goes on to point out, the disposition of a complex adaptive system is an open one and therefore the decision of what it constitutes in the system remains debatable.

It is also clear that the elements of structure cannot be separated from the elements of process as the structure and process exist through each other, as Cilliers (2001) pointed out . The elements of process are the subject of the next section.

Process

Complex adaptive systems exist because of interactions, and these interactions contribute to the unpredictability of a system's development. Thus, unpredictability is a property of process. There are several elements that contribute to this which are discussed here.

If we start with the idea that interactions are of central significance for complex non-linear developments, it is necessary to be aware of the nature of interactions in terms of feedback. Because agents are connected to one another, each action leads to an agent response, which in turn starts another stream of actions, with each response constituting a feedback loop. Complexity theory distinguishes between two types of feedback: positive and negative feedback (Parker & Stacey, 1994).

Negative feedback consists of loops that dampen and stabilise the system (Marion, 1999; Parker & Stacey, 1994). Diehl and Sterman (1995) suggest a self-correcting quality to negative feedback loops during the decision-making processes, in which the breach between the current situation and the intended situation is closed. However, such a quality depends on human agency as it requires the determination of a desired state as a goal and a deliberate action to achieve that goal state. Negative feedback exists and

develops from both intentional and unintentional actions and results from human agency and non-human agency, the latter being outside the direct range of control of human agents. Importantly, negative feedback is therefore stabilising, even if human agents wish otherwise.

Conversely, positive feedback consists of loops that fluctuate progressively and lies at the heart of the complexity thesis that small events can lead to major consequences and major events can produce major and permanent phase shift (Prigogine & Stengers, 1984). While negative feedback reinforces the status quo, positive feedback drives change in an amplifying, destabilising way. Again, this is independent from the type of agency as positive feedback loops can be intentional. To add to the complexity, negative and positive feedback loops can occur simultaneously, successively and on differing timescales (Diehl & Sterman, 1995), all in interrelated patterns.

While stabilising situations may indicate inertia, there are certain situations that can benefit from stability. As Parker and Stacey (1994) argue, positive feedback can be both "virtuous and vicious circles". Patterns of feedback loops are not well structured in practice. A change may or may not be received by agents and may or may not result in a response that in turn may or may not lead to adoption or adaptation. In addition, responses do not necessarily occur to the same degree as the original action. The resultant ever-altering patterns of feedback between agents and unpredictable conclusions are the fundamental nature of non-linearity.

The build up of negative and positive feedback loops can increase the stress on the complex adaptive system to such an extent that the current stable state of the system is challenged. While a change from one state to another may be gradual, the concept of punctuated equilibrium can be used to explain the erratic changes observed in both physical systems (Scheffer, Carpenter, Foley, Folke, & Walker, 2001) and social systems (Baumgartner & Jones, 1993). Change ensuing from pressure is characterised by periods of acceleration alternating with periods of stability. The reversal into periods of fast change is not caused by a particular event at that point in time, although events can function as the final trigger. It is the result of a build-up of system pressure to the degree that the system's resilience can no longer cope with the pressure and gives way to a new state at the point of phase shift.

Punctuated equilibrium means that the state of the system can remain seemingly stable because a gradual increase in pressure does not lead to gradual change, but rather to more radical change once the upper limit has been achieved. Conversely, because the state continues in a seemingly stable manner, human agents cannot predict punctuated equilibrium, and the position of the threshold in time and space remains unknown until the instant it is passed (Walker & Meyers, 2004). Punctuated equilibrium is regarded as a property of systems and the relationship between systems, as is the case in this study. Muradian (2001) suggests that the complexity of the causation of change is further increased as agency is confronted with change in both the system it is a part of and other systems, as in the case of physical and social farming systems interacting with one another. Punctuated equilibrium is therefore something that can only be understood through reconstruction after the fact (Gunderson, 2001). Compounding the complexity of such alteration is the concept of 'hysteresis', which is used to describe the phenomenon where once a change has taken place, restoration of the previous state of the system requires considerably more effort than was required to topple the system over the threshold, through a phase shift and into its new stable state (Hughes, Bellwood, Folke, Steneck & Wilson, 2005; Scheffer et al., 2001).

While punctuated equilibrium and hysteresis can explain the occurrence of sudden change, 'path-dependency' and 'lock-in' explain why transformation is not sudden and sometimes even completely absent. Path-dependency is the phrase given to the pattern in which changes are incremental and defined by the previous state of the system in the reflexive sense where history matters (Greener, 2002; Pierson, 2000). Lock-in is the process of increasing inflexibility and fixation of a certain situation when the amount of effort required to leave a position exceeds the benefits of preserving that position (Arthur, 1994; David, 1985).

Initially, a particular choice may lead to increasing returns: the more agents that choose it, the higher the returns, so a positive feedback loop is created. After a certain number of implementations, a new option may present itself. However, because the old choice has been adopted so many times before, the energy or effort required to shift towards the new option is considered to be too high compared to the benefits of remaining in the current situation. Hence as Pierson (2000) contends, agents and systems are locked in to a situation that, in the end, may be unfavourable for them.

In summary, processes that build complexity are driven by negative and positive feedback loops and are characterised by both erratic change (punctuated equilibrium, hysteresis and phase shift) and escalating stability (path-dependency and lock-in) which can take place concurrently. These ideas can be discerned theoretically, but empirically there are two constraints. Firstly, processes are not neatly separated but interlocked and interfering. Secondly, the timescale of the observations has an impact on the interpretation of the process. While a certain development may appear to be stable or locked in if observed over a given period of time, it may simply constitute a temporal stable state between two periods of rapid change if the observation period is extended at both ends of the series.

Emergence

A number of social theorists have attempted to discover the nature of the individual/structure relationship through empirical work and theorising. Some academics suggest that social theorists, including Emile Durkheim, Pierre Bourdieu and Anthony Giddens, have contributed to the ways of understanding the problem of emergence (Fuchs, 2003; Morrison, 2005; Sawyer, 2002). The study of emergence is very important to understanding the complex system. "The whole is greater than the sum of its parts. Changes are non-linear – systems change through phase shifts – radical transformations of kind rather than incremental development… complexity science is a revolutionary shift in science as a whole and that one of the implications is that the boundaries between natural and social are broken, not in the positivist direction of methodological and causal subordination of the social to the natural but rather in terms of an opening to mutual interchange… Complexity theory leads us to understand social systems as evolutionary. That means that they have histories and the histories are uni-directional" (Byrne, 2005, p2).

Cilliers agrees with Byrne that complexity is non-reductionist and anti-positivist, but stresses that claiming self-organisation is an important property of complex systems is to argue against foundationalism. Cilliers (1998) contends that the dynamic nature of self-organisation, where the structure of the system is continuously changed through the interaction of contingent, external factors and historical, internal factors cannot be

explained by resorting to a single origin or to a binding principle: "…self-organisation provides the mechanism whereby complex structure can evolve without having to assume first beginnings… It is exactly in this sense that postmodern theory contributes to our understanding of complex self-organising systems" (Cilliers, 1998, p106). For Byrne, "the trajectory of the system is the trace through successive time points of its location… Changes in the character of such a system which are non-linear and transformational will result in the establishment of a new trajectory occupying a different domain in the state space" (Byrne, 2005, p3). Geyer argues that Byrne has a more modernist orientation; complex systems theory represents a type of progress. In essence, more phenomena can be understood, enabling individuals and the state to exert more control over societies. He continues by stating that although it is possible to develop systems for understanding orderly and complex phenomena, there is always inherent uncertainty in complex phenomena, hence it can appear both a foundationalist and anti-foundationalist approach (Geyer, 2004).

Complex and Simplistic Complexity

Gerrits (2008) suggests that the constituents of complexity really only become apparent when the elements of structure and process are considered together rather than separately; also when it is understood that there are significant limits to how this complexity can be understood empirically. All the elements combine to build the complexity of non-linearity that agents are confronted with and are often forced to respond to.

The stable state of the system has, in turn, a cumulative effect on influencing pressures. As Mulder & Bergh (1999) suggest, the stability of systems is therefore temporal at best. The argument here is that the complexity of social reality can only be understood as a whole, despite its inherently complicated nature. Byrne (2005) argues for a distinction between simplistic and complex complexity in order to explain the relationship between complexity and social reality.

Simplistic complexity is, in essence, complexity within closed systems, with the emergence of structures and processes dependent wholly on the (fixed) variables within

the system. Such systems display complex behaviours but are judged to be simplistic because the initial stages of this complexity always remain within the closed system. This means that the dynamics are confined by the variables that define the system. Many examples of complexity theory, such as the computational simulations by Reynolds or Langton (Smith & Stevens, 1996) are examples of simplistic complexity.

While simplistic complexity is useful in representing the principles of non-linear development, it does not bear any similarity to social reality as its roots are fixed and bound. In social reality, the number and type of the variables determining the nature of an emerging structure or process are variable. Complex adaptive systems are regarded as open and constantly exchanging properties with other systems, and with such systems the component variables do not define their borders (Byrne, 2005).

What constitutes and limits a system is relative to the agent's and observer's locality, which complies with the argument on agency and boundary judgements and as such is endlessly connected to other systems. Therefore, complexity arises not only from the constituent elements of a system but also from the fact that it is dynamic in itself, i.e. that it is constantly changing. The initial idea behind complexity theory (that a limited system or set of rules can create complexity that cannot be explained by breaking this complexity down into separate components) is therefore challenged by the fact that, in reality, the origins of complexity are discursive to the extent that it is not possible to discern the aforementioned simple elements.

The contention thus far is that complexity theory provides a coherent framework for an understanding of the erratic character of interactions between complex adaptive systems. This is because it distinguishes components of such interactions in terms of systems and processes, allowing for an appreciation of complexity through the inclusion of all the comprising factors. It is, I suggest, distinct from previous attempts at systemic theories as it regards processes as dynamic rather than mechanical and systems as open and dependent on the agents' judgement rather than closed. Further to earlier discussion, complex adaptive systems do not exist autonomously from agents' understanding and representation. This is however arguable, as early attempts at formulating the frameworks of complexity hypothesised that systems existed free from interpretation. Fischer (1998) argues that the fact-value dichotomy underlying such an assumption has been systematically undermined and has resulted in a number of

epistemological approaches where causality, generalisation and, therefore, predictability have been substituted for a focus on discourses, interpretations and, in postmodern accounts, a complete rejection of the idea of causality. At first glance, complexity has an indefinite epistemology. On the one hand, it has taken positivism from the physical sciences from which it emerged, but conversely this positivist stance has been criticised and amended (Byrne, 2002; 2005).

Complex causality is always subject to interpretation and, as a result, open to question as every interpretation brings with it judgements which makes a strong case for negotiated subjectivism or critical realism (Byrne, 2003; Haynes, 2001; Uprichard & Byrne, 2006). Although this introduces the union of fact and value into the analysis of complex causation and acknowledges the 'locality of knowledge', as Byrne (2005) contends, it does not accept the postmodern position as it assumes that it is possible to explain, as long it is understood that such an explanation is local in time and place. Although temporal, cause and effect associations do exist and can be understood. As discussed in my section on methods, the ontological point of departure is consequently complex realism (Reed & Harvey, 1992; Byrne, 2002). In order to understand this it is essential to look at the differences between simple complexity and complex complexity (Byrne, Buijs & Eshuis, 2008).

As argued earlier, simplistic complexity follows simple rules which create complexity at its core. The works of Axelrod (1984) and Holland (1995) are examples of such an approach with their explicit illustrations of a hidden order that is understood to underlie complexity. We must investigate whether such types of complexity justify a positivist approach as reductionism and such singular explanations may assist in finding the simple, orderly patterns of rules from which this complexity supposedly arises.

With complex complexity, it is understood that systems' boundaries are defined by partial boundary judgements made by agents and that systems and contingency are therefore not clearly separable. In other words, complex complexity is not confined to systems' demarcations but intersects all system representations by agents. The observer is as much part of the complexity as the system or agents that are observed. Cilliers (2005) suggests that there are numerous interpretations of what complex adaptive systems are and how they behave. Rather than returning to reductionism to narrow driving complexity down to its essential core, there is a need to understand complex

causation as a whole (something that is even promoted in simplistic accounts of complexity), while recognising that this understanding is local in time and space and agent-bound, with the latter including the observer. Complexity theory as complex realism is positioned as the marriage of positivism with the converse of postmodernism. This is because, as Byrne (2003) asserts, while it accepts the impossibility of complete understanding of complexity, it acknowledges that given all limitations, an inter-subjective account can expose some of this complexity.

Physical Farming Systems

While the subject of this thesis is the investigation of the socio-production system of farming through the use of complexity thinking, there is a need to acknowledge other important nested systems within the wider agricultural complex system. The agricultural year that governs all aspects of the social, cultural and production system is seasonal and weather-dependent. Agriculture is cyclical, both in terms of animal fertility (lambing for example) or crop production (harvest or silage time): cycles determine the times of the year when intense activity is required and dictate when more free time is available, and social farming calendars have developed around these cycles. What follows is a very brief overview of these physical systems.

Like any natural system, agricultural enterprises may be described as open systems, receiving inputs from outside and releasing energy and matter as outputs. Internally, the physical system compromises a number of interrelated components through which energy and matter flow. The matter involved in these flows includes water (the hydrological cycle), nutrient elements (solutes: the carbon cycle) and solids such as soil particles (Briggs and Courtney, 1989).

Inputs to the system occur in a number of ways: by weathering of the underlying bedrock (which produces solids and nutrient elements), by solar radiation (energy), precipitation (water and nutrient elements), by transfers from adjacent land surfaces (e.g. by erosion or runoff which together bring water, solutes and solids), and, above all, by the farmer's deliberate input. These last inputs take the form of seeds, livestock, manures, fertilisers, pesticides, animal feeds and fuel energy (Briggs and Courtney,

1989). Indeed, it is partly through these inputs that human control of the farming system is established and maintains its capacity to produce the high levels of outputs that characterise the modern farming enterprise.

Humans also control many of the outputs from the physical farming system. Through land drainage the farmer affects the magnitude and pathways of water loss from the system. Through practices such as tillage, crop rotation and soil conservation, the farmer controls the rate of erosion and thus the loss of solids. Arguably, most importantly of all, the farmer influences the loss nutrients from the system through harvesting and the management of livestock and crop residue,. In fact, losses in harvesting often represent the major outputs of nutrients from agricultural systems, and it is to replenish these losses that large inputs of fertilisers are required.

As this discussion of systems implies, one of the major concerns when discussing physical agricultural systems is the nature of the cycling processes (of energy, water and nutrients) within farming systems, and the ways in which farming practices affect these cycles.

Socio-Production Systems

Farming is not purely an economic activity; it involves intricate and complex networks and systems of society, kinship, community and culture. The following section deals with a discussion of these social systems and how they feed back into the wider complex socio-production system of farming.

As was discussed in the previous section, agriculture is in its essence not a ‘nine to five’ occupation, nor is it a fair weather or low stress lifestyle. Individuals must desire to work in the system for the system to operate and so a form of negative feedback is required to occur in order to maintain this state, mainly through socialisation of farming children; this is discussed in much greater detail later in my concluding remarks to this thesis (page 250). Complexity theory portrays a world composed of self-organising systems, either maintaining an existing state through the process of negative feedback or following trajectories from one state to another as a result of positive feedback

mechanisms. It is argued that men, in particular, are deeply rooted in the cultural and physical systems of farming so that they firmly construct their identity as 'the farmer' to a degree that they cannot imagine a different way of life. 'Farming women', socialised from childhood to be so through their positions as 'daughters' and potential 'wives', are also clearly aware of this (Whatmore, 1991; O'Hara, 1998). Entrenchment in farming systems, created amidst the construction of identities from the assimilation of farming cultural systems, explains many actions (Ashton, 1991). According to Ashton (1991), the stability of social relations in farming is stubbornly maintained despite the continual disruptions of economic and policy-governing parameters, suggesting it is a much more stable system nested within the wider complex adaptive system. The conceptualisation of place as a set of socio-spatial practices is necessary, therefore, to reveal how social power relations construct boundaries and rules of behaviour within the farming complex adaptive system and way of life.

Due to the internalisation of a largely patrilineal system of inheritance in Britain, farming men or 'farmers'[20] and their ancestors are often born on the farm or in the immediate area which they go on to occupy and farm. There is ideological pressure to maintain ownership of the land that may contradict a strong personal desire to leave farming (Whatmore, 1991). Price and Evans (2005) take this further by suggesting that the notion of '*home'* exemplifies cultural beliefs and traditions set in an observance to the processes identified earlier. Women, they argue, often see the appropriation of their work, income and capital as curative through the upholding of treasured traditions (Price and Evans, 2005).

The arguments of structural feminism are useful in this discussion as they have evolved to consider the spatial separation of home and work which does not occur to any great degree in modern industrial agriculture. The discipline has developed from the Victorian ideology of separate spheres of operation for men and women based on innate biological capabilities (Purvis, 1995). Spring-Rice noted in the 1920s that "...the very large majority of men work away from their homes and return there for rest and recreation" (cited in McDowell, 1999, p126). Obviously this does not apply to farming men whose home and work are closely interlinked. The so-called 'women's problem' of the 1960s can be applied to farming men (Bowlby, 1965). Bowlby asserts that post-war

[20] I contend that the title 'farmer' would be assumed to be male (Whatmore, 1991).

women "...ensconced in their new homes with the newest technology yet still with an overwhelming responsibility for childcare, often experienced feelings of depression, hopelessness and isolation. Adhering to gender-ascribed identities, relations and roles can produce as much unhappiness for men" (Bowlby, 1965, p79).

Often farmers are isolated in the practice of modern farming which is increasingly dominated by technology and in which large numbers of farm workers are no longer needed, diminishing social interaction and the need to exercise power (McDowell, 1999). This has occurred without the relief of the spatial segregation of home and work. Simultaneously, recognition of gender roles may exclude men from full involvement in, and understanding of, domestic matters. As Campbell (1984, p112) notes, "...the Englishman's home may be his castle, but he takes care not to spend much time there". Family farming may see men in the home, but not of the home. This is one argument, but I would suggest that the loss of the farm worker has altered the role of the farm woman. Perhaps in past times farming women have been responsible for home and family, but in today's industrial agriculture, a woman's role may include much more of the farm's production duties. The socialisation of the next generation of farmers and farmers' wives may still occur in the modern farm home but the role of farm women cannot be viewed in purely gendered terms. Whatmore (1991) asserts that farming women often fill in the gaps left both by the exodus of farm workers from the agricultural sector and inadequate rural social service provision. This can even enhance the family's community status. Issues of status and pride in a self-sufficient farming way of life are acknowledged as important factors of wellbeing by rural stress networks (RSIN, 2000). Gray (1996) contends that farming women are clearly aware of the social practices that are required to maintain the farm family's cultural and physical attachment to space. For example, if a farming woman was to question 'patrilineal' inheritance and the loss of her own capital via generational transfer, this would completely threaten the cultural bedrock on which family farming rests (Gray, 1996). Revealing a sense of belonging and the actions it leads individuals to take, such as staying on a farm that is no longer economically viable, is one step towards reinterpreting 'stress'. For example, when retirement is compulsory, individuals may feel no point in continuing to live, so keenly is their sense of personal identity linked to the places and spaces of farming (McDowell, 1999).

Understanding the meanings of ‘house’ and ‘home’ is vital when attempting to evaluate sources and the causes of argument and discord in farming. A feminist approach is useful in revealing that this is because ‘the home’ and concept of ‘domesticity’ are typically associated with women (McDowell, 1999). However, for farming men and women, the symbolism of the farmhouse can be extremely important, particularly when the shadows of past (and future) generations are cast all around (Moore, 1986; Carsten and Hugh-Jones, 1995). Furthermore, the Marxist analysis of the home as a site of refuge for men from the rigours of capitalism, where new workers are socialised into the work ethic and women soak up male anxieties, is useful in understanding the emotions produced as a result of farming familial ideology (Gasson, 1992).

Upsetting reactions to life events in later years must be understood as often resulting from labour within, and reactions to, such a familial ideology. As Gasson (1992) recognises, male farmers can often only share their anxieties about the farm business with their wives. Such feelings of only being able to discuss farming lives with other farming individuals who have experienced the socialisation process and understand patriarchal and patrilineal gender relations is reinforced by many of the farming/rural stress networks, such as RSIN and FCN, who deal with the distress of such individuals. It is rather ironic that the specialist ‘networks’ or systems themselves contribute to the narrow circle of outlets available to distressed farm-based callers. When the farming system and way of life is seen to be threatened by non-farming rural occupants and agrarian economics not allied to its familial ideology, this can lead to retrenchment and exploitation (Little, 2002). The damaging impact of this ideology on individuals is rarely admitted, but there is evidence that this retrenchment into the space of home occurs in the aftermath of agricultural crises. This is sometimes revealed as outward hostility towards non-farming claimants to the use of rural space. Hence, the traditions of family farming located in the home are revealed as deeply embedded in the subjectivities of its members (Little, 2002).

Conclusion

Complex farming systems can be described as open systems, receiving inputs from outside and releasing energy and matter as outputs. How do human beings fit into the

complexity paradigm? They are an obvious symbiotic part of the web of their complex physical and biological surroundings. In addition to this, there is the very unique human characteristic of self-awareness: humans' ability to be aware of history and to evolve interpretations of themselves, their surroundings and history.

Complexity can be used in the analysis of varied subjects: from use in the study of cells in biology (Wolfram, 1994) to a tool for explaining drug use (Dean, 1997) to a means of guiding organisational science (Anderson, 1999); from the study of decision-making over estuaries in Germany, Belgium and the Netherlands (Gerrits, 2008) to economic trends like financial markets (Peters, 1999). The degree of flexibility afforded by complexity theory provides a lens through which to examine systems of an extensive and diverse nature, such as farming. Adopting a complex approach is of benefit as it facilitates an appreciation of nonlinearity, and the varied relationship between two or more influencing variables. As each interaction feeds back upon each system differently, the outcomes cannot all be reductionist (Byrne, 1998; Geyer, 2004; Cilliers, 1998; Haynes, 2003; Blackman, 2001, 2007; Smith and Jenks, 2006; Bertuglia and Vaio, 2005; Peters, 1999). As a result, each aspect of the complex system must be addressed and acknowledged as part of the whole, and cannot be reduced down to a simplified version.

Mays argues that theory assists us in the understanding of research and facilitating social life and systems, as well as allowing political, historical and economic concerns to be critically analysed (Mays, 1997). In Figure 4, below, I have attempted to depict the processes and interactions and influences that occur in a complex system. The diagram includes a pictorial representation of a complex system as a ball-and-stick diagram in the centre; this is encircled by the boundaries of the system, which are in place due to the influence of governing parameters. Mechanisms of positive and negative feedback both alter and reinforce these parameters, as well as the changing external environment. Information enters and leaves the system, and all these factors combine together to produce complex adaptive behaviour and emergence.

I will use the complexity framework, as set out in this chapter, to try and explain the development of the British agriculture industry, its complex nature and the way it has reacted to crises in recent history. From this analysis I hope to propose trajectories that the industry may follow in the future.

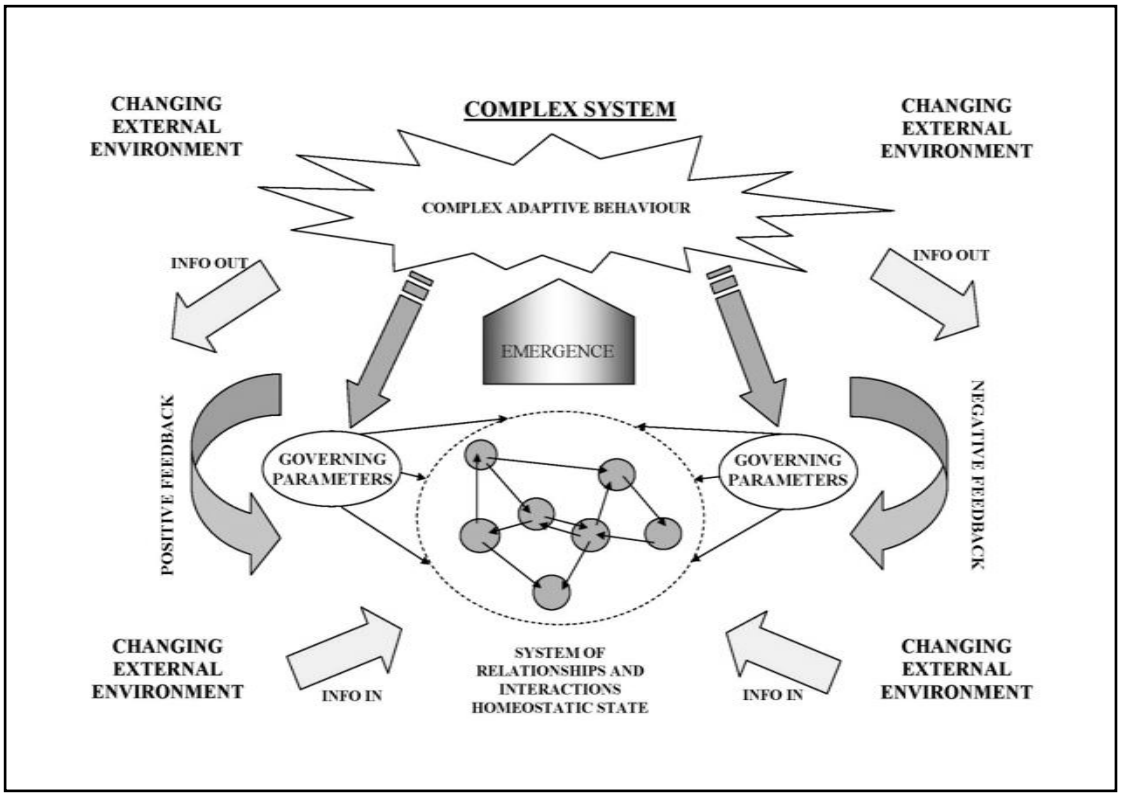

Figure 3: My own simplified diagram showing the processes, interactions and influences present in complex systems.

In summary, one can describe complexity as the "...domain between linearly determined order and indeterminate chaos" (Byrne, 1998, p1) that provides a means of understanding social and organisational features of the world which appear to be more complicated (Wheatley, 1992; Byrne, 1998). Complex systems develop as a result of "...rich interaction of simple elements that only respond to the limited information each of them are [ibid] presented with" (Cilliers, 1998, p5).

Even minute alterations in the state of the system will, and can, feed back and affect other present factors. This will then produce a different state which, again, feeds back into the system. Numerous small changes in factors over an extended period can promote difference between seemingly similar initial systems, leading to the emergence of change. As a result, while conditions may appear similar, fluctuation or even small differing details will produce very varied effects (Byrne, 1998; Haynes, 2003). Feedback reveals the interaction which exists between variables (illustrating the nonlinear evolution of the system) and so illustrates the system dynamics at work. As a

result external circumstances, promoting change, are just as important as the internal condition (Haynes, 2003).

Complexity theory offers a perspective on the role of time and history in determining emergent properties of complex systems; this is related, in particular, to the feature of nonlinearity. Understanding the historical development of British agriculture is fundamental to fully grasping the interactions and relationships present in the contemporary industry; this again makes the use of complexity theory in this thesis essential as a tool for further understanding[21].

The history of an event or development (the lowland mixed farming system in the case of this thesis) is also of great importance from a complex and complexity perspective. What is currently happening in a particular system has resulted from changes and responses to conditions in the past. Only by reflexively addressing these changes over time can we fully understand the existing observed complex system (Byrne, 1998; Coveney and Highfield, 1995).

Haynes' (2003) interpretation of complexity thinking suggests that while history does not always "guide us reliably towards future possibilities, cause and effect…" (Haynes, 2003, p49), it can however help to possess knowledge about the experiences of the complex system which permits a "...reasonable chance of forecasting..." (Haynes, 2003, p49). The key is to attempt to produce "...unknown but not unknowable futures" and "…to work back from imagined solutions and successful futures" (Shine, 2006, p79). However, the multiple factors influencing conditions within a complex system make precise projections of a certain future or outcome unattainable (Reed and Harvey, 1992;

[21] Two social theorists that espoused the importance of history in shaping present human activities were Karl Marx and Max Weber. Swingewood, (1984) explains that Marx's writings interpreted history in terms of a class struggle for survival that determines everything else in human affairs. Focusing on class, Marx's interest was in the historical basis of inequality, and specifically inequality under capitalism. Marx argued that the capitalist system's tendency towards crises produced the necessity of inequality (Ritzer & Goodman, 2003). In other words, economic crises such as recessions and depressions are an integral feature of capitalism.

Elliot and Kiel, 1996; Harvey and Reed, 1996; Brown and Eisenhardt, 1997; Byrne, 1998; Stacey, 2000; Haynes, 2003; Smith and Jenks, 2006).

To summarise, agricultural systems are complex, combining human and biological elements that link together diverse people, places and processes through multiple product flows and intermediaries. They are characterised by emergent properties and non-linear dynamics, due in part to highly articulated interactions between many levels (Liu et al., 2007; Puu, 1993; Sawyer, 2005). On occasions small causes can produce large effects, but large causes can produce complete change and phase shift by destabilising a system and altering its future path or trajectory. This is particularly evident in several recent crises in agriculture: the 'slow burn' of BSE, or the acute shock of foot-and-mouth disease in 2001. Complexity theory can assist interpretations of uncertainties and divergent views and aid understanding of the social, economic and political factors determining the workings and pressures of such complex socio-technical and socio-ecological systems.

4. METHODS

Introduction

Themes of methods and methodology are elemental to conducting social research. Such issues do not stop at 'theory on a page': instead they permeate every phase of this thesis, from the initial subject development and issues explored to the process of data collection, and on to the later analysis and writing up of the work.

I am interested in informing ideas of change within agriculture by using complexity theory. My ethnographic experiences have brought to light certain possible drivers of this change such as BSE, land price increases and the changes in EU agricultural policy such as decoupling. This chapter will discuss both method and methodological justifications for the data collected, including the general and theoretical approach contained within this; ontological and epistemological issues will then be debated. Details of the methods employed and a rationalisation of both the primary and secondary data will be discussed. The sample population and my access will be considered as they relate to my combined autoethnographical and ethnographical stance. The theoretical applications in terms of grounded theory will be considered in terms of this study. Finally, there is a need to consider ethics. This chapter sets out my 'tool kit' for achieving the understanding I have detailed in the problematic chapter. Complexity theory will aid in the analysis and explanation of what is occurring in the farming industry, but it also informs the research discussed later.

In summary, this chapter will discuss the method of data collection and the methodological issues which inform it as an attempt to address the change issues in agriculture which I am most interested in. These strands combine to aid the understanding of what is produced and how it is created (Mays, 1997).

The Approach

This thesis combines a documentary and literature-based approach to illustrate the situation of lowland mixed farming within County Durham. The other aspects are

interview and autoethnographical data from my own personal experience. A variant of 'grounded theory' research methodology was adopted in which theory and empirical experience inform each other and shape the course of enquiry (Glaser and Strauss, 1968). This involved three concurrent research activities: first, critically reviewing academic writings on theoretical and contextual issues such as agricultural change, foot-and-mouth disease (FMD) and BSE, CAP reform and complexity theory. Second, an extensive critical review of other information sources including the mass media, NGOs, official government publications and statistics. Thirdly, interviewing key 'actors' and observers in the local agriculture industry.

The documentary and literature-based secondary sources – including general reports and also the National Farmers Union (NFU)'s specific media reports – allowed me to use data which I would not have been able to collect myself. Not only did these sources allow me to contextualise the experience of farmers in County Durham, but they also provided information about the situation prior to my own research. Government reports and some academic literature, whilst exhausting the notion of how farmers actually felt at the time, do give an indication of the 'real' experiences of those involved at the exact time of each specific crisis. This, in turn, informs and enriches the narrative of those in the farming industry by giving a multilayered idea of what individuals' experiences were and, most importantly, the longer term residual effects of a number of crises.

Such documentary material affords a broad idea of the state of affairs. Government reports provide insight into national and, where available, regional attitudes and approaches of those in power. Media reports of the crisis also afford insights into the viewpoints of both politicians and media organisations, reflecting the general consensus of the populace. Further document-based resources that I used were National Farmers Union press releases and website information. This gave an indication of the NFU's management approach and stance on crisis management, and their tactics for dealing with the press (PR) and influencing government decision-making.

A broad-ranging review of academic literature was undertaken. This included not only literature on north eastern agriculture, where possible, but also to a greater extent the British agricultural system. Such writing examined contemporary issues in the farming industry and community, which mainly focused on foot-and-mouth and the reform of the Common Agricultural Policy. (It should be noted that a great deal of useful literature

is being generated by individuals such as Philip Lowe and others in the Centre of Rural Economy, part of the School of Agriculture at the University of Newcastle upon Tyne). These articles centre mainly on farmers' states of mind, and economical and logistical difficulties and attitudes within the industry as a result of foot-and-mouth. They also allow an appreciation of the acute and short-term impacts upon social networks and livelihoods and afford a view of the changes occurring in systems as a result of destabilising factors. This facilitates a multi-faceted appraisal of the experiences of farming individuals and those associated with farming.

Methodological Issues

Jary and Jary (1995) suggest the need to choose methods dependent on certain key factors, all of which have a bearing on epistemological and ontological considerations: the nature of the research topic, the theoretical standpoint, time and money, and the authority of the type of research.

This research aims to understand how the experiences of the County Durham farming community (used as a case study group) are affected by the larger issues of national agricultural change, and how the thoughts and actions of individual farmers and farming professionals[22] are affected by, and can influence, the wider changes in the agriculture industry. I have adopted a realist perspective which informs the epistemological[23] and ontological[24] viewpoints of this study in the complex realist tradition. Complex realism proposes that the social world and individuals' own knowledge of it influences behaviour. By implementing this approach, this research attempts to view actors and structures as possessing a common influence and interaction. This will give the thesis an

[22] By farming professionals, I am referring to individuals who while not engaged in primary farming practice are directly reliant on the farming industry for their income or profession. Such professions include vets, engineers of agricultural machinery, agricultural land agents, etc.

[23] Epistemology is "…the branch of philosophy concerned with the theory (or theories) of knowledge, which seek to inform us how we can know the world" (Jary and Jary, 1995, p201).

[24] Ontology concerns itself with "… the nature of social entities" (Bryman, 2001, p16).

ontological push towards individuals' interaction with and perception of the existing external factors – namely changes in the agriculture industry – resulting in a better understanding of individuals' viewpoints and relationships within such systems. Realism acknowledges the importance of everyday interaction and allows it to be examined alongside the structures which shape and affect relations. This interplay aids the research and provides the thesis with a better understanding of how the social world behaves and can be altered (Bhaskar, 1989).

The ontology adopted in this study influenced the formulation of questions and the methods employed to carry out the research. Ontology is the philosophical desire to ascertain what exists in the world (Jary & Jary, 1995) and as such "…can not be divorced from issues concerning the conduct of social research" (Bryman, 2001, p19). Ontological questions are fundamental in appreciating the reality of the world and the nature of social entities, but also key to – and cannot be removed from – the conduct of social research.

The adoption of ethnography has allowed me to focus firmly on the case study of farmers in County Durham in order to appreciate how experience is socially and culturally felt. The combination of observation and interview – intrinsic in the ethnographic process – provides a fuller understanding which is a more 'rounded' and not 'segmented' understanding of the situation (Hughes, 1992, p443). Further to this, as Boyle (1994) highlights, it allows one to see the interrelations between systems and subsystems, whilst also allowing the "…informants [to] speak for themselves" (Boyle, 1994, p163). Boyle (1994) asserts that ethnography is less a technique and more a term which can be used to describe what is created in the line of research, and as such is bound up in the researcher's epistemological stance. My assertion of the 'theory of knowledge' places the inner group as the focus, thus allowing me to appreciate the depth of the effect on the 'subculture' of farming.

My epistemological approach to this research inspires my ethnography as it concerns the way in which I view culture, and believe it should be studied. Hammersley and Atkinson (1983) term this as 'constant comparative' (a term associated with grounded theory). They state that "each segment of data is taken in turn, and, its relevance to one or more categories having been noted, it is compared with other segments of data similarly categorised. In this way, the range and variation of any given category can be

mapped in the data, and such patterns plotted in relation to other categories. As this process of systematic sifting and comparison develops, so the emerging model will be clarified" (Hammersley and Atkinson, 1983, 180). This process was undertaken in my analysis with the aid of NVivo software. It aided a methodical approach to data analysis and the ability to easily revisit and review data throughout the research process.

I have adopted a critical realist epistemology as a means of understanding the mechanisms at play in the faming industry, to shed light on its 'shape' and to look at the process within those systems, such as the mechanisation of agriculture and its effect on the requirements of an agricultural labour force, or the contemporary trend towards the conversion of nineteenth century agricultural buildings into dwellings. A central idea of critical realism, as asserted by Morton (2006), is that natural and social reality should be understood in terms of an open stratified system of objects with 'causal powers'. In addition, there are unobservable events which cause the observable ones: "the social world can be understood only if people understand the structures that generate such unobserved events" (Lyubimov, 2009, p2). This fits well with the notion of systems and the feedback mechanisms within them which maintain and/or alter their shape.

Bhaskar, in his seminal work on critical realism (1978, 1998), asserts that there is a reality that exists independently of its human conception. Culture and society are generated by human activity, so society is continuously changing due to the dynamic nature of human actions (Bhaskar; 1978, 1998). As such – and this is the crux of the theory as applied to this study – there is a mutually influential relationship where humans shape their society which in turn feeds back to affect human activity (in this case farming). Therefore, critical realism in the context of this study reinforces the links between the governing parameters within the agricultural system (to use complexity theory terms). It governs how the parameters affect the individual farmers and informs the culture and individual worldviews that those farmers bring to the decisions they make. In turn, the parameters govern how this feeds back into the agricultural industry and the resultant changes. Critical realism, therefore, necessitates a range of methods – in this case, the secondary and primary approach, meaning that the data, which is applicable, is both categorical and insightful while avoiding the pitfalls of sticking rigidly with one type of research method; this encourages a more overlapping approach.

Grounded Theory

In this inquiry, grounded theory was used as a guide (or tool) to help understand the contexts and contingencies of such incidents as BSE, FMD the changes in CAP, decoupling, Environmental Stewardship Schemes and market volatility (including emphasis on property and land for leisure). I would like to clarify, however, that I did not rigidly adhere to grounded theory: instead I utilised a form of grounded theory where the most useful aspects and principles were followed but the rigidity of some of the processes was not allowed to take over and stifle the reflexive and evolutionary path of the research. Warren (2011) describes this 'cherry picking' approach as utilising the 'tools of grounded theory'.

As I have adopted a critical realist perspective, utilising the tools that are most appropriate is essential; however, Warren argues that "the selection of those tools does not necessarily imply allegiance to a wider methodological stance" (Warren 2011, p131). Ackroyd (2004) succinctly makes this point: "Methods are a means of accomplishing things and should be thought of as being like tools. It all depends what kind of tasks there are to do and what is being sought to be accomplished what tool should be used…" (Ackroyd, 2004 p139).

Grounded theory is an interpretive method which shares much with phenomenology. A benefit of this approach is that when repetition occurs, I am aware that a saturation of findings has been reached on a particular issue (for example foot-and-mouth), from a particular farming type (tenant farmer/farm owner), from a particular farm size (acreage), farming method (beef/cereal) and so on. The most effective aspects of grounded theory within this investigation were those of theoretical samplings and theoretical saturation which will now be discussed.

I used both qualitative and quantitative methods at a multi-staged level: first one then the other. After much consideration, it was decided that I had sufficient innate knowledge and understanding of my subjects' position and the then current situation of the farming industry in County Durham to begin the research process through qualitative data collection and not through a review of secondary academic sources. I chose to apply a heuristic form of grounded theory, a 'non-fundamentalist' approach which would guide me by its principles but that would not allow grounded theory to

restrict my research. I did not want to use a hypothetical deductive method but to use my research as a means of generating a set of narratives.

The data collection process I adopted began with a research situation. From my knowledge position through upbringing and socialisation and working within the industry, I had informed notions of the farming situation in County Durham. Within that situation, the task I set myself as 'researcher' was to understand what was occurring, and how the 'actors' manage their roles. I approached this through observation, conversation and interview. After each bout of data collection, the key issues were noted down, and the transcripts were imported into NVivo and coded with emerging themes. I found that constant comparison through an iterative form of cyclic analysis was central to this process. At first this involved comparing interview to interview, looking at the questions I was asking and reflecting on the responses they were eliciting. Then later secondary source data and a literature review into this process were incorporated while still referring back to and evaluating individual interviews.

What most differentiates grounded theory from other forms of research is that it is explicitly emergent: it does not test a hypothesis. It sets out to find which theory accounts for the research situation as it exists (Bryman, 1996). In this respect it is like action research: the aim is to understand the research situation. The aim, as Glaser (1998) states, is to discover the theory implicit in the data (Glaser, 1998). The themes developed through the grounded approach and use of the data management package, NVivo, allowed for a thematic approach to secondary data and other academic writings. In essence, the primary data led the literature review and the furtherance of the thesis at every turn. The place of literature in grounded theory is quite different to hypothesis-testing research, as is the way in which both methodology and theory develop gradually in grounded theory as data and interpretations accumulate (Glaser, 1998).

There are certain aspects of grounded theory which fitted in well with the type of research I wished to carry out and these will now be discussed. First of all, grounded theory has its own sources of rigour. It is responsive to the situation in which the research is done. There is a continuing search for evidence which disconfirms the emerging theory. It is driven by the data in such a way that the final shape of the theory is likely to provide a good fit to the situation (Bryman, 1996). In fact, Glaser (1998) suggests two main criteria for judging the adequacy of the emerging theory: that it fits

the situation; and that it works – that it helps the individuals in the situation to make sense of their experience and to manage the situation better. In collecting and interpreting data on a particular theme, a point of 'diminishing returns' was eventually reached. Eventually the interviews were adding nothing to what I already knew about a theme, its properties, and its relationship to the central ideas; when this occurred I finished pursuing that theme. Ultimately interviews cease to yield new or relevant data (Bryman, 1996) and this constrained my sample size.

This process is termed 'theoretical sampling' by Glaser and Strauss. They suggest it "…is the process of data collection for generating theory whereby the analyst jointly collects, codes, and analyses his data and decides what data to collect next and where to find them, in order to develop this theory as it emerges. The process of data collection is 'controlled' by the emerging theory, whether substantive or normal" (Glaser and Strauss, 1967, p45.) This definition conveys a crucial characteristic of theoretical sampling: namely, that it is an ongoing process rather than a distinct and single stage, as it is, for example, in probability sampling. Moreover, it is important to realise that it is not just people that are the 'objects' of sampling, as can be seen in a more recent definition: "data gathering driven by concepts derived from the evolving theory and based on the concept of "making comparison"" (Strauss and Corbin 1998, p201), the purpose of which is to go to places, people, or events that will maximise opportunities to discover variations among concepts and to categorise them in terms of their properties and dimensions (Strauss and Corbin 1998). For Charmaz (2000, p519), theoretical sampling is a 'defining property of grounded theory' and is concerned with the refinement of ideas, rather than boosting sample size.

In the context of this piece of research, it is relevant in so far as it is able to open a space for diversity in the research process. The aim is to cover a fuller range of possible variations in the field and in the phenomenon (and its study). Charmaz (2006) has produced a contemporary definition: "Theoretical sampling means seeking pertinent data to develop your emerging theory. The main purpose of theoretical sampling is to elaborate and refine the categories constituting your theory. You conduct theoretical sampling by sampling to develop the properties of your categories until no new properties emerge" (Charmaz, 2006, p.96). Theoretical sampling allows the introduction of diversity and variety in the data. As Glaser and Strauss (as well as Charmaz)

underline, it should always be driven by theory: the state of the developing theory in the study.

It has already been noted that there was a need to talk directly to farmers about their experiences. This required a methodological approach capable of allowing the researcher access to farmers and those involved in the farming community/industry and the ability to draw conclusions from these narratives. Also, and perhaps more importantly, there was a need to encourage the respondents to reflect on the meaning of their work/farm/community/industry and to encourage them to give their own interpretations (their own 'voice', perhaps). Complexity was also central to this process. Strauss (1987) argues that: "…the basic question facing us is how to capture the complexity of reality (phenomena) we study and how to make convincing sense of it" (Strauss, 1987, p12).

Strauss argues that the method of grounded theory is the best way to do this. Warren argues that the inductive approach has much to recommend it: "…it allows theoretical development to occur over the course of the research project and, by its very nature, stops the researcher from modifying data in order to support a preconceived, theoretical model" (Warren, 2011, p130). As such, this seemed a suitable methodological approach to draw on. That said, to pursue this research wholly on the assumptions made by this methodological approach was not my design. Whilst I agreed broadly with the idea that it is important to ground theoretical explanations and conclusions within the data collected during a project of this nature, this alone is not enough. As Warren contends, for this research to be successful, "the researcher could not begin "tabula rasa" for both methodological and practical purposes. Methodologically, because to research the area without grounding the process within the context of both the locality and the industry would have been disastrous and also cast serious doubts upon the researcher's credibility" (Warren, 2011, p130). He goes on to argue that the researcher must appear to the respondent to have a correct grasp of the subject to instil confidence and put respondents at ease: "This would have affected the project at a practical level, because if the researcher cannot demonstrate a certain level of understanding, it is unlikely that they will be successful in securing the co-operation of those in the industry and retaining their goodwill. Also, the researcher has to start somewhere; the challenge is to be able to display a level of knowledge of the subject which will allow informants to

feel confident that the researcher is competent and well-informed without assuming too much and, consequently stifling, informant's responses" (Warren, 2011, p132).

Case Study and Complexity Theory

Complexity theory will be discussed in much greater detail in Chapter 3. However, it is necessary to acknowledge its relevance in terms of data collection and methodological considerations as mentioned earlier. Complexity theory is a means of understanding, interpreting and explaining data collected in this investigation and fits comfortably within a realist structure. In turn, the focus on the County Durham farming system adopts a case-based method popular in complexity theory. Byrne argues: "Cases are complex systems – a position that transcends the holistic/analytic dichotomy by recognising that complex systems (far from equilibric systems), trajectories and transformations, depend on all of the whole, the parts, the interaction among parts and whole, and the interaction of any system with other complex systems among which it is nested and with which it intersects" (Byrne, 2009, p2). Moreover, complexity theory's ability to shed light on the trajectories of cases and collections of cases, Byrne asserts: "…resonates with critical realism's understanding of causality as complex and contingent, and both correspond with the configurational conception of causality that underpins Ragin's (2000) assertion that what matters for social scientists are set-theoretic relationships rather than causal models couched in terms of descriptions of associations among abstract variables" (Byrne, 2009, p2).

Critical realism has already been discussed in this chapter; however, to employ complexity, it is necessary to employ realist reasoning of the world's stratified ontology and its distinction between what Harvey (2009) describes as the transitive and intransitive domains of science, which he asserts provide something of a 'launching point' for the discussion of social ontology for complex social formations. Harvey goes on to suggest that "What is needed, though, is a scientific ontology that bridges the two. Complexity theory is just such a vehicle: it is a general systems theory…" (Harvey 2009, p26).

Storied Spaces

Baskin proposes that when looking at complex adaptive systems, for him the emphasis is upon the human actors: *"the critical difference is the ability of human beings to tell stories, to imagine new futures, act on those stories, and change the world so that they can realize such futures"* (Baskin, 2008, p2). Baskin proposes the theory of *Storied Spaces* as a framing device for the narratives which are generated by the interviewing process. He contends that this forms an intricate network of stories, knowing, and meaning: as powerful a constraint on our behaviour, individually and collectively, as our physical environment – perhaps more so. Baskin (2008) suggests that storied spaces "…appear to be an intensely complex nested network of less inclusive storied spaces that function as the human equivalent of complexity study's complex adaptive systems" (Baskin, 2008, p4). He continues: "…storied spaces are swirling, dynamic environments" akin to Dervin's process of sense-making: "…a process whose products are forged in the inevitable conflict that occurs when people, with their varied functions, desires and experiences, live and work together" (Dervin, 2003, p45). Moreover, this network is very complex because we can belong to so many different storied spaces: a family of origin and one's own family, a work group or two, a religious congregation, a political party, sports teams, and perhaps a local farming community like the mixed lowland farming community which features in this thesis.

The dynamic of these storied spaces occurs due to the interaction of two very different types of stories, which reflect Gell-Mann's 1994 theory of how complex adaptive systems learn (or put a different way, come to *know*) about their environments. Gell-Mann suggested that complex adaptive systems learn through the way they process information. That is, they condense experience into 'schemas': allowing them to respond to new information by predicting from those schemas, observing the results, and either selecting effective schemas or generating new ones, therefore learning.

The first type of story Baskin identifies is the dominant narrative: "...the fixed accounts of past events, the historically grounded, control-oriented re-telling, whose function in storied spaces is to keep our behaviour congruent with ways that have always worked, much like complexity's attractors" (Baskin, 2008, p3). It is possible to think of an attractor's lifecycle as depicted in Figure 5, below. Uprichard and Byrne (2006) look upon local narratives as representing not only "... accounts of the single complex system

of the self, but as representations of how lives and the social intersect..." (Uprichard and Byrne, 2006, p668). It is by understanding the meaning which underlies action and interaction that possible futures are formulated (Byrne, 1998; Shine, 2006; Uprichard and Byrne, 2006).

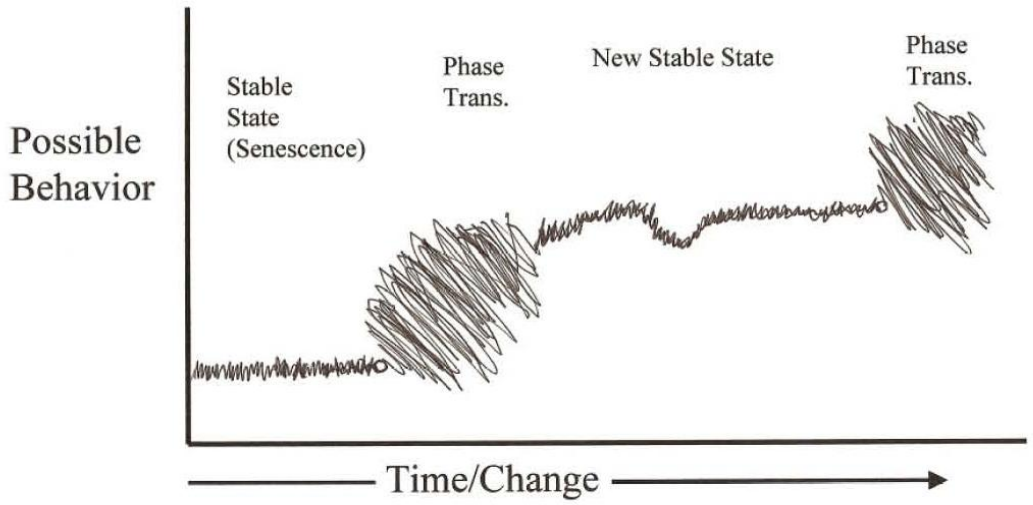

Figure 4: Lifecycle of an Attractor (Source: Baskin, 2008, p5).

Baskin explains that the stable state of any entity is formed in the phase transition, "…where the entity's components explore their environment to discover which behaviours enable them to survive" (Baskin 2008, p5). When they find those behaviours, their interaction determines the attractor of their entity's stable state; that is, the limited number of all possible behaviours that become characteristic of it. At some point, however, 'environmental' change becomes so great that the system can no longer survive its 'bifurcation point' (Baskin, 2008; Byrne, 2005; Blackman, 2000) and the system must either break up or go into another phase transition. Essentially, this is the pattern described as 'punctuated equilibrium' by Gould (2002).

'Antenarrative' (Baskin, 2008) is the flexible, continuing attempt to explain what is currently happening (akin to the feedback of Gell-Mann's model) with which complex adaptive systems must compare their models so that they can learn as their environments change. In storied space, antenarrative provides flexible feedback to people about recent happenings requiring patterns of behaviour different from those

driven by their storied space's narratives. As Boje (2001) notes, traditional analysis of storytelling, starting with Aristotle, has focused on narrative. However, as Baskin contends, "…it is only through considering the interplay between the narratives and antenarratives in any storied space that we can come to understand its dynamics and, specially, its evolution" (Baskin, 2008, p5). What makes human social systems so complex is "…the dynamics that emerge as people behave as agents in an intricate network" (Baskin, 2008, p6).

In other instances, events demand that people act in ways not defined by their 'dominant narratives'. If the dominant narratives do not provide ways for people to test antenarrative perceptions that do not fit within those narratives (as formed, for instance, by their work group storied spaces) then behaviour is likely to become what Baskin (2008) called 'dysfunctional'. As long as the storied space in which a small group or organization exists remains in its stable-state attractor, such 'maladaptation' is generally not dangerous. However, once a government, business or industry (the latter being of most importance in this monograph) moves into phase transition, a dominant narrative that offers no way for people to enact their antenarratives can become dysfunctional and face extinction, as much as tiger's prey that cannot adapt to the tiger's faster speed.

Mixed Methods Research

In this investigation several types of data were utilised in an attempt to gain a better understanding of mixed lowland farming as a complex adaptive system. Semi-structured interviewing, autoethnography and official statistical analysis have been employed and the following section is intended to explain the reasoning behind the adoption of such a mixed methodology.

Debate on the merits of quantitative and qualitative approaches can be fierce. Some researchers committed to quantitative survey methods refuse to acknowledge the strengths and validity of other methods, while others, whose preference is for direct observation, refuse to countenance quantitative techniques. Denzin (1970) has suggested that, whenever possible, social research should seek to 'triangulate' different research methods. By using triangulation in this study, I have taken Bryman's recent

(2012) definition of the process as a means of cross-checking data from different sources or collection methods as a means of backing up statements or opinions. Jary and Jary suggest that triangulation offers "…the best chance of achieving validity" (Jary and Jary, 1995, p698).

Qualitative Interviewing

Interviews consisted of three parts: first a discussion of the subject's early experiences and present circumstances; then anecdotes; and, finally, a narrative review of particular experiences. Two hours were provisionally allocated for each interview (the time was shortened or extended accordingly). The interviews were recorded using a dictaphone (with the subject's permission); this enabled each interview to be transcribed later, reducing the need for note-taking during the interview, which would have hampered engagement.

As mentioned previously, a type of grounded research was adopted. Grounded research (Glaser and Strauss, 1968) seeks to identify variables and links 'on the ground': to evolve explanatory theory and to test and refine this repeatedly until *'saturation'* is reached. My own experiences within the farming industry were my initial starting point. I had initial notions of change in farming that I tested using the grounded process which developed as the research unfolded (my position as 'researcher' within the research process will be discussed later in this chapter).

The qualitative data collection process involved a preliminary degree of analysis taking place in stages, meaning that the theory developed gradually. Any emerging themes were then incorporated into further data collection with the purpose of developing hypotheses.

Interviewing is one of the most frequently employed qualitative methods. Indeed, the term 'qualitative methods' commonly denotes data collection techniques based on various types of conversations between researchers and respondents. Of these, the one-to-one interview is arguably the primary form; it is used in many research settings and can be quite variable in style (there can be variations in duration, the role of the

interviewer and the degree of 'structure' of the conversation which constitutes it (Bryman, 1996).

In this study I utilised in-depth, relatively free-flowing (though still focused) interviews which were employed to investigate subjective feelings and reactions, and which would be helpful in the exploration of 'sensitive' topics (Renzetti and Lee, 1993) such as depression and suicide associated with farming in isolation and the financial effects of the crisis. McKenzie and Crouch (2004) assert that respondents in such studies are usually selected on the basis of being, or having been, in an unsettling or disturbing situation – such as, in this study, living through the major changes in their livelihoods associated with the agricultural crisis that I am describing (Crouch and McKenzie, 2000; McKenzie and Crouch, 2004). Silverman argues that such interviews target the respondents' perceptions and feelings rather than the social conditions surrounding those experiences; at least, the collection of the interview material and its interpretation and analysis are not primarily directed towards establishing 'objective facts' concerning these conditions. Therefore, the primary aim of in-depth interviewing is to ''generate data which give an authentic insight into people's experiences'' (Silverman, 1993, p91). Miller and Glassner take a realist perspective, where they use the term 'authentic' which implies that the respondents' point of view can be granted the "culturally honoured status of 'reality'" (Miller and Glassner, 1997, p 99).

To understand a situation, we need to take its social context into account. This means, in effect, that the interview material is ultimately understood within a situation assumed to be independent from experience (Miller and Glassner, 1997). It is therefore necessary to be aware of this when interpreting and analysing the material. Silverman (1993) suggests that this process is an attempt to sociologically formulate both the subjective and the social meanings in the respondents' accounts. That is, to accept these accounts as aspects of the respondents' experience overall, but also to accept that this experience overlaps with the interviewer's actions, and therefore causally relates to them. It is for this reason that I have used multiple other sources of evidence to provide a more rounded picture of events while still maintaining the quality and depth of data generated through the interview process.

Interviewing is without doubt an obtrusive method; that is, it "elicits the statements to be analysed" (Seale, 1999, p27). Seale continues to argue that this is so even when

respondents are freely encouraged to 'tell their story' because that story might not have been told, or told in a particular way, without the interviewer's intervention, both through the initial prompt and subsequently throughout the course of the interview. It is for this reason that the literature on interviewing contains extensive discussions of problems associated with the interactive aspect of the interviewing process (Minichiello et al., 1995). Most commonly mentioned are interviewer bias, variability of rapport and, especially from an empiricist perspective, validity issues relating to the interpretation of the interview material (Minichiello et al., 1995). However, there are also – much less frequently mentioned – advantages in spontaneous interviewer-interviewee interaction. Silverman (1993) suggests that in an in-depth interview, the researcher's discretion with respect to the conduct of the interview is part of an open-ended mode of inquiry which can produce great richness of material if the researcher is responsive to cues as they occur in the course of the interview (Silverman, 1993). Furthermore, without the constraint of a predetermined grid of specific questions or issues to be discussed, the very scope of the inquiry can broaden or even shift in response to the emergent interview material.

None of this need imply that such interview procedures lack reliability. On the contrary, Bryman (1996) proposes that such complex reactions and feelings are best given meaning and are best articulated to the respondents' satisfaction (i.e. their sense of 'closure') through conversation which encourages reflection on, rather than mere reporting of, experience. The dialogue about experience can, of course, "…be an internal one, with oneself, as it were; but in the reflective interview a skilled and, most importantly, theoretically as well as emotionally informed interviewer is invaluable as a sounding board and an aide to veridical expression of thoughts and feelings" (Kleinman and Kleinman, 1996, p55).

It has already been suggested that in-depth interviews can generate new knowledge, or at least new understanding. In addition to increasing self-understanding, this knowledge may also afford better insight into the social conditions of respondents' lives or the realisation of networks they were not aware of (Van Maanen, 1983). The researcher looks for insight into these conditions as they are reflected in respondents' experience, but as Kleinman and Kleinman (1996) argue, the investigators needs a keen view of the context in which the new knowledge is to be taken, which in turn depends on the

researcher's understanding of the relationship between interviewing and the particular research question (Kleinman and Kleinman, 1996).

This discussion raises an interesting point: that data collection from interviews is in principle both distinct from and independent of analysis and interpretation. Walker (1985) contends that the distinction between methodology and methods is relevant here. "Whereas the term "qualitative methods" refers to a category of ways of collecting data, "qualitative methodology" denotes theoretically underpinned research strategies which are conceptual and hermeneutic throughout the research process" (Walker, 1985, p196).

The method of data management chosen for this piece of research was NVivo. The analytic deduction of the data will be carried out using the meticulous organisation of the data afforded by this programme.

QSR NVivo Computer Assisted Qualitative Data Analysis Software

My reasons for using NVivo included its ability to handle large data sets and the fact that it is relatively simple to use. It is possible to import documents directly from a word processing package and code these documents easily on screen. Coding stripes can be made visible in the margins of documents so that the researcher can see, at a glance, which codes have been used where. In addition, it is possible to write memos about particular aspects of documents and link these to relevant pieces of text in different documents. Walsh argues that many "…social science researchers selecting software do not have the expertise to make informed assessments of the different software choices, thus, decisions made can be based on colleagues' recommendations or on the basis of trying out one package and finding it appropriately user-friendly" (Welsh, 2002, p1). This was my own experience; Dr Lydia Martens, who was a supervisor of mine at the time of data collection and analysis, taught NVivo within Durham University, affording me easy access to tutorials, training and expert advice.

Much has been written about the use of computers in qualitative data analysis with some commentators expressing concern that the software may 'guide' researchers in a particular direction (Seidel, 1991). Others have commented that using Computer

Assisted Qualitative Data Analysis (CAQDAS) could serve to distance the researcher from the data, encourage quantitative analysis of qualitative data, and create homogeneity in methods across the social sciences (Barry, 1998; Hinchliffe, Crang, Reimer & Hudson, 1997). However, proponents of CAQDAS argue that it serves to facilitate an accurate and transparent data analysis process whilst also providing a quick and simple way of counting who said what and when, which in turn provides a reliable, general picture of the data (Morison & Moir, 1998; Richards & Richards, 1994). Some consider that using software in the data analysis process adds rigour to qualitative research (Richards & Richards, 1991). One way in which such accuracy could be achieved is by using the search facility in NVivo, which is seen by the product designers as one of its main assets as it facilitates interrogation of the data. Whilst the search facilities in NVivo can add rigour to the analysis process by allowing the researcher to carry out quick and accurate searches of a particular type (the researcher may be reluctant to carry out these searches manually, especially if the data set is large), and can add to the validity of the results by ensuring that all instances of a particular usage are found, Welsh (2002) urges caution here as this searching needs to be married with manual scrutiny techniques so that the data are in fact thoroughly interrogated. I took this approach and only coded while reading the text, not using the search facility. My transcripts held much terminology and indeed many respondents used different terms in different contexts to mean similar things. I felt the search facility carried too much risk of me missing valuable testimony because of an incorrect search term.

For me, qualitative data analysis software such as NVivo is designed to carry out administrative tasks of organising the data more efficiently and on this basis should therefore be exploited to the full. For example, it is easier and quicker to code text on-screen than it would be to manually cut and paste different pieces of text relevant to a single code onto pieces of paper and then store them in a file. Clearly, in this situation it makes more sense to use dedicated software. The extent to which the software is exploited beyond this basic use is related to the requirements of the individual researcher. As I have employed only a 'grounded theory lite'[25] approach in this thesis, I felt no need to 'take the NVivo journey' any further than this. Qualitative data analysis software is often thought to be based on grounded theory approaches to data analysis in that theory will emerge from the data, and the software often has 'memoing' tools

[25] 'Grounded theory lite' will be discussed in greater detail later.

which facilitate theory-building from the data. Taking a grounded theory approach to data analysis means allowing the data to 'speak for themselves' rather than approaching the data within, for example, existing theoretical frameworks. However, Kelle (1997, p20) suggests that the manufacturers have jumped on the 'grounded theory bandwagon' because it is 'an established brand name' and that many researchers claim to be using grounded theory when in fact they are applying a 'coding paradigm' which is neither inductive nor deductive, but a mixture of both. Whilst, as Walsh proposes, the 'memoing' tools in NVivo do push the researcher to draw theory from the data, "… it is not necessary to follow the grounded theory guidelines when using this software" (Welsh, 2002, p6).

In conclusion, Welsh (2002) suggests that we think of NVivo software as a loom that facilitates the knitting together of the tapestry: "… but the loom cannot determine the final picture on the tapestry. It can though, through its advanced technology, speed up the process of producing the tapestry and it may also limit the weaver's errors, but for the weaver to succeed in making the tapestry she or he needs to have an overview of what she or he is trying to produce" (Welsh, 2002, p5). It is likely, and quite legitimate, that different researchers would weave different tapestries from the same available material depending on the questions asked of the data. However, they would have to agree on the material they have to begin with. Software programs can be used to systematically explore this basic material creating broad agreement amongst researchers about what is being dealt with. Hence, I believe the quality, rigour and trustworthiness of this research is enhanced by employing NVivo.

I am interested in examining the theoretical data in terms of notions of change and crisis within the socio-production system that is lowland mixed agriculture in the British Isles. I intend to draw on other theoretically informed empirical work in order to assess the utility of these concepts in relation to my data. I have established an NVivo project that will enable new concepts to emerge from the data. The next stage will be to combine the theoretical ideas with the developing concepts in order to progress to the final stage of data analysis.

Autoethnography

As part of a multi-method approach, I feel autoethnography adds depth and understanding to this research. The ethnographic genre has been subjected to extensive scrutiny, and several types of ethnographic writing practices have become available to researchers (van Manen, 1988). One emergent ethnographic writing practice involves highly personalised accounts where authors draw on their own experiences to provide an understanding of a particular discipline or culture; such writing practices have been labelled 'autoethnography' (Reed-Danahay, 1997).

Autoethnography describes studies that connect the personal to the cultural (Ellis & Bochner, 2000) which further connect the researcher's experiences with those studied (Ellis, 1995a; 1995b). Autoethnographic research describes, narrates and interprets personal experience while discreetly trying to address the lives and cultures of others, decreasing the supposition of traditional ethnography (Crawford, 1996). Bochner and Ellis (1999) suggest that autoethnography is a product of both interaction and observation. It is bound to the embodied experiences and participation of the investigating self. Moving beyond the confines of traditional ethnography, autoethnography recognises the vagueness "...and complexity of meanings, understanding and social criticism, language as a constitutive quality of reality, local stories, situated meanings and writing stories from the position of a feeling, 'vulnerable observer'" (Bochner & Ellis, 1999, p187).

Within the field of qualitative research, autoethnography is becoming more widely known as a useful and appropriate approach. Autoethnography comes from a simultaneously personal and social space, a mix of autobiography and ethnography (Bochner, 1996; Bochner & Ellis, 1999, 2002; Ellis, 1997; Ellis & Bochner, 2000; Ellis & Ellingson, 2001). It differs from the traditional ethnographic methods because the writer is no longer an objective outsider in the texts. Those in favour of autoethnographic methods argue that to understand others one should also understand the self and what that entails (Bochner & Ellis, 1999; Ellis, 1997; Smith, 1998).

The term autoethnography was first coined by David Hayano (1979, cited in Ellis and Bochner, 2000). He used the term to refer to anthropologists researching their own people, where the researcher is a complete insider within the group being studied.

However, I use the term to mean a form of self-narrative that places the self within a social context (Reed-Danahay, 1997). It has been claimed by Gans (1999) that much postmodern ethnography; particularly autoethnography, has been preoccupied with the self, which is a product of an asocial theory of knowledge. For Gans (1999), "*This kind of ethnography has nothing to do with analysing what people do with and to each other in their groups…or how institutions and communities function and malfunction*" (Gans, 1999, p541). However, Gerrits (2008) has trouble with Gans' claim because he argues that as the self is a social phenomenon, an individual learns to understand others by reflecting on the self in the context of social action with others. Sparkes (2002) takes this notion further by suggesting that "...a person learns how they are defined by the world, and how to redefine themselves and their relationships with others through reflection on what people do with and to each other. A valuable use of autoethnography is to allow others' experiences to inspire critical self reflection" (Sparkes, 2002a, p221).

Given that autoethnographic methods promote analysis of the self through lived experiences in a particular context, Church suggests that it is possible to learn about the general from the particular (Church, 1995, p5). In addition, this can help readers understand the way the concrete details of a specific life convey a general way of life (Bochner, 1996; Bochner & Ellis, 1999; Ellis & Bochner, 2000; Sparkes, 2002a). Therefore, an ethnographic methodology is a suitable aid to understanding how individuals react within the farming industry. "Autoethnography (re)positions the researcher as a project of inquiry who depicts a site of interest in terms of personal awareness and experience; it utilises the self consciousness… to reveal subjectively and imaginatively a particular social setting in the expressions of locally grounded impressions" (Crawford, 1996, p166).

Furthermore, drawing on Wenger's (1998) social theory of learning, it can be reasonably suggested that this alternative, emerging version of ethnography is "engagement in relationships" with the self and others (Ellis, 1991; Ellis & Bochner, 2000; Sparkes, 2002a). Networking and connecting with others occurs when individuals socially interact for their own interests as in the socio-production system of lowland mixed agriculture. As maintained by Smith (1998), it is important to map those connections in order to understand the social context. Autoethnography encourages this mapping using lived understanding and narratives of self (Ellis, 1991; Ellis & Bochner, 2000; Sparkes, 2002a, 2002b).

Autoethnographic researchers believe in sharing things that are private and unique to the self, based on personal experiences (Ellis & Flaherty, 1992 in Rhedding-Jones, 1996; Sparkes, 2002a, 2002b). For Krieger (1991, cited in Ellis, 1995a), autoethnography includes our own personalities, histories and relationships in the field, as much as our field research. The self sees life from a different point of view at different points in life (Geertz, 1995; Onley, 1980 in Smith, 1998), and the act of writing leads to self-reflection, action and more reflection that may change the self and possibly the life (Gusdorf, 1980 in Smith, 1998). I too used reflexive thinking to understand the effects of the researcher. I wondered how, if the researcher is recording, analysing and interpreting the data, the self can be wholly removed from the research process? Acknowledging the presence of self, to some degree, should be part of the research methodology. This will be discussed in greater detail later in the chapter.

According to Clandinin & Connelly (2000), it is narrative that allows Bateson, as an anthropologist, to learn. In fact, narratives allow all of us to learn individually and collectively. Smith (1998) argues that the sequence of events that one lives through in a culture results in the kind of person that they become and shapes their outlook on life. Thus, drawing on life writing, the farming industry's culture and its influences on individual farming approach and experience can be captured through studying the self in the farming community (Smith, 1998).

The autoethnographic approach I used has the following characteristics: it is grounded in reality through personal experience; grounded within a specific social context; subjective; reflexive; and it combines methodologies of narrative inquiry and personal experience methods (narratives of self). Although I am a member of the community I studied, I was predominantly known within the community as a 'daughter' and a 'young woman', neither of which were necessarily going to assist me in gaining access to all respondents. Traditional research splits the researcher and the researched, the object and the subject, and the knowledge producer and knowledge recipient. In contrast, I am taking a constructionist stance which gives emphasis to 'inter-subjectivity' where there is 'reciprocal sharing of knowledge and experience between researcher and the researched' and an understanding that the researcher is herself part of the production of knowledge (Shields and Dervin, 1993, p67). This is distinguishable from mainstream work that represents the researcher as a 'disembodied scholar' devoid of gender,

sexuality, class, race, values and emotions and who has an objective presence in the knowledge produced (Waldby, 1995, p17).

In terms of agency, Byrne contends that "agency matters in determining systemic form and that moreover agency can be recursive… human actions can change things and moreover those human actions can be based on an understanding of the nature of the systems and the potential impact of particular actions". This is in effect a realist position: it reasons that we can have complex understanding that is "…local and socially constructed but which nevertheless lets us know how things work, and that that very understanding can contribute to our actions in shaping our world" (Byrne, 2005, p5). A reflexive approach to research requires an acknowledgment of one's own 'intellectual autobiography' (Stanley and Wise, 1990, p47) so that one can then critique and unpack how this may have influenced the construction of knowledge.

Reflexivity is an awareness of self. Throughout the changes in agriculture, farmers are reassessing who they are and incorporating what they do into their own long-standing framework. Reflexivity also allows farmers to assess how their lives have changed and been affected by external factors such as bureaucracy and the influence of world economics. The concept of reflexivity is key to appreciating and understanding social accounts of change and adaptation which "…act to reproduce or to transform those social situations to which they refer" (Jary and Jary, 1995, p550).

I contend that autoethnography is a critical aspect of a truly reflexive approach to this research. Autoethnographies "...are highly personalised accounts that draw upon the experience of the author/ researcher for the purposes of extending sociological understanding" (Sparkes, 2000, p21). An autoethnography "…lets you use yourself to get to culture" (Pelias, 2003, p372). It is suggested by Wall (2006) that the freedom of a researcher to speak as a player in a research project and to combine his or her experience with the experience of those studied is precisely what is needed to advance inquiry and knowledge. If a researcher's voice is omitted from the text, the writing is reduced to a mere summary and interpretation of the works of others, with nothing new added (Clandinin and Connelly, 1994).

My use of autoethnography in this study is a means of adding further depth of validity to the data. It allows me to give the reader an understanding of the world in which I

operate personally and as a 'researcher'; in addition to this, it enables my experiences of agriculture, which have mirrored and followed the paths of many in this study, to be explored more deeply than could be achieved simply by interviewing. Indeed, Wall (2006) contends that "…it can be argued that an individual is best situated to describe his or her own experience more accurately than anyone else" (Wall, 2006, p2). Like Ellis (1991), I believe my experience of the situation means I can use introspection as a data source and, following accepted practices of field research, study myself like any subject.

My experience is therefore as valid as any member of the community's that I am studying. My use of autoethnography in this study is a means of adding a further dimension to the depth of data I have provided and my analysis of that data. The potential power of autoethnography to address unanswered questions and include the new and unique ideas of the researcher is inspiring to me as one who wishes to find my niche and make my own contribution. My world view as a farmer can therefore not be ignored when assessing my analysis of the data I collect here. Nor should it be, and I would suggest that this is the situation for any researcher who has ever undertaken work in which they have an interest. Whereas I take pains to be true to the voices of my respondents, I acknowledge my inherent bias, but keep in mind at all stages of the project that it is the respondents' 'truth' and that of the secondary data that is of paramount importance when analysing any data. I repeatedly revisited the data to ensure that I was reporting the narratives faithfully.

Criticism, Defences and the Validity of Autoethnography

While I am aware, as Sparkes (2000) points out, of the fact that "The emergence of autoethnography and narratives of self… has not been trouble free and their status as proper research remains problematic" (Sparkes, 2000, p22), I believe it is beneficial because autoethnography provides a more authentic approach than traditional observed research because of the researcher's use of self, the voice of the insider being more truthful than that of the outsider (Reed-Danahay, 1997). The sense of the use of self in research was revealed by Ellis when she asked "who would make a better subject than a researcher consumed by wanting to figure it all out?" (Ellis, 1991 p30). She added: "that

we have to take precautions in interpreting, generalising and eliminating bias the same as we do with any data we collect is assumed" (Ellis, 1991, p30). Ultimately, it can be argued that using the self as a subject is a way of "…acknowledging the self that was always there anyway and of exploring personal connections to our culture" (Wall, 2006, p5).

I myself am part of a reflexive process. Despite my academic training, I have not been, and cannot be, removed from the farming environment or from my research. I'm not returning to something I once knew: my farming life has run parallel to my academic life and those two selves are deeply connected and often act simultaneously. By 'placing myself in the process of production' and explaining how my own background as a farmer's daughter led to my interest in the research topic in the process, I have behaved as described above (Edwards, 1990, p479).

I feel it is important to be aware of my 'limitations' as a researcher, rather than try to change my position. I embody my history, my life experiences make me who I am and this can only enhance my understanding. The researcher and the 'researched' can be reflexive together: I can appreciate their experiences (maybe not firsthand but definitely through narratives which my parents have told and retold). This research is firmly located within my personal experience, emerging as it did from my own interest and background in the County Durham farming industry. The questions I am interested in as a researcher are similar to those which concerned me growing up and in my roles within a farming family. I cannot separate the part of myself that is a 'daughter of a farmer' from the part of myself that is a 'researcher'. However, I am aware of differences in attitude and perception of a situation, hence the adoption of a realist research paradigm within my research, and the use of interviews to attach individual meaning to situations.

The Study Population

I chose to centre my research on the socio-production system of mixed lowland agriculture in County Durham. The decision was made at the beginning not to include hill farming in this research as it is subject to restrictions and subsidies that do not apply to other parts of the industry. I also did not have the same level of access to hill farmers

nor do I have the innate knowledge and experience of hill farming, and therefore lack the insight and empathy that I have with farmers engaged in lowland agriculture. The North East of England encompasses all the major sectors of the farming industry (dairy, sheep, cattle, suckler, arable, mixed, etc.) and farm sizes ranging from smallholdings to large estates. There is also a degree of diversification away from traditional farming incomes occurring in the region that I have incorporated in my research.

Central to this research is the testimony of farmers in County Durham, and this is therefore the population which I set out to sample. I could not attempt to talk to every farmer in the county, so a sample of farmers willing to participate would be interviewed and from this, hypotheses and conclusions could be drawn, producing knowledge of the individual informants' world views and understandings of the situations they were describing.

The final study population broke down into the following demographic categories: nineteen farmers, of which there were: three females in their fifties; four married farming couples ranging in age from fifty to eighty; twelve males ranging in age from their mid-twenties to late sixties. A male agricultural buying group managing director in his forties; a retired male vet in his mid-sixties; a male corn merchant in his forties; a male land agent in his fifties; a male farming expert from a high street bank in his thirties; a businessman in his early thirties looking to farm; and finally a male butcher, abattoir owner and retailer in his sixties.

Ethical Issues with Reference to the Study Population

The central ethical concerns addressed in this research will now be discussed. Ethical principles have been followed and rigidly adhered to throughout the research and data collection process in this thesis. This research adhered absolutely to the ethical guidelines of Durham University and the Department of Applied Social Sciences. There is much academic writing on this subject which revolves around certain recurring issues which Diener and Crandall (1978) break down into four main areas. They suggest that research is deemed unethical: "Whether there is harm to participants; whether there is a

lack of informed consent; whether there is an invasion of privacy; whether deception is involved" (Diener & Crandall, 1978 in Bryman, 2001, p479).

To avoid falling into any of the above categories I took certain major precautions, which will now be discussed: all records pertaining to any participant in this study were securely stored and were only accessible to myself. Once transcribed, the interview transcripts were referenced by profession or farm type and only referred to as such during the analysis and results discussion stage. This was employed to mitigate against any harm to the participants or invasions of their privacy (referring to the confidentiality of respondents' testimony and the information they provided). My goal was to maintain anonymity for the respondents so no aspect of their testimony could be attributed to them from any reference I may have given. The farming community is small and closely knit and therefore to reveal too much demographic information when attributing narrative responses to individual respondents could endanger the anonymity of the respondent. I have therefore only divulged information relating to interviewees to add context to the statements, but that does not identify them to other members of the community. In some cases I have erred on the side of caution, and perhaps more information may have been given in the discussion of the data (Chapter 6), but ultimately the ethical considerations and protection of the identities of those who trusted me with their personal experiences must be paramount.

At no point in this research process was covert investigation used, thus removing the risks of 'lack of informed consent' and 'deception'. All participants were made fully aware of the research implications in advance and I was explicit about the fact that I would discuss any concerns at any stage of the data collection process. A consent form was signed by every participant to ensure that all parties had the same understanding of what would happen to the data.

Gaining Access

I was aware from the beginning of the data collection that gaining access to my desired sample could prove to be difficult. I was also conscious of the fact that, as Bailey advises, "…the particular route one takes to gain entry affects the rest of the research"

(Bailey, 1996, 50). I had to be sure that my initial contacts were made in such a way as to make further interviews and the snowballing process a viable possibility.

To improve my chances of gaining access to farmers for interviews, I chose to use a familiar and prominent individual within the sample population to act as a 'gatekeeper' or 'key actor' (Dean, Eichhorn & Dean, 1969; Burgess, 1991; Bailey, 1996; Wax, 1971) and this provided certain benefits in terms of gaining access to potential respondents. The obvious choice was my father. He has farmed in the area from childhood, and now in his sixties, he is a well-known member of the local farming community. He is a director of a cooperative buying group and is therefore known to farmers from across County Durham in this capacity. As a parent, he also knew of my research and my interests and aims for the data collection.

A core number of respondents was initially interviewed. The transcripts of these discussions and the field notes taken were then imported into NVivo. The first stage of analysis was preliminary coding from the emergent themes of these first narratives. After the initial six interviews, further access was achieved by snowballing, non-random sampling in which the first subjects suggested other farmers/farming industry workers to interview until 'marginal utility' was achieved (Bryman, 1996). Further interviews were then conducted after I had adapted certain questions according to what I had already found, then I transcribed them and imported them into NVivo and recoded once more. After recoding this second batch and reflecting on the themes emerging from the data, I was able to revisit the first interview set with 'fresh eyes' and recode with the new themes in mind. This coding and recoding process continued throughout the data collection process. Nodes and themes expanded in some cases and were discarded in others as I became more familiar with the core emergent concepts. Analysis of data became very much a cyclical process and was facilitated by the NVivo software and its ability to organise and (more importantly) retrieve data and whole transcripts, through search and other techniques, at the touch of a button.

The nodes and themes generated in the data analysis process were apparent in distinct groups as a particular part of a system within the farming industry/society. I then used these grouped themes to produce the visual aid diagrams in the data chapter sections (Chapter 6). These diagrams were not intended to form part of the final thesis, only as a means for me to get a fuller understanding of the relationships between the themes and

issues affecting that particular part of the farming system. However, they proved very useful in showing the 'shape and form' and also the degree of interrelation of themes within the systems so I chose to leave them in. Indeed, they form the basis of the discussion in that chapter and act as a visual summary of the discussion that follows.

I employed a degree of snowballing as a means of building up a sample that included a spread of individuals to interview. I was aware, as both Burgess and Bailey point out, that it is important to remember that each person in the setting is 'to a greater or lesser degree a gatekeeper' (Burgess, 1991, p48; Bailey, 1996, p51) so constantly explained and re-explained my research interests to all the respondents in the study, for reasons other than simple courteousness. In an attempt to get an additional perspective on the accounts I was receiving from the farmers themselves, I also interviewed individuals from a farming background who work in the industry but not as farmers. For example, I interviewed a vet and an agronomist who both worked in County Durham and are both the sons of farming families.

An approximate upper limit of thirty interviewees was determined at the outset to produce a manageable data set. Grounded theory and the process of saturation sampling led me to interview in line with developing themes and certain characteristics until repetition occurred and sampling stopped. Thus while thirty interviews was set as a limit, it was only ever a maximum figure/guideline. From the interviews, the following data was collected: qualitative data: semi-structured interviews of approximately two hours in length; quantitative data from interviews: demographic information on the respondents, e.g. farm size, respondent's age, marital status, farm type, etc.

Conclusion

As I discussed in the introduction to this chapter, I am interested in forming ideas based on complexity and I am concerned with aspects of change within the agriculture industry and farming community. These ideas of change stem in part from my ethnographic experiences and include drivers of change such as land price increases, BSE and EU Policy change. Ethnographic and autoethnographic aspects of the research provide an insight into the in-depth workings of the farming system. Due to my own

unique position within the County Durham farming community, I am able to employ interviews as a tool to show how those involved in farming have been affected. I use my own experiences – through autoethnography – to enhance the ethnographic information, providing further, richer insights into the personal impacts which social, economic and political changes have wrought upon farmers.

As can be seen from the discussion above, complexity will aid in the analysis and explanation of the processes and changes within the farming industry by providing a framework from which to explore concepts such as emergence, phase shifts and trajectories. The case study method has also benefitted the research by firmly basing the work within limited boundaries, adding context to the findings. This also provided a firm footing for complexity to show how changes within farming over time (land price increases, BSE and EU Policy change) have informed not only the present but also the future of farming (in terms of diversification, extensification, organic farming, etc.).

5. THE CRISIS THAT DESTABILISED THE SYSTEM

Introduction

This chapter is the product of documentary-based research on the relatively recent past, focusing on the time leading up to and including the period when the empirical data collection was undertaken. By drawing on multiple sources, including media articles, government reports and official statistics, it aims to highlight the significant changes occurring in farming. It should also be noted that this chapter covers many diverse issues which have affected aspects of the farming system as well as obstacles that have affected the industry as a whole. As the farming system is made up of a myriad of interconnected and overlapping nested systems, this chapter must cover a wide and varied range of topics to address the major driving forces pertaining to the change.

In this chapter, I argue that a phase shift in the system produced the crisis in British agriculture. Furthermore, I outline the main features that have contributed to this position. Indeed, in the vernacular of complexity theory, crisis is another word for phase shift. This chapter looks at the disturbances that have occurred, such as foot-and-mouth disease (FMD) and BSE, which have both (in complexity terms) had interesting, noteworthy but not catastrophic impacts on the system of study in this exposition. While both BSE and FMD are occurrences that immediately spring to mind when one thinks of a crisis in British Agriculture, they are rather two particular episodes to be considered among other destabilising events. These events will be viewed in relation to the socio-production system of lowland mixed agriculture which forms the basis of this thesis' case study and is representative of much of the British Isles.

This thesis draws upon two forms of narrative data: interview testimony and autoethnography. While not all the statistics are current, the data cited is contemporary with the narratives documented in this research (data collected throughout 2004/05) and with the autoethnography (2007 to present). I am attempting here to give relevance to the contextual nature of the data, depicting that particular 'state in time' of the complex farming system.

The National Farmers Union (NFU 2002) talks about a 'decade *horribilis*' in which BSE, foot-and-mouth disease, exchange rates and commodity prices have all created problems for the UK farmer. Farming income has declined steadily since the 1970s. In 2000, at £1.88 billion, total income from farming (TIFF) in the UK reached its lowest level for more than 25 years (DEFRA, 2002; Countryside Agency, 2001). Estimated average farming income per head in the same year was £7,800 (Countryside Agency, 2001).

The impact of gruelling hours – 66% of farmers in Britain regularly worked over 60 hours a week (NFU, 2002) – and the effect of uncertainties about the future on both farmers' health and the quality of their families' lives were significant. Suicides among farmers and farm workers stood at 59 per year (NFU, 2002), at least one suicide each week (BSE Inquiry, Vol. 1 pp157 & 163-164). North (2001) took a contentious approach; however, it is representative of the testimony of the farmers detailed in later chapters:

"Bovine Spongiform Encephalopathy (BSE) had also emerged as a high-profile issue. As it had with salmonella in laying hens, MAFF locked itself into the legend that 'infected feed' was the cause. So predictable was this finding that we could have written the script. MAFF always blames feed when a new disease emerges – be it swine fever, swine vesicular disease, blue-ear disease, fowl-pest or even humble salmonella in laying hens – and was to do so again in the foot-and-mouth epidemic. This is the same MAFF, incidentally, which could not see a link between the use of organophospherous sheep dips – potent neurotoxins – and the emergence of neurological illnesses in its users" (North, 2001, p24).

In the twenty years preceding data collection, farming was a multi-generational business. The average age of a UK farmer by the end of the 1990s was 58[26] with little indication of an influx from the younger generation (Lacey, 1998). Demand for farm products is also declining. Drummond et al. contended that the situation has been brought about by "…the overlap of the sharp fall in farm incomes as a result of the strength of the pound sterling with more fundamental trends towards the progressive withdrawal of production subsidies under the EU Common Agricultural Policy and the

[26] Currently it is 60.

generally depressed state of agricultural commodity prices world wide." (Drummond et al., 2000, p111).

Back as far as 1999, the National Farmers Union began to show concern. Overall, UK farm incomes fell by 48% in 1998, with several types of enterprise – pigs, poultry, mixed farms and lowland sheep and cattle – operating at a loss (NFU, 1999). It was argued by the NFU president at the time that statistics "…paint an alarming but realistic picture of the appalling situation which farmers up and down the country have faced… no shadow of doubt can exist in anyone's mind to the extent of the crisis" (Drummond et al., 2000, p112). By themselves, neither the falls in commodity prices nor the realisation that the Government was no longer able or willing to support farmers through production subsidies necessarily constituted a structural crisis for the agricultural sector. There was widespread recognition within the farming community that profound changes may be close at hand, and this perception would in itself prove to be significant.

This perception of crisis, together with a realisation that public opinion was no longer firmly on the farmers' side, became apparent in attempts to build and express a political agenda concerning rural rather than agricultural interests (particularly apparent in the literature that was emerging from DEFRA after the FMD outbreak) and through the development of the Countryside Alliance (Drummond et al., 2000, p112).

Drummond suggests two features which he contends characterised the political response in Britain to the situation of the time: "first, an increasingly neo-liberal approach to agricultural policy, and second, the tendency to substitute rural for agricultural policies which is very evident when the policy turnout of DEFRA is compared to that of MAFF" (Drummond et al., 2000, p111).

The following sections of this chapter will examine the incidents that have contributed to destabilising the system and leading to the incidence of phase shift or crisis. This thesis concerns a social system which has developed because of a certain type of lowland mixed agriculture and what has occurred in farming society and farming economy to affect the systems and produce new trajectories. I contend that events such as BSE, FMD, the increasing cost of farmland, the continual rise of the supermarkets and the food system changes that have occurred in conjunction with the strength of

Sterling against the Euro, and the potential ramifications of the reform of the CAP have come together to destabilise the socio-production system of lowland mixed agriculture.

Farm Income Crisis

Towards the beginning of the new millennium (between 1996 and 2000 specifically), the increase in value of the Pound against the Euro of approximately 33%, had massive repercussions for UK agriculture as it saw 'farmgate' (the amount the farmer receives) prices and incomes fall dramatically. This is shown in Figure 6 below. The total income from UK farming fell by 70% from a high in 1996 to a low of £1.8 billion in 2001/2, the year of foot-and-mouth. It has since recovered slightly, rising to £2.36 billion in 2002 and to £3.23 billion in 2003 (DEFRA, 2003).

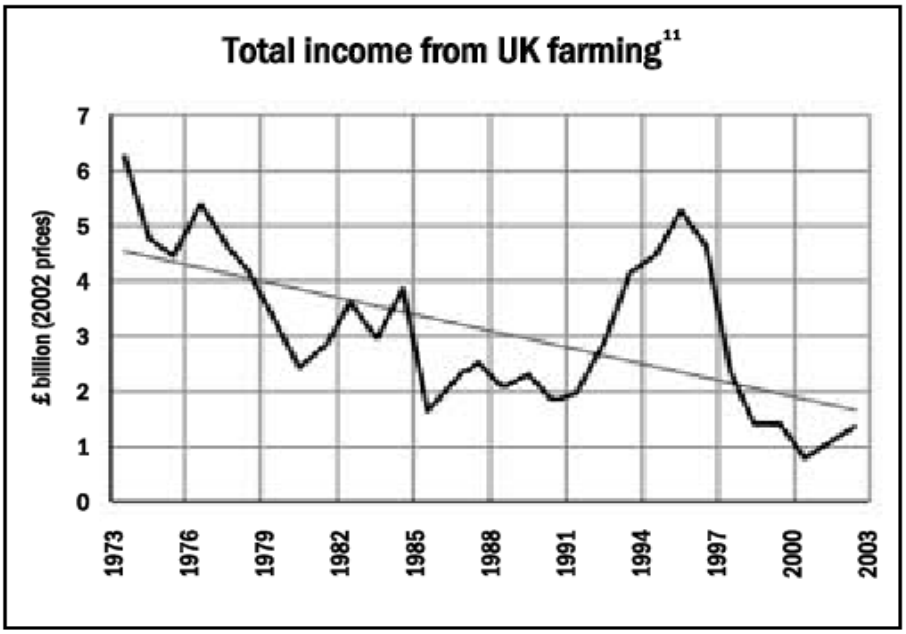

Figure 5: Total Income from Farming 1973 to 2003 (Source: NFU, April 2003).

But what ramifications does this have for the individual farmer? Research by Deloitte & Touche suggests that the average net farm income fell considerably from £80,000 in 1995/6 to £8,000 in 2000 and to £2,500 during 2001, the year of foot-and-mouth (Deloitte & Touche, 2002). The average net farm income has since recovered

somewhat: £10,100 in 2001/2002, and £12,500 in 2002/3 (DEFRA, 2002c). Nevertheless, this is merely an average figure; incomes for some (mainly small) farmers remained well below the minimum wage (Harris, 2003; Carter and Curtis, 2004).

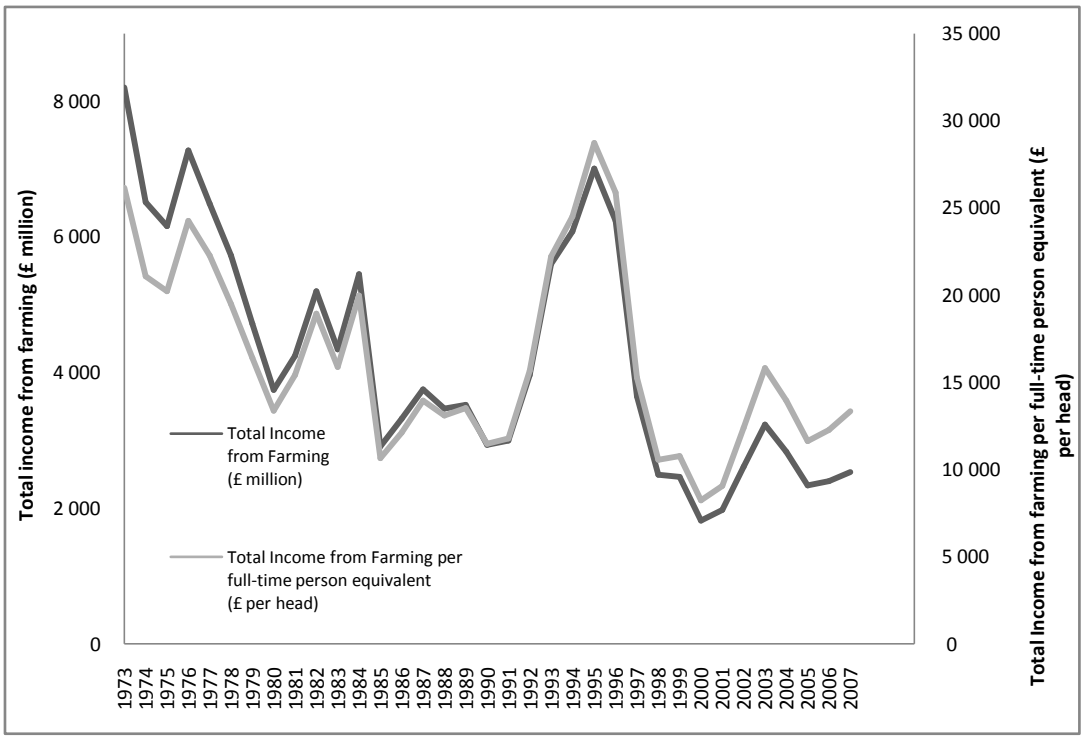

Figure 6: Total income from Farming and total income from farming per fulltime person 1973 to 2007 (Source: DEFRA, 2008).

Debt was a further problem which contributed greatly to the crisis in farm incomes at this time. Agricultural borrowing in the UK currently stands at an estimated all-time high of more than £10 billion (NFU, 2002). In 1999, 64% of farmers borrowed money in order to keep their farms going (NFU, 1999). It is often at this point in a debate about the plight of UK farmers that the support from the European Union is cited to negate any sympathy for the plight of British agriculture. Indeed, UK farmers received almost £2.6 billion in subsidies under CAP in 2002 (DEFRA, 2002c). However, as these subsidies are production-based (i.e. the more acres of cereals you grow or the more stock you rear, the greater the subsidy), the bulk of the subsidy goes to the larger, richer farms (OECD, 2003). There was a dramatic gap between incomes at the beginning of the new millennium. Within the EU, 80% of farm subsidies go to 20% of farmers; however, the majority of UK farmers (63%) receive less than £5,000 a year in farm subsidies (Actionaid, 2002).

As in all economies of scale, it is inevitably the small and medium-sized that lose out. DEFRA's 2002 figures suggest that it was small and medium-sized farms which were disappearing while the number of larger farms was increasing (DEFRA, 2002a). The agricultural establishment asserted that the thousands of small and family farmers being forced off the land each year was an inevitable result of the need to increase the efficiency of UK agriculture (DEFRA, 2002d). Britain's 23,000 tenant farmers were finding it even more difficult to 'make ends meet' thanks to falling incomes, continuing obligations to pay rent, poor borrowing power and the restrictive conditions of tenure, which among other things can prohibit change of use and therefore greatly reduce diversification opportunities (NFU Press Release, February 2000).

In 2000, agricultural professions accounted for about 2% of the total UK workforce. There were 303,000 farms in the UK and an agricultural workforce (farmers and farm workers) of 557,000 but this figure was declining (DEFRA, 2002a; DEFRA, 2002b). The reduction in the number of farmers and farm workers was gathering speed. Between 1993 and 2001 some 87,000 farmers and farm workers left farming in the UK, and a further 18,000 left farming in 2002 (DEFRA, 2002a). The Government predicted that 25% of the remaining farms in the UK would have gone out of business or merged by 2005, resulting in 50,000 more people being forced out of farming (Wintour, 2001).

To adopt a more contemporary perspective, a further reason for the exodus from the industry can be seen in the very high price agricultural land currently commands; this is also a reason why there are very few new entrants to farming. The value of the land also has no bearing on the price the farmer gets for the crops. Such high land prices in the UK have provided something of a 'retirement package' for an aging farmer if (as has been discussed earlier) his offspring are not willing or able to take on the farm business; the farm is sold, usually in lots to maximise the return.

The Land Price Issue

Land is a finite resource. In the past, farms were sold at a price determined by the quality of the land and the acreage (the house and buildings were not factored into the assessment). The resultant value was a reflection of the ability of that block of land to

yield a return that would cover the mortgage and provide the resident farmer with an income to live on. As I have outlined above, this is no longer the case.

A problem further compounding the increases in farmland prices pertains to the benefits of owning farmland when inheritance tax is calculated. Under the Agricultural Holdings Act 1986, landowners benefit from 50% inheritance tax relief on the agricultural value of the property. Those let under a Farm Business Tenancy can claim 100% inheritance tax relief on the same basis. In certain situations, older tenancies can be reordered to benefit from 100% relief (Valuation Office Agency, accessed 27.11.07: http://www.voa.gov.uk/instructions/chapters/inheritance_tax_ch_1b/pnotes/frame.htm).

In both cases, relief is only available after seven years of ownership. This however has proved an incentive to buy and there is anecdotal evidence[27] of City bonuses being invested in land to take advantage of this loophole. This increase in the price of land has even reached the notice of the media as its growth greatly exceeds that of other land types. The Daily Telegraph (Tyzack, 17/11/07) published figures for the capital growth of property in the year to June 2007: Farmland – 23 per cent; Residential – 10.2 per cent; Commercial – 7.7 per cent.

These figures show the considerable disparity concerning the increase of farmland as opposed to other forms of property and the problem facing people such as my husband and I.

Writing in the Scotsman in December 2007, Jeremy Watson put forward an argument about this very issue and the impact it is having across the border in Scotland. He contends that for the first time, more than a third of Scottish farms sold this year have been snapped up by rich businesspeople anxious to avoid paying inheritance tax (IHT) to the Inland Revenue when they die.

According to the annual Scottish Estates Review published by property agency Strutt & Parker (Strutt & Parker, 2007), the number of farm buyers who cite IHT as a reason for their purchase reached 36% this year. The publication also notes that farmers who sold to other farmers were down to 24%, with lifestyle buyers (22%) and relocation buyers (18%) making up the rest.

[27] Reported by a land agent who worked for one of the Major land Agencies in the UK.

Watson cites ‘countryside experts’ as welcoming such investment in the countryside, but, he contends, farm leaders said that the influx of wealthy IHT buyers was inflating the value of land beyond the reach of genuine entrants to the industry.

The Strutt & Parker survey (2007) notes that prime Scottish arable land has now more than doubled in value since 2004, selling for at least £3,500 an acre, compared with £1,600 three years ago. Watson quotes Andrew Smith, Strutt & Parker's farm sales specialist, who said that the number of buyers citing inheritance tax as a reason for buying Scottish farmland had reached unprecedented levels (Scotsman, 2007). "One of the major factors is the recent oil boom, with price rises leading to people selling their companies, releasing substantial amounts of capital. These are people with maybe £20m, £30m or £40m and they are looking for ways to shield that money from IHT in the future. They are buying farms and sheltering some of their money that way".

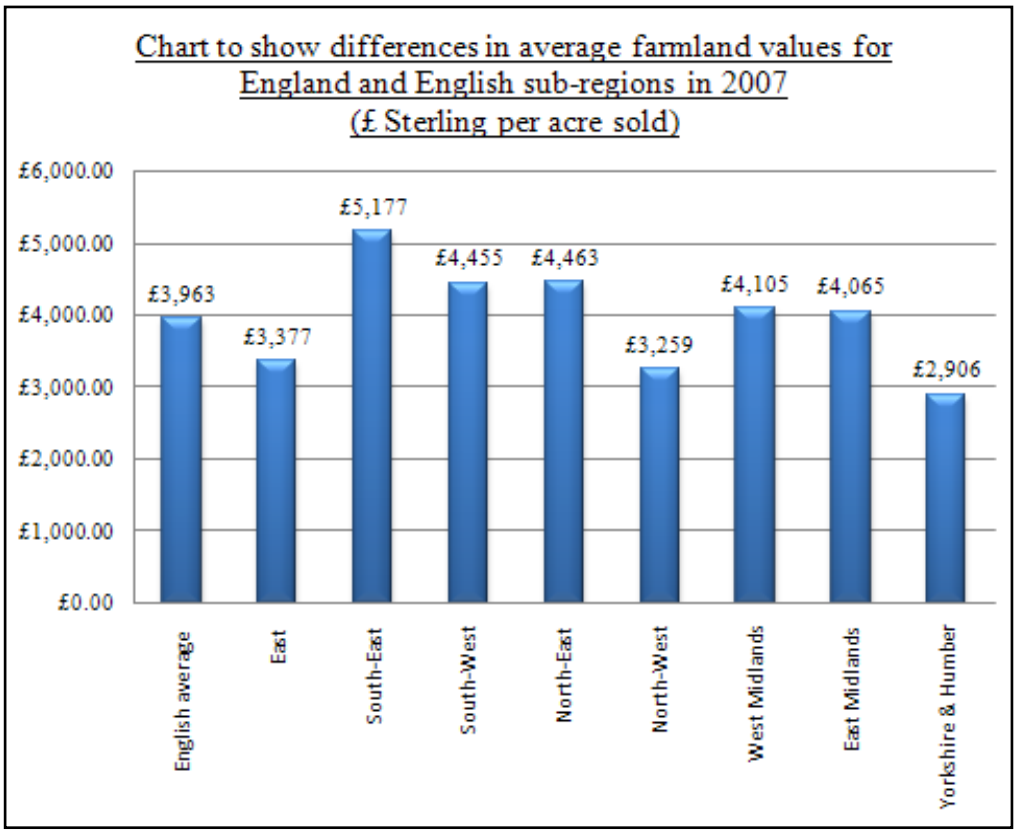

Figure 7: Chart depicting the average farmland values for England and the English sub-regions. Values shown in £ sterling per acre sold (Tyzack, 2007).

Figure 8 shows the high nature of land values in the North East of England at £4,463 per acre. Indeed, they exceed the English national average of £3,963 per acre and are

only surpassed by the South East (£5,177 per acre) and £4,455 per acre in the South West sub-region.

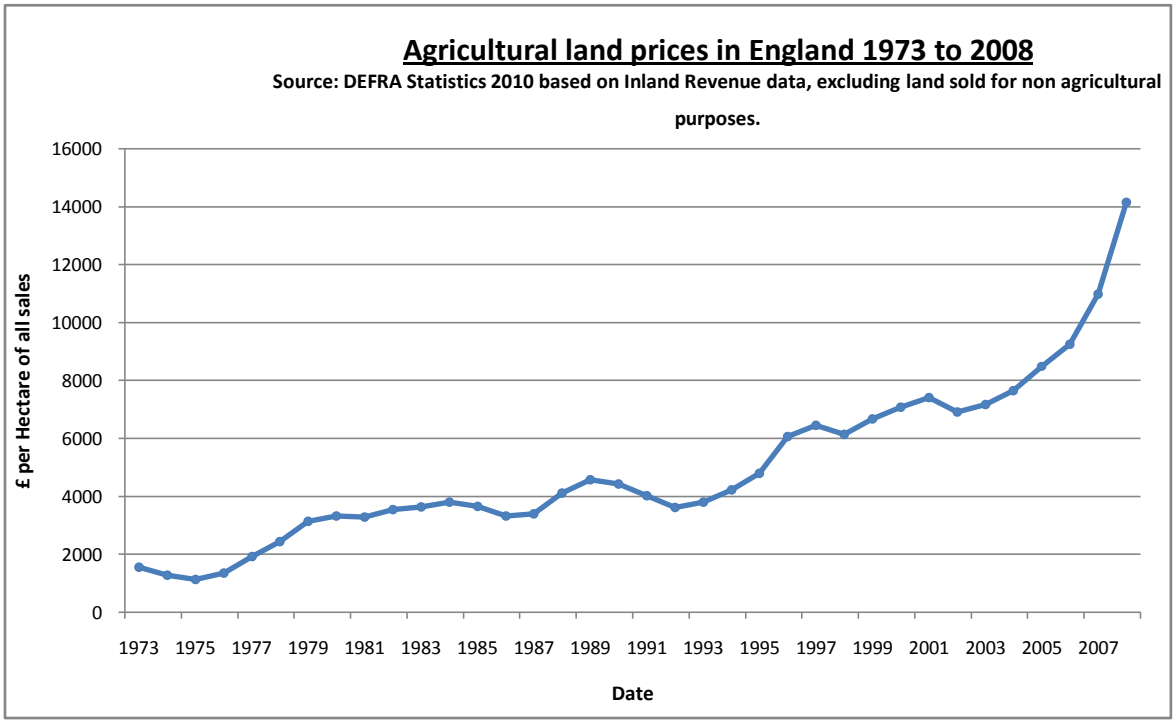

Figure 8: Agricultural Land Prices in England 1973 to 2008 (Source: DEFRA, 2010).

Indeed, as Figure 9 shows, while there has been a steady trend towards land price increase in agriculture between 1973 and the start of the new millennium, the really dramatic increases seemed to begin in around 2005. As farmers sell up, the land frequently goes out of production. The house and a small plot of land can often be sold for as much as the entire farm would reach if sold as a going concern (the value of a farm is traditionally calculated by the acreage and quality of the land only) and may be bought up for commuter homes, or by property developers, for executive housing, business units, equine facilities and golf courses. According to the Royal Institute of Chartered Surveyors, half of all farms sold in England go to city people who want a house in the countryside and who do not intend to farm the land (Vidal, 2003). The accompanying farmland is frequently sold off to a neighbouring farmer who wants to increase the size of their holding, thus continuing the trend towards the concentration of UK land ownership into ever fewer hands which means that UK farming may be well and truly finished (The Countryside Agency, 2003).

Farmers are stuck in a vicious cycle of producing more but earning less. A survey in 1999 found that UK farmers were earning almost nothing from what they produce. For virtually every commodity in the survey, the farmgate price was less than the cost of production (McCarthy, 28/08/1999). The UK dairy industry is facing particular problems due to unprofitability resulting from the fall in farmgate prices relative to production costs. The farmgate milk price has fallen by over 30% since 1995 (DEFRA, February 2004). In 2002, dairy farmers received an average of 17ppl (pence per litre) compared to production costs of 18-21ppl (DEFRA, February 2004; KPMG, 2003). This has forced massive numbers to leave the dairy industry. Between 1970 and 2000, the number of dairy farms fell by over 70% (DEFRA, February 2004).

Farmers have sought efficiency gains to remain profitable largely through increasing herd size and cutting costs where feasible. It is notoriously difficult to establish average production costs, although a study in 2003 estimated that these amounted to 18.33ppl. In the last few years, production costs have increased dramatically as a result of increases to the price of oil and gas and the escalating cost of farm labour. The NFU estimates that between 2002/3 and 2006/7, production costs rose by as much as 3.01ppl. It is generally recognised that at least 60% of dairy farmers are failing to cover their production costs, and this is before the reinvestment requirements needed to modernise dairy farms in order to comply with tightening customer, regulatory and environmental standards are taken into account.

In the past, a combination of factors drove farmgate milk prices, including: prices for internationally traded commodity dairy products; EU market support, which helped to set a floor in the market; the value of Sterling, which determines the value of support expressed in Euros and affects the UK's competition with imported products; the balance between the supply of raw milk and the level of demand for milk products; weak negotiation, due to the structure of the industry; and the costs of manufacturing milk.

Dairy farmers are situated across the United Kingdom, but tend to be concentrated in western parts of the territory where the climate encourages favourable conditions for grazing cattle. In recent years, milk production has gravitated towards the west and south west of England, the west of Wales and the west of Northern Ireland. Nevertheless, the number of dairy farmers has fallen dramatically. In 1997, there were

26,110 registered production holdings in England and Wales. By February 2007, this had fallen to 13,125: 6% fewer than in February 2006, which reflects the continuing pattern of decline. Until recently, the production of raw milk has remained relatively constant following the introduction of EU milk quotas in 1984 and stands at around 14 billion litres, or over 30 billion pints, which means that dairy farms have increased substantially in size and scale. However, the last few years have seen a slight decrease in production, suggesting that either larger milk-producing herds are declining, or that the number of herds expanding has decreased. There are reasonable predictions that the amount of milk produced in the UK could fall by as much as 900 million litres (7%) over the course of the next few years if producers continue to exit the industry at the current rate, with fewer remaining dairy farmers willing to expand (MDC Farmer Intentions Survey 2007).

FEBRUARY 2006	FEBRUARY 2007	YEAR ON YEAR CHANGE
2,199	2,055	-144
2,963	2,815	-148
212	197	-15
1,607	1,501	-106
345	308	-37
1,842	1,700	-142
1,987	1,875	-112
348	318	-30
2,499	2,356	-143

Figure 9: Number of Producers in England and Wales by Region (MDC Farmer Intentions Survey 2007).

The average size of dairy herds in the UK has increased from 72 cows in 1996 to 92 in 2004 (MDC Datum). Dairy farms in the UK are amongst the largest and most efficient in the European Union. At the same time, genetic and management improvements in dairy cattle farming have seen an increase in the average cow's milk production from 5,000 litres a year in 1989 to 6,787 litres in 2005/6 (MDC Datum).

British cereal producers received just 4.8p from the sale of the average loaf of white bread (800g) costing 55p. Arable farmers' incomes fell by 57% between 2000 and 2002. For the average UK cereal farmer working 100-200 hectares, the cost of production in 2002 was £119/tonne, yet the farmgate price was only £72.50/tonne (NFU, June 2002). At this point, we should consider whether these low prices were being passed on to the consumer.

It might be reasonable to assume that as farmgate prices fall these would translate into lower retail prices, but according to the National Farmers Union there is no evidence that these falling prices were being passed on to consumers at supermarket checkouts (NFU June, 2002). From 1991/2, the food retail price index rose by 15% while the price received by farmers fell by 9.6% (NFU, June 2002), and in 2001 the slump in milk prices did not reduce the retail price (KPMG, 2003).

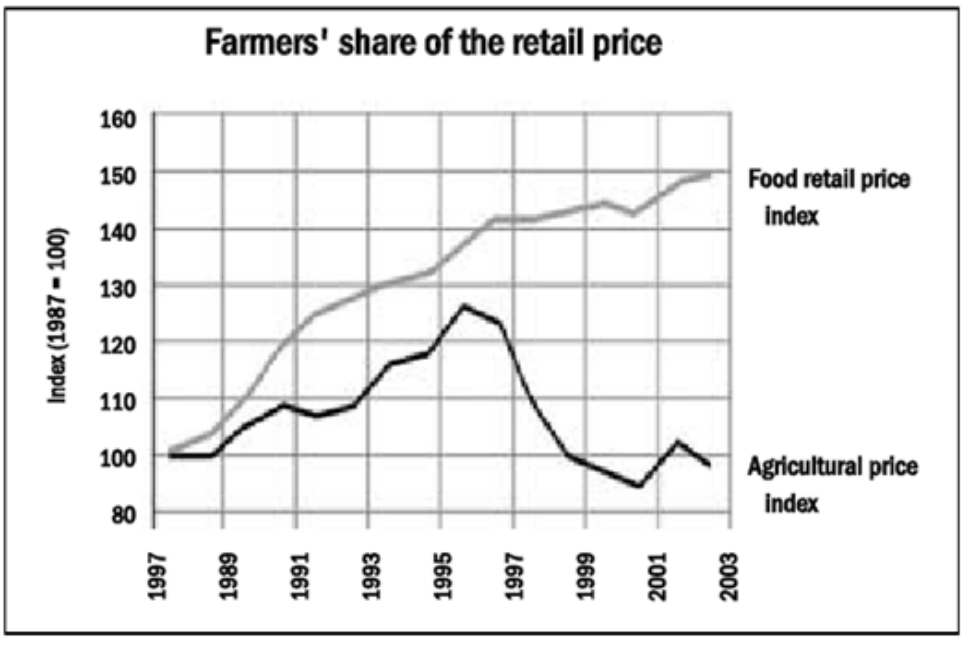

Figure 10: Farmers' share of the retail price of their produce (Source: NFU, April 2003).

Figure 11 shows the increasing disparity between farmgate and retail prices. This is due, among other things, to the influence of the supermarkets. In 1991, the farmgate price of potatoes was 9p per kg and the retail price was 30p; in 2000, the farmgate price was still 9p per kg but the retail price had increased to 47p per kg: a price increase of 57%. The farmgate price for cauliflowers was 24p in both 1990 and 2000 but the retail price rose from 73p in 1990 to 98p in 2000, a price increase of 35%. These products require no processing other than grading and packing, both of which are done by the farmer. That difference between farmgate and retail prices and the increase in the farmgate to retail price differentia, Friends of the Earth argue, is due to the supermarkets' excessive profit margins at the expense of farmers (Friends of the Earth, 13/06/2003). Even the then Prime Minister, Tony Blair, admitted that supermarkets had farmers in an 'arm lock' (BBC News Online, 2001).

Corporate Control of the Food System

The food industry lobby is one of the oldest in Britain. It is very well organised and funded. The main body is the Food and Drink Federation, an alliance of all the commodity-specific groups, from sugar and confectionery to dairy and grain. The industry prides itself on its capacity to 'enter the doors' of the key politicians. Lord Sainsbury, the former chairman of the supermarket chain, became personally responsible for British science under the last Labour administration, and he is only the most high-profile example of the food industry lobby. Lang even suggests that it has created a 'holy triangle' featuring the industry, Parliament and Whitehall (Lang, 2003) which points to a very powerful and influential governing parameter for the agriculture industry. While such power does not extend to farming directly, this section will attempt to show how the monopolisation of agricultural markets can produce situations where the farming system is compromised and therefore destabilised.

This lobbying machine was becoming incredibly powerful. Indeed, Lang contends that "…this power has only been tamed by public pressure and concerted action by public interest lobbies such as health, conservation, social and labour movements" (Lang, 2003). More recently, the lobby has successfully challenged the supermarkets and manufacturers over issues concerning food safety, quality and unethical trading.

However, as food production in the UK and globally is increasingly controlled by a small number of multinational corporations, this may be becoming increasingly less feasible. The food system has been likened to an hourglass, with thousands of farmers selling their produce to millions of consumers via a small number of corporate food processors and retailers (Heffernan, 1999).

In every sector of the food system, the number of corporations had fallen, competition between them had diminished and the market share of the remaining companies had grown, allowing them to take greater profits. This was worrying from an economic perspective, as Lang asserts: "according to the principles of competitive economics, markets are most effective when there is strong competition between a number of businesses" (Lang, 2003, p15). This was most definitely not the case in Britain at the start of the new millennium.

Six processors (Arla/Express, Dairy Crest, Robert Wiseman, Glanbia, Associated Co-operative Creameries and Nestlé) controlled 93% of UK dairy processing (Bessey et al., 2001). This phenomenon was almost entirely a result of manufacturers buying each other out to obtain successful brands. Lang (2003) argues that this "…changed both the architecture of the food supply chain and its public face" (Lang, 2003, p18). As with manufacturers, there has been an incredible concentration of retailing power in the years immediately preceding this point, and by 2004 only four supermarkets were in control of 75% of food sales: Tesco 25.8%, Sainsbury 17.2%, Asda-Walmart 16.6%, and Morrisons 15.8% (Lawrence, 2004).

According to the Institute of Grocery Distribution, the major supermarket multiples made up 60% of the market share in 2001, convenience retailers 20%, the smaller multiples, independents and specialists 13%, cooperatives 5% and hard discounters 2% (Grocery Retailing, 2002) while half of the country's food was now sold from just 1,000 large stores (Lang, 2003). To attempt to counteract this domination, farmers on the Continent have formed cooperatives so that with more to sell they can demand a better price. It is ironic that the Competition Commission broke up the large UK dairy farmers cooperative, Milk Marque, in 1999 whilst allowing the supermarkets to continue their monopoly.

Most of what we spent on food – in fact nearly all of it – was going to non-farmers at the end of the last century. It was estimated that UK farmers receive only 9p of every £1 spent on food by consumers (Douthwaite, 1996). If farmers weren't making money from the food chain, who was? In 2001, the profits of just two supermarkets equalled the total annual incomes of all the farmers in the UK. Tesco made record profits of £1.2bn in 2001; total farm income in 2001 equalled £1.7bn. Tesco Chief Executive Sir Terry Leahy received £2.4m ('Tesco Eight check out more than £1m each', Guardian, 14/05/02). The average return on capital (a measure of future profitability) for the UK's big supermarkets in 2003 was around 10-15% and approximately 0.5% for farmers (Vorley, 2003).

In the immediate post-WWII era, farmers in Europe and North America received 45-60% per cent of the money that consumers spent on food. By the start of the new millennium, that proportion had dropped dramatically to just 7% in the UK and 3.5% in the USA but remained at 18% in France (Pretty, 2001). It is no longer those who grow the food that control the food supply chain.

Farmers are in an extremely weak negotiating position. They used to have some bargaining power on the basis of seasonality, but imports and glasshouses have destroyed this advantage (Michaels, 2002). Farmers also do not know what price other producers have offered and this forces them to offer their produce at a low price to ensure a sale to supermarkets. Producers of perishable foods are especially vulnerable. Supermarkets dictate not only how much they pay but also how the produce will be packaged, stored and delivered (Friends of the Earth, 2002).

A further display of the power of supermarkets can be seen in the decline in the number of cattle markets across the UK. Tesco was the first supermarket to bypass live auction markets, buying cattle and sheep direct from farmers (Animal Aid, 2000), but all the big supermarkets now favour buying directly from a small number of selected farmers. These closed contract production systems have become such a large part of the livestock and produce industries that the traditional methods of selling farm produce through wholesalers and livestock markets are now in serious decline.

The practice of selling through live auction markets was still dominant in the 1960s and over 800 markets operated in the UK. However, only 170 remained by March 2001

(DEFRA, 2001). A survey taken by the Meat and Livestock Commission in 2002 suggested that less than 20% of cattle and only 35% of lambs were sold through cattle markets (Reid, 2002). The closure of livestock markets is also destroying the viability of market towns and further isolating farmers from their communities as they no longer come into town to go to the market every week (Wright et al., 2002). This all points to a further destabilisation of the socio-production system that is lowland agriculture. There was also a decline in the number of slaughterhouses, which means that live animals must be transported long distances by truck to be slaughtered. In 1967 there were over 3,000 slaughterhouses in the UK, but by March 2001 only 520 were still in operation (DEFRA, 2001). This is partly the result of increased competition and rising hygiene standards since Britain's membership of the EU but also because the big supermarkets have forced farmers into direct supply contracts with favoured slaughterhouses such as Tesco-associated St Merryn Meat Ltd (Reid, 2002). The decline in the number of slaughterhouses is also making it difficult for farmers to trade locally and further isolating them from the consumer, removing possible opportunities for diversification.

The influence of the supermarkets is indeed depressing from a farmer's perspective. Lang contends that "Competition policy and regulation have been reactive, not proactive. There are a few signs that this may be beginning to change" (Lang, 2003). The Labour Government had set up a competition commission, the EU was 'flexing its muscles' and consumer groups had joined the new anti-supermarket alliance of small farmers, environmentalists and civic campaigners to pressurise government to take on the corporations (Lang, 2003).

In 1999, the Government instructed the Competition Commission to look into the power and concentration of supermarkets and the allegations that their suppliers (including farmers) and customers were not getting a fair deal (Competition Commission, 2000). The Commission's report, published in 2000, identified 27 practices supermarkets were engaged in that were 'against the public interest' and 52 that adversely affected their suppliers. Despite stating that any retailers with more than 8% market share had 'considerable buying power', the Commission didn't acknowledge the fact that the 80% market share of the 'Big Five' effectively meant that a monopoly was in operation. It simply recommended that a voluntary Code of Practice should be introduced to improve relations between supermarkets and their suppliers (Competition Commission, 2000).

But as Lang (2003) warned, "…meaningful change may be a long way off. Although the different sectors of the food industry are locked in battle with each other to control the supply chain" (Lang, 2003). Michaels asserted that "when confronted over this blatant exploitation, supermarkets cast the blame elsewhere. Either, it's the free market and we can import milk more cheaply from Eastern Europe or New Zealand…" (Michaels, 2002, p14). Other excuses include blaming the WTO who could sanction supermarkets for price-fixing (Pretty, 2001), blaming the middlemen for siphoning off the profits, or stating that the quality of produce is not adequate (Policy Commission on Food and Farming industry stakeholder meeting, 23/10/01).

As for the 'middlemen', there *were* seven large processors in the dairy industry, and although not blameless, they were also affected by the drop in the price paid for commodities such as milk by the supermarkets. To ensure a profit, the supermarkets and processors prefer to deal in bulk with a standardised profit. Michaels argues that "to achieve the blemish-free perfect 7.4-inch carrot, pesticides, fertilizers and factory farming are necessary. Up to 40% of a perfectly good product will be discarded to meet the cosmetic perfection apparently demanded by UK consumers, and taste is undoubtedly sacrificed" (Michaels, 2002, p14). Such a move towards factory-style farming further serves to undermine and destabilise the farming socio-production system of lowland mixed agriculture. It should also be noted that a small change in a commodity price for a larger farm might be a problem that could be buffered by the wider farming income to that system, and a storm be weathered. For a smaller farming enterprise to cope with such market dictation and uncertain revenue for products makes them uncompetitive, and can produce a radical turning point – and therefore a crisis. This is just a further example of the pressures and stressors on a particular way of life.

BSE

BSE began in 1985, when the disease first started to manifest itself in herds in Britain, and ended in 1998, the year the EU Commission sanctioned the recommencement of exports of British beef, although, of course, the effects of this crisis still remain today. There is still scientific disagreement over the genesis of the disease and whether or not

it could be transmitted to humans in the form of CJD, and in Europe and other parts of the world, cases of BSE were still emerging in 2004/5.

BSE was a major event in the crisis surrounding British farming; however in complexity terms it was just another destabilising even among several that I am documenting in this chapter. What I am attempting to show is that BSE was essentially a disturbance, and now with the benefit of hindsight in 2013, once can state that its effects have been not been too severe. The population now eat beef in roughly the same volumes as they did before the BSE outbreak and Europe once again buys exported British beef. This is the wider view, however. I contend in Chapter 5 that BSE was a crisis for the smaller dairy producers who lost out greatly when the 'BSE bomb' dropped. It was these farmers – my parents among them – who relied on the meat value of their baron 'geld' cows and on selling their bull calves to be reared for beef. Both these markets disappeared overnight. The value of dairy cattle herds plummeted, and with the low price per litre of milk and the lack of additional revenue streams, small producers could not survive.

While BSE proved catastrophic for the dairy industry, it had impacts and permutations for other parts of the farming system. The outbreak also affected the way farming was portrayed in the media and the way that the public perceived the industry.

The media began to devote an increasing amount of coverage to the disease, and eventually this resulted in a crisis of public confidence in British beef. Ministers and officials of MAFF continually denied that BSE posed a health risk for humans: in November 1988, Keith Meldrum, Chief Veterinary Officer at MAFF, stated that "we don't believe that there are any implications for humans at this time" (Weir & Beetham, 1999, p284), and in May 1990, the Chief Medical Officer, Donald Acheson, said: "There is no risk associated with eating British beef" (Weir & Beetham, 1999, p283). On 7th December 1995, during Prime Minister's Question Time in the House of Commons, John Major stated: "...I have sought and received advice that there is currently no scientific evidence that BSE can be transmitted to humans or that eating beef causes CJD" (Dealler, 1996, p242). The Phillips report consequently noted that while the Government thought the probability that BSE posed a risk was remote, "they did not trust the public to adopt as sanguine an attitude. Ministers, official and scientific advisory committee members alike were all apprehensive that the public would react irrationally to BSE" (Phillips et al., 2000, volume 1, p233).

On 19th March 1996, the Government's new advisory committee on BSE, Spongiform Encephalopathies Advisory Committee (SEAC), informed the Secretary of State for Health, Stephen Dorrell, of their latest findings: that a distinct variant of CJD had affected ten people in Britain over the previous fourteen months and that a link between BSE and CJD could not be excluded. Dorrell informed the House of Commons of this the following day. A month later, the medical journal Lancet published a report of ten cases of a new variant of CJD in Britain. The unusual feature of these cases was that the patients' ages ranged from nineteen to thirty-nine. The CJD Surveillance Units decided that Britain had a new variant CJD[28] (Oldstone, 1998, p166).

BSE and the EEC

In the mid-1980s, farming in the UK was relatively prosperous. Government-funded advisory and veterinary and marketing services were available – services that had long assisted farmers to increase output, and to improve animal health and welfare. Agriculture had a long tradition of financial support from both the UK Government and the EU, in the form of market support schemes and compensation payments. It was developing valuable export markets and was noted for its high level of efficiency and productivity (MAFF, 1996).

Between 1986 and 1995, as well as coping with the impact of the BSE epidemic, farmers had to come to terms with significant changes to their traditional relationship with government. In 1987, the Government largely withdrew the provision of free advisory services (ADAS) to farmers, cut back near-market research and in 1993 abolished the Milk Marketing Boards. During this period, farmers were faced with significant reforms of the EU's CAP. In particular, the CAP reforms of 1992 sought to reduce over-production of the main agricultural commodities (e.g., cereals, oil seeds, beef and milk) by cutting support prices and reducing access to intervention.

Beef and dairy farming have long been closely integrated, with surplus calves and aged or unproductive cows from dairy herds providing nearly two-thirds of UK beef production in the mid-1980s. Dairy cows are commonly bred with beef bulls to produce

[28] 'New variant CJD' shortened to 'vCJD'.

cows for beef suckler herds. In 1986, the UK cattle population was 12.5 million spread across 122,900 (or just under half of) farm holdings (MAFF, 1996). In the same year, the output of milk, fattened cattle and calves was worth £5,134 million at 1990 prices, forming 60% of the total value of livestock products in the UK and 37.5 % of the UK's total agricultural output (MAFF, 1996). In 1995, output of these products had declined to £4,681 million at 1990 prices, forming 53% of the total value of livestock products and 33% of the value of total agricultural output (MAFF, 1996).

In 1986, the UK produced 94% of the total of beef and veal supplied to the domestic market. By 1995, domestic production of beef and veal had dropped from 1,046 to 996 thousand tones (HMSO, 1988), yet domestic production met 113% of the supply to the domestic market (MAFF, 1988). This indicates a drop in domestic consumption, leading to an exporting surplus. During the period 1986 to 1995, the UK produced sufficient liquid milk to supply the needs of the domestic market and over two-thirds of the domestic market's demand for butter and cheese.

One of the EU's objectives was to foster trade in agricultural produce between member states. The removal of barriers to trade and the progressive harmonisation of legislation encouraged trade to develop. By the time BSE emerged, the UK had built up a significant trade in beef and dairy products with the EU. In 1986, 68% of total beef exports of 211,000 tones (dead carcass weight) were to the EU. By 1995, beef exports had increased to 325,000 tones – worth £500 million – of which 77 % was to the EU (MAFF, 1996).

To summarise, the BSE crisis is an example of where a precautionary policy was not followed. That is the conclusion of van Zwanenberg & Millstone, who analysed this issue (van Zwanenberg & Millstone, 2002, p170). Beef and dairy farming have long been closely integrated, with surplus calves and aged or unproductive cows from dairy herds providing nearly two-thirds of UK beef production in the mid-1980s. Dairy cows are commonly bred with beef bulls to produce cows for beef suckler herds. In 1986, the UK cattle population was 12.5 million spread across 122,900, or just under half of farm holdings (MAFF, 1996). In the same year, the output of milk, fattened cattle and calves (at 1990 prices) was worth £5,134 million, forming 60% of the total value of livestock products in the UK and 37.5% of the UK's total agricultural output (MAFF, 1996). In 1995, output of these products had declined to £4,681 million (at 1990 prices), forming

53% of the total value of livestock products and 33% of the value of total agricultural output (MAFF, 1996).

However, in complexity terms, BSE has not had a significant long-term effect on the whole of British agriculture, other than perhaps a bureaucratic legacy in the traceability of cattle and bovine meat products. It has really only been a disastrous event for those smaller dairy producers who were left without a revenue stream from their baron cows and bull calves. Dairy farmers, like my parents, saw the value of their herds halve virtually overnight and the economic inability of the dairy system to function when so compromised saw many of the smaller producers leave dairying and move into other agricultural activities.

Foot-and-mouth Disease

Foot-and-mouth disease (FMD), like BSE, is another example of an episode that needs to be considered in terms of the destabilising effect it had on the socio-production system of lowland mixed agriculture. However, that is not to say that it was in itself a turning point: in complexity terms it was one of many disturbances that combined with the other major factors discussed in this chapter to play a major role in the phase shift and the alteration of the farm system's trajectory. Although the previous major epidemic of foot-and-mouth disease, in 1967, affected 2,364 farms, with almost 440,000 animals slaughtered in total, the outbreak was much more geographically concentrated due to the prevailing smaller scale and more localised structure of the farming system in the UK. However, the disease was endemic throughout two-thirds of the world: between 1999 and 2001 there were some 14,898 cases of foot-and-mouth in 16 different countries (Department of Health, 2001; Scudamore, 2002).

A suspected case of foot-and-mouth disease was discovered at an abattoir in Essex in south-east England on 19 February 2001 (caused by the PanAsia strain type O virus). The following day the case was confirmed by the Ministry of Agriculture, Fisheries and Food (MAFF). This proved to be the primary phase of the first major outbreak of the disease in Britain since 1967, but was most significantly the most acute economic and social crisis to face rural communities in recent years. The outbreak at the abattoir in

Essex was officially traced back to Burnside Farm, Heddon-on-the-Wall, Northumberland, where (as is now thought) the pigs had been infected since 12 February, but the infection 'was probably present at the beginning of February/ late January' (Anderson, 2002, p 6). It was discovered that foot-and-mouth had also infected several other farms in the area (Phillipson, Lowe and Carroll, 2002; Anderson, 2002; Rowell, 2003).

The farm belonged to the Waugh brothers. Investigations were made into the feeding arrangements for the pigs, and specifically the source of the swill fed to the pigs. The Waugh brothers collected waste from bakeries, hotels, restaurants, schools and a military facility in the area. The law stated that they couldn't feed this directly to their pigs because it had to be heat-treated first: it might be infected with a range of viruses including foot-and-mouth (Law, 2004, p7). What they did, or were supposed to do, was to leave it in containers on the edge of their property to be taken for treatment at a nearby farm. However, as the Department of Environment report details, this cannot have occurred: "…evidence of cutlery in the pig troughs and pens at Burnside Farm. Catering waste normally contains some cutlery but it would be unusual for this cutlery to survive the processing operation and end up in the processed waste fed to livestock" (Department for Environment, 2002, p19).

Bobby Waugh was subsequently found guilty of a series of offences, including the failure to alert officials about the state of the pigs on the farm's health, and feeding unprocessed waste to pigs (28th June, 2002; Wilson, 2002). Rowell talks of conspiracy theories. He suggests: "Rumours continue that this was neither the date, nor the location for the start of the outbreak, and that the farmer concerned, Bobby Waugh, was made a public scapegoat (Waugh was found guilty of failing to notify the authorities of foot-and-mouth disease and inflicting unnecessary cruelty on animals)" (Rowell, 2003, p57). When it emerged that the pigs ate contaminated pigswill, this was embarrassing for the Government because of the revelation that SEAC had argued for the ban on using catering waste as pigswill from in 1998 to prevent disease transmission. However, these recommendations were rejected on the grounds of the economic consequences (Burke, 2001).

From Burnside Farm, the virus became airborne and was transmitted to a few farms near Brentwood, and a larger number close to Heddon-on-the-Wall. However, when the

vets looked at the paperwork of one of the Northumberland farms at Ponteland, they discovered that nineteen sheep had been sold from the Ponteland farm at Hexham market on Tuesday 13th February; note the date: nearly a week before the infection was discovered in Essex (Lessons to be Learned Inquiry, 2002, p51).

It is believed that the initial batch of nineteen sheep was responsible for the spread of the disease: three had gone to a butcher, six to a Lancashire farm, but the other ten had been bought by a dealer (Lessons to be Learned Inquiry, 2002, p51). He had taken these and 174 others to Longtown Market near Carlisle, in Cumbria, on the Scottish border on 15th February. Here at the market, they had crossed paths with at least 24,500 other sheep (the number of animals that had passed through the market between February 14th and 23rd). Those 24,500 sheep had in turn been sold to 181 buyers from all over England and southern Scotland. A national ban on movement was imposed on the 23rd February, but the vets knew it was too late (Law, 2004, p8). During the period 19th February 2001 to 24th march 2001, 2,657,000 animals had been slaughtered altogether and a further 75,000 were due to be slaughtered, whilst 40,000 carcasses were awaiting disposal (Department for Environment 2002, p22).

Finally, as Law and Singleton (2004) argue, the 2001 FMD outbreak disaster was a result of both natural incidence and social pressures: "The virus was, yes, 'natural' – but even this needs qualifying since the variant that caused the epidemic appeared in South India in the early 1990s almost certainly in a mutation arising from the domestication of animals" (Law and Singleton, 2004, p8).

FMD, being viral in nature, and airborne, is thought to have the ability to attach itself to objects and thus be transported on car tyres and Wellington boots, etc. Apparently the FMD virus is quite selective, being exhaled by pigs but not inhaled by cats or dogs. It can be hosted by – but not infect – horses, and humans can also contract the virus, suffering mild skin irritations (Law, 2004, p8). But FMD infection is particularly virulent in pigs. It is clear that infected pigs are ill, and once they contract FMD they emit the virus in huge quantities. Thus Burnside farm was emitting a viral plume capable of infecting animals several miles downwind (Department for the Environment, 2002, p25). The outbreak demonstrated to a shocked public the long-distance nature of industrial farming and the wide scale and sheer complexity of the modern farming system. Since the previous FMD outbreak in 1967, the number of cattle markets had

shrunk from 380 to 180 and the number of abattoirs from 2,200 to 360 (Anderson, 2002, p5). This raises a number of questions: is this the culmination of a long-term trend? Why were there so many animals on the move in Britain? Why was an abattoir in Essex taking pigs from Northumberland? Why were dealers from Devon buying sheep on the Scottish Borders?

Firstly, in terms of abattoirs, it is partly due to numbers: they are limited in number, and animals often have to be transported long distances for slaughter. In 1970 there were approximately 2,000 slaughterhouses in the UK. In 2001, there were just 411 (Royal Society, 2002). Why? The answer is controversial, but it involves both economic and political influences on the farming system.

In the UK, sheep are moved long distances for a number of reasons. Firstly, many are bred on upland areas, and are brought down for sale in spring and autumn. In addition, the economics of the industry are dependent upon large-scale national and international movements. Tastes for cuts vary from one place to another. Most of those who eat lamb do not live near the farms on which the sheep are reared; 'local' lamb may have come from the locality, but there is a high probability that it has travelled hundreds of miles between the farm and the butcher (Law, 2004, p27).

A further reason is that the food wholesale and retail industry has become centralised and big supermarket purchasers want to deal with a limited number of suppliers. In addition, it has become costly to follow UK and EU legislation; for example, every slaughterhouse requires a resident vet. BSE and other food scares have resulted in hygiene laws becoming strict and costly, and the paperwork is considerable. Many abattoirs have closed down as they cannot make a profit (Fort, 2001; Kennard, 2001). In complexity terms, these two points (animal production and meat markets) are at the centre of the extreme nature of the FMD outbreak in 2001. FMD is a product of bio-socio-economic interactions within the system which have been influenced by external factors such as markets and regulations. The bare economic facts were laid out by Phillipson, Lowe and Carroll (2002).

On farms where livestock was culled, households' incomes and revenues faced an average shortfall of £61,000 in 2001-2. These farms, however, had received compensation with estimates averaging £74,000 – £111,000 per farm where livestock

was culled; on livestock farms where livestock was not culled, household income and revenues faced an average shortfall of £18,000 in 2001-2. Farms where livestock were not culled did not receive any compensation. On predominantly arable farms where no livestock was culled, household incomes were expected to rise by an average of £2,700 in 2001-2. The total net loss of revenue to the farming economy of the North East is estimated at £98 million for 2001-2. Diversified activities, particularly on affected farms, were especially vulnerable to the disruptions of FMD. For the farm sample as a whole, income from existing diversified sources fell in 2001-2 by an average of 26% per farm. Farm contracting activities and rentals of buildings were strongly hit; some farmers gained income through working on disease control activities, often on their own holding. The average income for those households with off-farm employment fell by 8%. Farm incomes in 2000 were already at their lowest level in 25 years, at an average of £7800 per capita (Countryside Agency, 2001).

Although compensation was paid for the loss of all slaughtered livestock, it has been estimated that "…those farms directly affected by the crisis would collectively face further losses of £84 million as a result of higher restocking costs, wages, and other costs incurred during the quarantine period" (Midmore, 2001). This loss to the farmers could have been greater if one considers Connor's argument disputing the official figures and claiming they were 'fudged': "In official calculations a breeding sow with six piglets would all be counted as 'one unit', even though seven were killed. The Meat and Livestock Commission estimate that, including all lambs, piglets and calves, some 11 million animals were killed. The breakdown is approximately 9.5 million sheep, 860,000 cattle and 430,000 pigs" (Connor, 2002, p1).

To summarise, the effect of FMD on the agricultural system was significant, but acute and short lived. There were both 'winners' and 'losers' in the aftermath of the outbreak as Phillipson, Lowe and Caroll (2001) show above. Those whose livestock was culled experienced the isolation of quarantine and the distress of the cull but were well compensated. From a complex system perspective, it was a means of retirement or a way of leaving the industry for older farmers on smaller/tenant farms that would not have been possible without FMD and subsequent compensation. For those choosing to stay and farm, the injection of funds and the 'blank canvas' left by the cull could have afforded an opportunity to diversify or change the direction of their farm businesses that might not have been available or considered otherwise. The real farming 'losers' during

FMD, as the Phillipson, Lowe and Caroll (2002) data above shows, were those stock farmers whose livestock was not culled. Their animals could not be moved or sold and their income was severely compromised but there was no compensation. The smaller, less economically viable (often) tenant farms were not in a position to weather that particular storm; testimony describing such incidents can be found in the following *Agricultural Voices* chapters.

Tenancy Reform, Structural Change and a Crisis for New Entrants in UK Agriculture

UK agriculture has experienced successive rounds of structural change in terms of changes to the number, size and layout of farms. The dominant trend has been towards fewer, larger and more capital-intensive farms, but as Bowler (1992, p89) suggests, this trend is 'not nonlinear'. Thus, while the number of large farms (over 100 ha) continues to increase and accounts for a majority of agricultural land (over 60%), the largest growing size group since the early 1990s has been very small farms (less than 5 ha). This bi-modal distribution of farm sizes in the UK varies according to farm type and between localities (Lobley and Potter, 2004). So while the number of dairy and general cropping holdings fell by nearly 50% and 40% respectively between 1985 and 2005, the number of horticultural holdings (mainly in ornamental production) more than doubled over the same time period (EFFP, 2005).

An important dimension of structural change in UK agriculture has been a general ageing of the farming population, with the median age of holders increasing from 55 in 1990 to 58 in 2005[29] (DEFRA, 2006). There are many reasons that lead to low exit rates from farming by older farmers including an inability to retire because they cannot afford to, their enjoyment of farming and a desire not to relinquish control, inheritance tax

[29] It should be noted that official statistics may well overestimate the ageing of farmers as in many cases it is the relatively younger farmer/successor that is responsible for much of the day-to-day operation of the business.

reasons (keeping land in hand and using contract farming arrangements), and the lack of a successor (Williams, 2006). Within many farming families, inertia and a commitment to stay in agriculture still remain strong (Savills, 2001; Lobley and Potter, 2004).

Concomitantly, the main barriers to entry into farming are poor availability of land and high start-up costs (ADAS et al., 2004; Williams, 2006) – inextricable when linked to the low rate of exits. This is confirmed by a study of entries and exits from UK farming, with an entry rate of 2% between 2000 and 2004 much lower than the 18% exit rate as the total number of farms and farm businesses decline (ADAS et al., 2004). The overall result is that prospects for new and young entrants have not improved. In addition, many of the county councils' smallholdings (county farms) that played a key role in bringing new entrants into farming at an affordable cost in the past have either been sold off or amalgamated into bigger holdings (Whitehead and Millard, 2000; Ilbery et al., 2006).

Most agricultural tenancies created after 1st September 1995 are governed by the Agricultural Tenancies Act 1995 (the '1995 Act'). Introduced in an attempt to revitalise the agricultural let sector, this legislation confers little protection on the tenant, in stark contrast to the agricultural holdings legislation which preceded it. Tenancies already in existence on 1st September 1995 continue to be protected by the Agricultural Holdings Act 1986 (the '1986 Act'), and as such benefit from lifetime security of tenure, up to two generations of succession rights, a statutory rent review formula, and numerous other measures during and on termination of the tenancy.

Farm business tenancies, as the agreements under the 1995 Act are called, are by and large devoid of statutory interference (Sydenham and Mainwaring, 1995), allowing freedom of contract which dictates the relationship between the parties, with only a few fallback provisions where the agreement is silent. From the landowner's perspective, the new style agreements preserve flexibility over the future management of their farmland portfolios and crucially maintain their vacant possession premiums, as farm business tenants effectively do not have any security beyond their initial term. As an added incentive to landowners, and further distinguishing the two regimes, the Finance Act 1995 extended agricultural property relief from inheritance tax to all post-1st September 1995 agricultural tenancies, conferring 100% relief as opposed to the 50% available on existing tenancies (see Inheritance Tax Act 1984, section 116(2)). Not only have these

measures motivated the new letting of farmland, but they have also encouraged landlords to attempt to convert pre-1995 agreements into new ones, with potentially very serious consequences for the tenant's security of tenure and rent, because the new tenancy might be deemed to have been granted under the 1995 Act.

This conversion could be explicit: with the landlord and tenant agreeing to a surrender of the old tenancy and the granting of a new one. This by definition would be a farm business tenancy and the tenant would lose his 1986 Act protection. The landlord would gain 100% inheritance tax relief and would 'shake off the shackles' of the 1986 Act.

What has occurred, in effect, is that the powers put in place to protect the tenant and encourage generational succession and improved food security through protecting the actual producers has slowly changed, with successive acts placing the power back in the hands of the landlord and removing the security of the tenant – and the incentive to invest in or be creative in a long-term manner with his or her farm business.

Conclusion

In summary, the arguments in this chapter highlight a point of crisis within the agriculture industry. This is particularly true if you consult the definition of the term 'crisis' offered in the introduction to this chapter[30] – which means that the industry is facing the situation that the farming industry of the future will be significantly different from today. Indeed, the farming industry faces such a myriad of negative and damaging influences that one can conclude without difficulty that a fundamental change is occurring in what has been for many years a stable and predictable system.

While this overview is extensive and illuminating, what it lacks is the validity that can only be brought to a piece by the testimony of the individuals actually living through the 'crisis' as described here. I have deliberately presented material from the period leading up to the time I did my field research. This account of the difficulties within the farming

[30] The Oxford English Dictionary defines crisis as: "*a crucial stage or turning point especially in a sequence of events or a disease… an unstable period especially one of extreme trouble or danger*" (Collins Concise Dictionary, 1999).

industry is an attempt to contextualise my argument for the phase shift in farming. What this chapter shows is that there are a number of discreet issues that if experienced in isolation may not have destabilised the farming system; the cumulative effect of the events occurring within a period of only a few years was required to produce phase shift. Indeed, it is important to note that many of the issues here have continued and are still continuing today. Figure 12 shows the continuing decline in the agricultural workforce taken from the most recent available data (2008). This is broken down in Figure 13, which illustrates the numbers of farmers and farm workers. This graph clearly depicts the continuing trend of the reduction in the number of farmers and the numbers of workers (both part- and full-time) that they are able to employ.

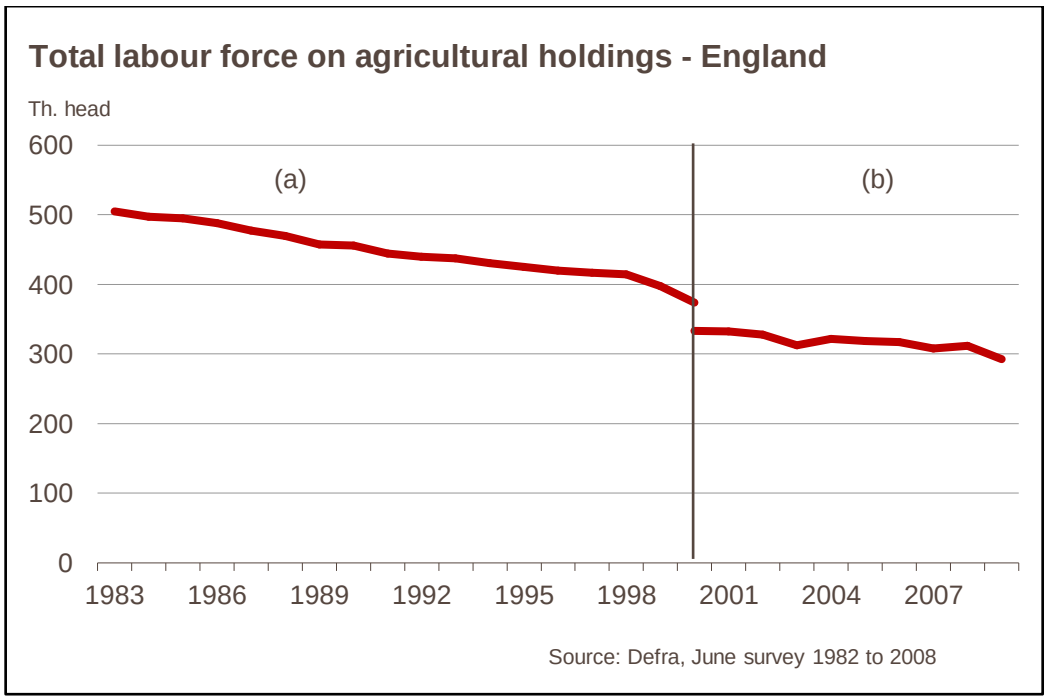

Figure 11: Total labour force on agricultural holdings: England 1983 to 2008 (Source: DEFRA June Surveys, 1982 to 2008). (a) shows data collected by MAFF and (b) represents data with a minor change in the way certain data was classified by DEFRA.

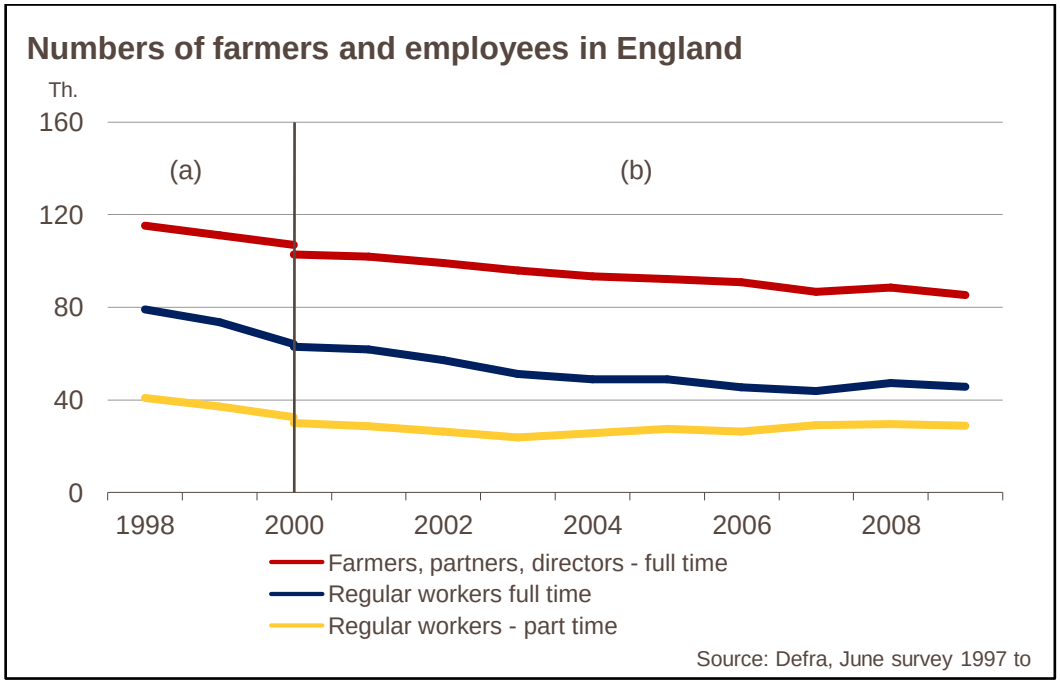

Figure 12: Number of farmers and their employees 1998 to 2008 (Source: DEFRA June Surveys, 1997 to 2008). (a) shows data collected by MAFF and (b) represents data with a minor change in the way certain data was classified by DEFRA.

The sharp decline in the number of dairy holdings due to crisis situations in the dairy farming system is also alluded to in this chapter. Figure 14 below shows that this is a trend which has continued until the most recent DEFRA data of 2009.

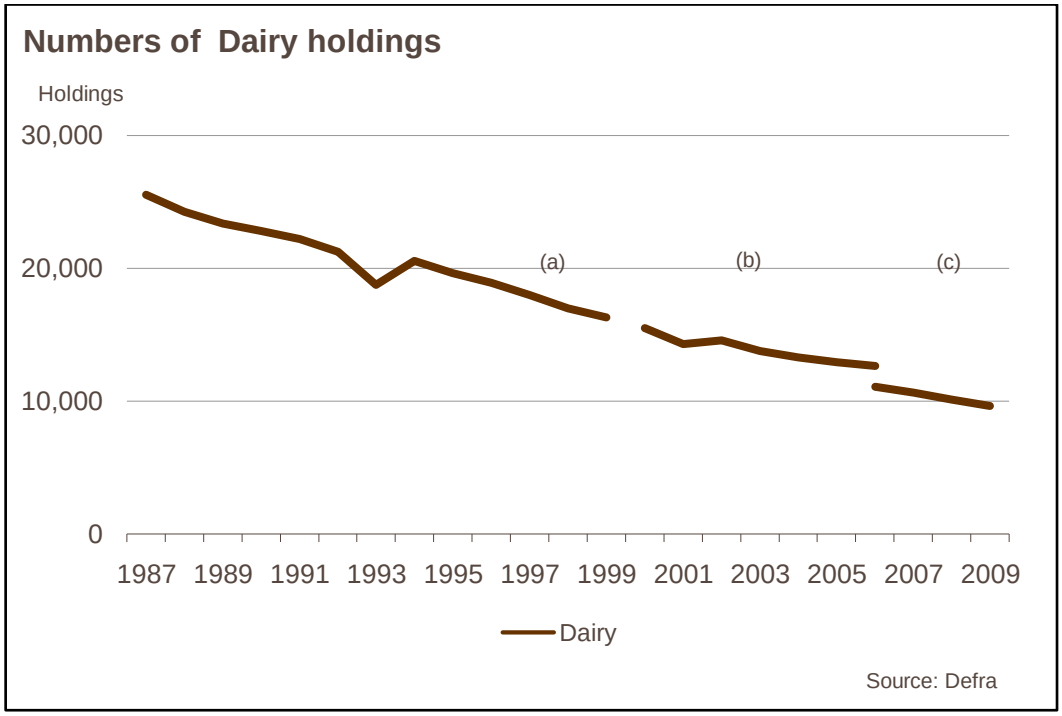

Figure 13: Number of dairy holdings 1987 to 2009 (Source: DEFRA, 2010). (a) shows data collected by MAFF and (b) represents data with a minor change in the way certain data was classified by DEFRA. (c) represents a further change in data collection criteria by DEFRA.

Figure 15, below, shows the rapid rise, post-2001 and FMD, in the number of agricultural holdings which are not classified within the DEFRA 'robust holding types' of Mixed, Grazing (lowland and upland LFA), Cereals, General cropping, Horticulture and Dairy.

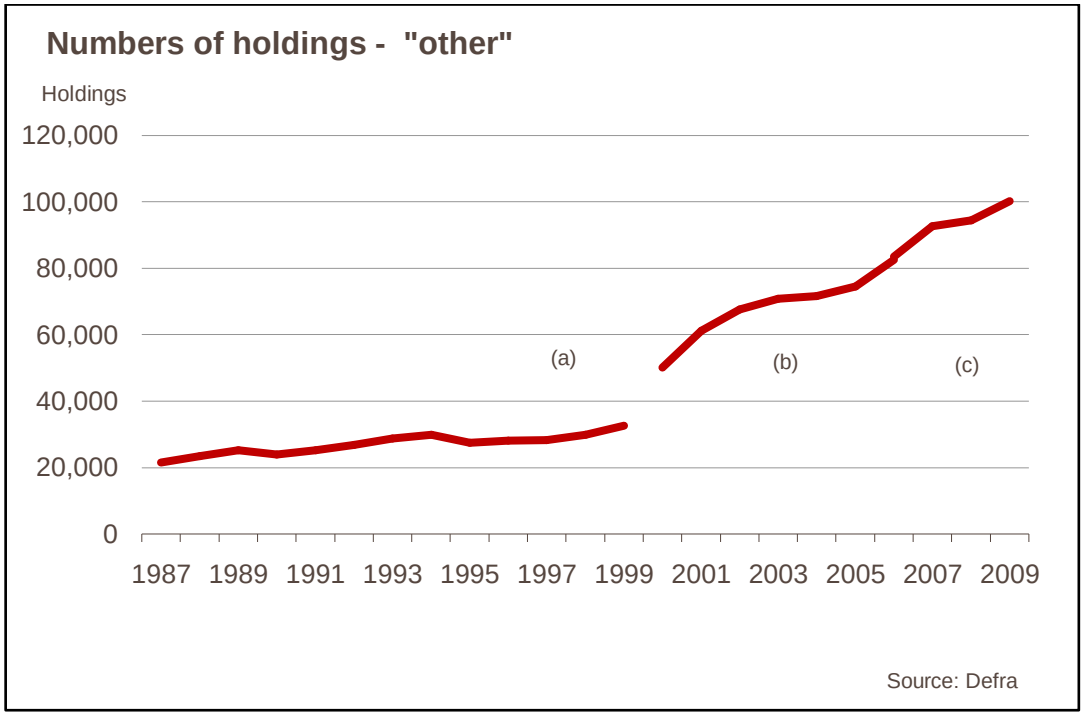

Figure 14: Number of holdings classified "other" 1987 to 2009 (Source: DEFRA, 2010). (a) shows data collected by MAFF and (b) represents data with a minor change in the way certain data was classified by DEFRA. (c) represents a further change in data collection criteria by DEFRA.

This is further explained by the following Figure 16, which shows the breakdown of farm types within this 'other' category. Note the significant rise in the 'Specialist horses' holdings and also 'Minor holdings' and 'Non-classifiable – other' which points to the amenity and lifestyle buyers of farms and farm land discussed in the 'Land Price Issue' section of this chapter.

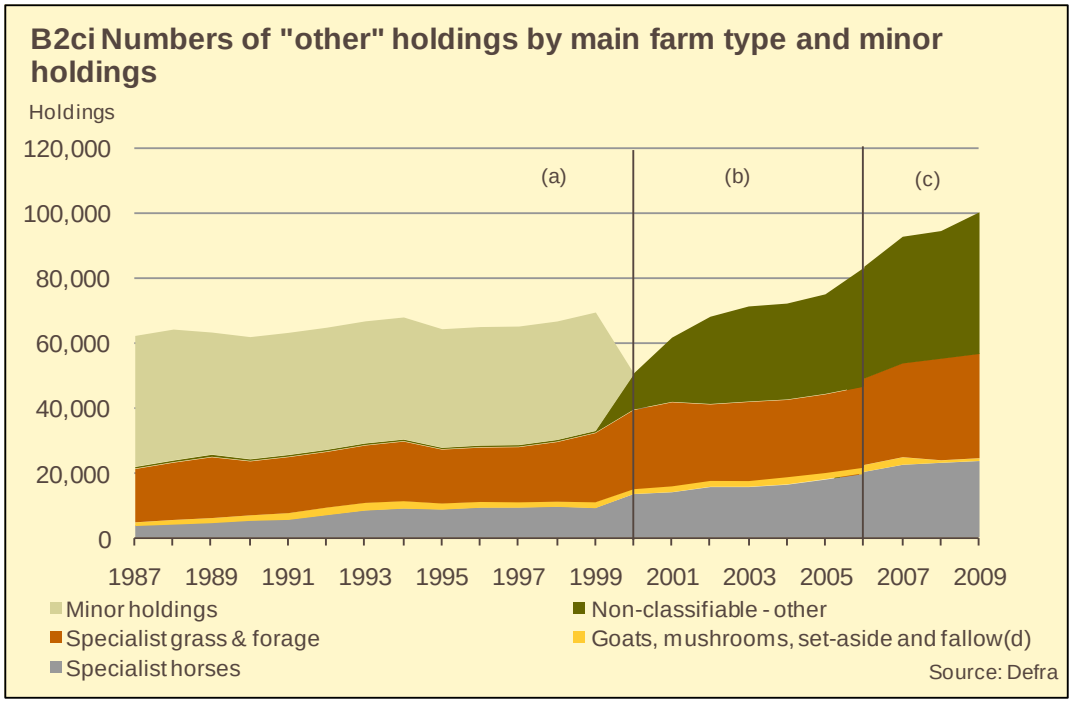

Figure 15: Number of holdings classified "other" by main farm type and minor holdings 1987 to 2009 (Source: DEFRA, 2010). (a) shows data collected by MAFF and (b) represents data with a minor change in the way certain data was classified by DEFRA. (c) denotes a further change in data collection criteria by DEFRA.

Finally, Figure 17, below, shows the degree of debt of British farmers and clearly shows that they are now borrowing more than ever to maintain their businesses.

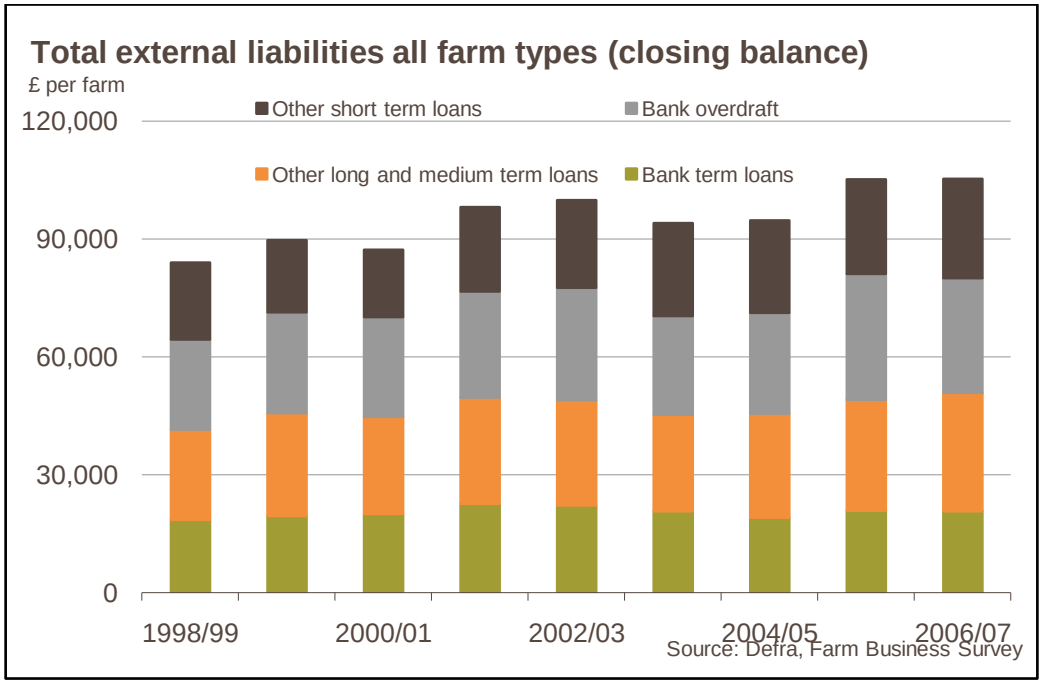

Figure 16: Total external liabilities of all farm types 1998/99 to 2006/07 (Source: DEFRA, 2010).

Blythman (2011) suggests in an article in the Observer that imported foods are featuring ever more prominently in the nation's diet. The percentage of home-produced food we eat has fallen from 75% in 1994 to 63% in 2004. She goes on to summarise some of the most recent issues in British agriculture: "…only one per cent of the population is employed in agriculture and the average age of the British farmer is now 60. The dairy industry, in particular, is in meltdown. Last year, dairy farms closed at the rate of one a day. On current trends, the UK can expect to become a net importer of milk within five years" (Blythman, 2011).

This crisis (an accumulation of negative events and experiences, prompting the destabilisation of the system) occurred over a period of decades and cannot be described as a sudden occurrence. As each incident happened, a cumulative effect took hold, and the resultant build-up of crisis on crisis has resulted in the phase changes in the socio-production system that is mixed lowland farming in the British Isles. The crisis is the conceptual axis upon which this thesis pivots.

6. AGRICULTURAL VOICES

The following chapter is a record of the narratives of farmers and those indirectly making a living from farming. The investigation provides a valid means of understanding the motives, feelings and experiences that informed the world views and influenced the lifeworlds of those who lived and worked through the 'crises' described in Chapter 5.

The testimony of respondents was collected during the autumn and early winter of 2004, therefore the responses of the individuals were contemporary with the two major endogenous factors within the crisis: foot-and-mouth disease and BSE. While in the overall scheme of change it cannot be argued that these two factors had greater importance for the wider phase shift than the others identified in Chapter 5, they were still being felt by the industry, with constraints (such as the 30 month rule for food chain beef cattle) still being in place.

This chapter has been divided into four main sections to draw out the major themes that emerged from the farming narratives. These themes generated in the data analysis process were apparent among distinct groups: particular parts or systems within the farming industry/society. I use these grouped themes to produce the visual aid diagrams that appear throughout this chapter. These diagrams were not initially intended to form part of the final thesis, only as a means of providing a fuller understanding of the apparent relationships present. They proved very useful to me in further understanding the interrelationships of the issues discussed by the respondents so the decision was made to include them as part of the final analysis. The diagrams depict the connections present between the themes through the use of arrows. The direction of the arrow shows the direction of the influence or effect of one theme or issue upon another and the thickness or weight of the line denotes the degree of that influence. The central or highlighted box in each diagram is usually the central theme or system type from which all the issues stem, either directly or indirectly.

The final section in this chapter is an autoethnography dealing with more current themes, discussing the difficulties of entering farming and acquiring access to land to use for farming in particular.

As has been discussed in previous chapters, agricultural systems are complex, combining human and biological elements that link together diverse people, places and processes through multiple product flows and intermediaries. They are characterised by emergent properties and non-linear dynamics, due in part to highly articulated interactions at numerous levels. On occasions small changes can produce large effects, but large causes can produce complete change and phase shift. This is no more evident than in several recent crises in agriculture: the slow burn of BSE, or the acute shock of foot-and-mouth disease in 2001.

While official statistics, official publications, media reports and academic writing tell us a great deal about the experiences of farmers, there is no substitute for an account from an individual who has lived through the experience. To gain a proper insight into the systems involved in the agriculture industry and how such systems have changed and adapted over time, it was important to talk to farmers themselves. It was often not easy to elicit information on these experiences from the respondents: I found farmers to be 'proud' and reticent when it came to admitting weakness. However, a comfortable atmosphere and a genuinely interested audience (myself) more often than not brought out very rich and informative data. Complexity theory can assist in interpreting uncertainties and divergent views and understanding the social, economic and political factors determining the workings and pressures of such complex socio-technical and socio-ecological systems, and a full analysis will be undertaken in the concluding chapter of this thesis.

While I had a sound notion – from my own background in farming – of what to expect from the data, there was much discourse in these chapters that surprised me, some of which I found either very moving or amusing. The individuals that participated in this study, more often than not, 'opened up' and divulged more information than I had anticipated. This resulted in rich data covering a number of relevant topics which provide high quality information showing the depth of the respondents' perceptions.

Section 6.1 deals with the inherent nature of the agriculture industry and the myriad of different systems detailed in previous chapters. This does not suggest novel change, but what I hope to show here is that aspects of the crisis have combined to influence what might otherwise have been contiguous change and make it novel. For example, part of this chapter deals with farmers' attitudes to stress and paperwork. Both would arguably

be part of the system regardless of the 'crisis' component; however, the additional regulations and paperwork that aspects of the crisis such as BSE and CAP reform have brought into the equation contribute to make this change novel and are therefore worthy of note.

There is an examination of respondents' attitudes to the familial working relationships that often characterise smaller/family farm businesses. The farmers comment on the benefits and disbenefits of these situations and how tensions from the crisis are compounding already 'taut' working relationships.

Section *6.2* tackles the main disease outbreaks in the farming crisis, namely foot-and-mouth disease (FMD) and BSE. It investigates the respondents' understanding of and attitudes towards the incidences of the diseases, the approach of government and scientists, and the effects on the farming industry of the media's reporting styles and the variations in tone and sympathy between the two outbreaks. This chapter is intended to give an insight into the farmers' perception of the political, economic and business implications of the BSE and FMD disease outbreaks while also showing the differences between the two and the differing effects that farmers felt they had both on the public psyche and also the farming industry's future.

The incidences of FMD and BSE could not be argued to be evidence of contiguous change. Indeed, the BSE epidemic is one that represents a novel and unprecedented disease that was neither anticipated nor understood scientifically for much of the time it was present in the national herd. In fact, BSE could be best described as a 'PR nightmare' for both the British Government and the UK farming industry. It left politicians and farmer bemused as to its cause and to what could realistically be done to contain the animal disease, and also regarding any links to the proposed human form: vCJD. This chapter details the farmers' views of the 'dark days' of both of these outbreaks and their own views on where they came from and who was indeed to blame in both cases.

Section 6.3. addresses the farmers' reflexive perceptions of farming in the past and how they compare to the contemporary industry. The chapter begins with this reflexive overview of farming's past, and the changes in the agriculture industry in the lifetimes of the respondents. This is followed by an account of the respondents' views on the Common Agricultural Policy and the EU in general, the effects of dwindling workforces

on their own ability to farm, and the benefits and disbenefits of increased mechanisation. The chapter concludes with an in-depth exploration of the attitudes of farmers to the governments, the NFU and supermarkets who have arguably the most influence on the direction of the industry at present.

Section 6.4 explores many of the themes present in *6.3* but goes into greater depth. The key issues here are the effects of the changes in farming on the lifestyles and workloads of the respondents. Here I have tried to characterise the respondents' attitudes towards the most recent changes in farming, including the introduction of agri-environmental schemes, the CAP reforms, their own diversification strategies and their thoughts on second jobs outside of the industry as a means of supporting a farming lifestyle.

The notion of a farming lifestyle is also discussed here with reference to the individuals' takes on the alterations that have occurred among the social networks of the industry and their own personal experiences as members of dwindling farming communities. This includes discourses on the role of pubs and cattle markets as meeting places for farmers, the roles of friendships (inside and outside of the industry) and the role of families in the farming community. *Agricultural Voices 4* explores the possible future trajectories the respondents see for their own businesses and families, their immediate farming communities and the industry as a whole.

Finally, *Section 6.5* is an autoethnographic account of the problems my husband and I have faced attempting to buy land to farm and how this might constitute a problem for many in our position across the country. This chapter charts a period of five years which gives further depth and perspective on some of the issues discussed in the first four sections of farmers' responses.

6.1. THE NATURE OF FARMING

Introduction

This section reports the experiences and views of farmers interviewed in meetings which sought to understand events 'through their eyes' and to discover which issues they felt were of greatest importance in their farming lives. The chapter is divided into three sections: first there is a discussion of the 'risks' or dangers associated with the business of farming. This includes respondents' narratives on issues such as work-related stress, workload, farming type, stress, and the perceived burden of paperwork. Secondly, the views of interviewees are recorded regarding the impact of farming pressures on personal relationships and on personal wellbeing. Finally, there is a section entitle *Change* in which non-farming respondents discuss their observations of farmers' reactions to the changes currently occurring in the industry.

In this section I hope to show the main stressors in modern farming life and the effects those stressors have on individuals, businesses and families as reported by those who encounter them on a daily basis. The idea behind the *Agricultural Voices* sub-chapters is to give a 'voice' to the farmers, farmwomen, wives, partners, children and those involved in other aspects of the agriculture industry in order to gain a greater understanding of the 'realities' of their daily lives and what informs their world views.

Risky Business

Respondents often cited business issues and uncertainties about future economic developments as sources of stress. This can be expressed in three terms: (1) global competition – whereby UK farms were increasingly competing with overseas labour which was much cheaper than their own, in part due to CAP reform. (2) The dominance of supermarkets over the food market, which enabled them to control prices and steer

farming practices; this is specifically the argument of smaller-scale farmers, family farmers and tenants. (3) The aggressive business tactics of corporate (non-local) farms, which included the acquisition of land and inflation of prices, and the domination of union and government policy, which meant that there were poor prospects for the future of smaller-scale farming, tenant farming and for the future of young farmers in the locality.

These factors represent trends that have become more apparent in agriculture in recent decades and do not fit in with the more intrinsic 'risks' associated with agriculture, most notably the influence of the weather or the incidences of animal or crop diseases. Many farmers reported feeling that they lacked '*a level playing field'* with overseas producers, and questioned whether these farmers were subject to the same degree of regulation in terms of animal welfare and inspection regimes as them (the implication was generally that they were not). Some farmers felt that the Government insisted on *'heavy regulation'* when it suited them.

For many respondents, the price that they were able to realise for their produce was the single biggest source of daily stress, and the issue most likely to drive them out of farming. One respondent put it in very graphic terms when he reported that "everyone is chuffed to bits because corn is £90 to £100 a tonne; it's not that long ago since corn was £150 a tonnes and our inputs were a lot lower: we were making a lot of money then. But our inputs have gradually increased, like fertiliser; when corn was £150 a tonne I recall fertiliser was low in the '90s, and if you bought well you could get it for 70 quid. Now fertiliser is over £100, like even last year fertiliser price was over £100 and corn price was 60. It was always that fertiliser price followed corn price: if it went up fertiliser price went up, down. But now fertiliser price is higher than what corn price is".

This was also an issue highlighted by every dairy farmer interviewed in this study. They pointed out that the price supermarkets were willing to pay for milk had fallen below the cost of production. The reason that farmers felt this had happened was that supermarkets treated milk as a loss-leading product to entice customers into stores, and were little concerned about fostering a lasting association with their supplying farmers. A number of these farmers lamented the demise of the Milk Marketing Board: an organisation that they regarded as having ensured greater equality and that had "fought their corner". One respondent summed up the difficulties farmers have in such

instances: “we’re described as an industry but farming is like no other industry. We’re really just a bunch of individuals, all in competition with each other, and all a little paranoid the other bloke is getting one over on us. We have a weak union and no collective voice; it’s as simple as that”. One large-scale dairy farmer respondent was fairly typical in his perspective: “The supermarkets are absolutely screwing us into the ground on milk price… farmers don’t want to be rich and all, they just want a fair return for what they do: it makes you feel as if you’re banging your head against a brick wall. All they’re interested in is cheap, cheap, cheap”.

Respondents frequently discussed financial aspects of farming as producing intense levels of stress, particularly farmers on the smaller to medium-sized farms who were more likely to be struggling to make a profit. Money worries were repeatedly reported as the most stressful aspect of these farmers’ work, which was also central to other farming problems. An interviewee argued that financial pressures played more heavily upon livestock farmers, whose businesses were often based upon smaller agricultural units. It was also chiefly the principal farmer who felt the greatest stress from financial issues. Their wives and partners who were often involved in some way in the farm’s ‘bookwork’ often shared this stress to some degree. No respondents suggested that farming had ever been a particularly prosperous occupation; most felt, however, that there had been a marked shift in agriculture’s fortunes over a generation, and that it was now influenced greatly by economies of scale and dominated by larger scale businesses for which financial rewards provided an occupational motivation. “All our input costs have gone up. Even seed costs used to resemble the corn price but seed costs are £250-odd; they were £230 when we were getting [£50-60] a tonne so our input costs are up. The only thing that’s come down is the cost of machinery, but seeing as we can’t afford to buy it… The only anomaly that I can’t figure out is that tractor sales are up.”

Several respondents recounted that they had seen neighbouring farmers close their businesses because of financial problems. Some interviewees commented that they lived “in dread” of bankruptcy, both because of the “shame” that they felt would be associated with not being able to make a success of farming and because it would mean loosing their farms, their homes and their livelihoods and being unable to support their families.

Financial pressures were also cited as being troublesome at particular times, for example during and following the FMD outbreak. One respondent in his mid-thirties with a large farm and a university education argued that the UK was currently undergoing a major agricultural recession which was having intensive financial impacts for individual farmers. Many interviewees commented that to be a successful farmer in the current economy, there is a need to be a very good business manager. However, this kind of business-related thinking did not always sit well with the occupational characteristics of farming, with many farmers reporting difficulties in responding to new financial pressures, and moreover in making changes to the way they had farmed for years in order to make their farms more profitable. One respondent detailed the plights of a number of farmers of his acquaintance who had delayed making changes, and consequently were in a position where their produce had become progressively less profitable and their equipment was on the verge of breakdown and urgently needed replacing, which they would not be able to afford: "these guys are all stressed to death: if you ask them if they like farming they'll tell you to bugger off. They eat, sleep and drink overdrafts and bank loans; they've stopped having holidays and their wives shop at the charity stores. It's sad: they don't deserve it. But they won't look past farming for an income and you just can't do that these days". Another livestock farmer argued that profit margins had become progressively tighter, leading him to compare farming to gambling.

Other respondents described how it was often difficult to know when to "throw in the towel". One interviewee explained that "there's more to it than a purely business decision: it's a livelihood we'd be giving up. And while your business might be shite and haemorrhaging money, you just don't want to admit defeat: you don't want to loose your home, what you've poured your heart and soul into, and worst of all fail your kids by stuffing up their inheritance. But with all that pressure, you can't see the wood for trees. How do you call it a day and sell up? I think most people just wait till the bank makes the decision for them and forecloses". It seems, therefore, that the self-employment aspect of farming, combined with its lifestyle and farmers' deep emotional connection to it, could make it difficult for farmers to judge when financial pressures have become unsustainable.

There were also financial costs associated with meeting the terms of agricultural regulations, which proved an additional source of pressure. Extra stress resulted

specifically from the time interviewees spent waiting to see if subsidies had been forthcoming. This was described by many respondents as "horrendously worrying" for farmers already experiencing financial difficulties. Interviewees also talked of how financial pressures influenced farmers' decisions in ways that had repercussions for everyone working on their farms. Consider the experience of one respondent: due to financial difficulties, this individual who was running a small mixed farm[31] cut back the farm's labour forces, making it necessary for the remaining staff to take on the additional work. This resulted in work-based tension and conflict. Financial difficulties also prompted farmers and their wives to take on additional work outside of the farm, further reducing workforces and sometimes creating role conflicts. One respondent suggested that such financial (and the resulting time) pressures increase the likelihood of divorce amongst farming couples. Financial pressures were reported as also threatening farmers' retirement plans. Tenant farmers felt they were under more pressure to make a constant profit in order to meet their rental costs.

One tenant farmer explained steps he had taken to remove some of the stress from financial pressures, by taking a more diversified approach to traditional farming: "I'm going into the stewardship scheme and doing B&B for other people's cattle during the winter. But that reduces the risk for me because I get paid regardless of what the market's doing: I charge on a weekly basis a fee determined before the cows arrive". This individual was attempting to farm traditionally, using the skills he had gained from years of dairy farming and animal husbandry while removing market-related risks and guaranteeing a monthly income.

The diagram below is an attempt to visually represent the relationships and correlations highlighted in the following discussions. They are present as an aid to explanation, but in a greatly simplified form. I intend to demonstrate the strength and importance of said relationships and correlations to the central issue (as identified by the respondents – for example, stress) by the size and density of the arrows.

Such diagrammatic representations appear periodically within this chapter. The production of these diagrams assisted in the writing of this section, and they illustrate the connections that the respondents were outlining in their testimony. They remain in

[31] Please see the Introduction chapter which sets out the definition of mixed farming that is used throughout this thesis.

the final thesis as a visual representation of connections within emergent themes but also as a further illustration of the complex farming system as described by those within it.

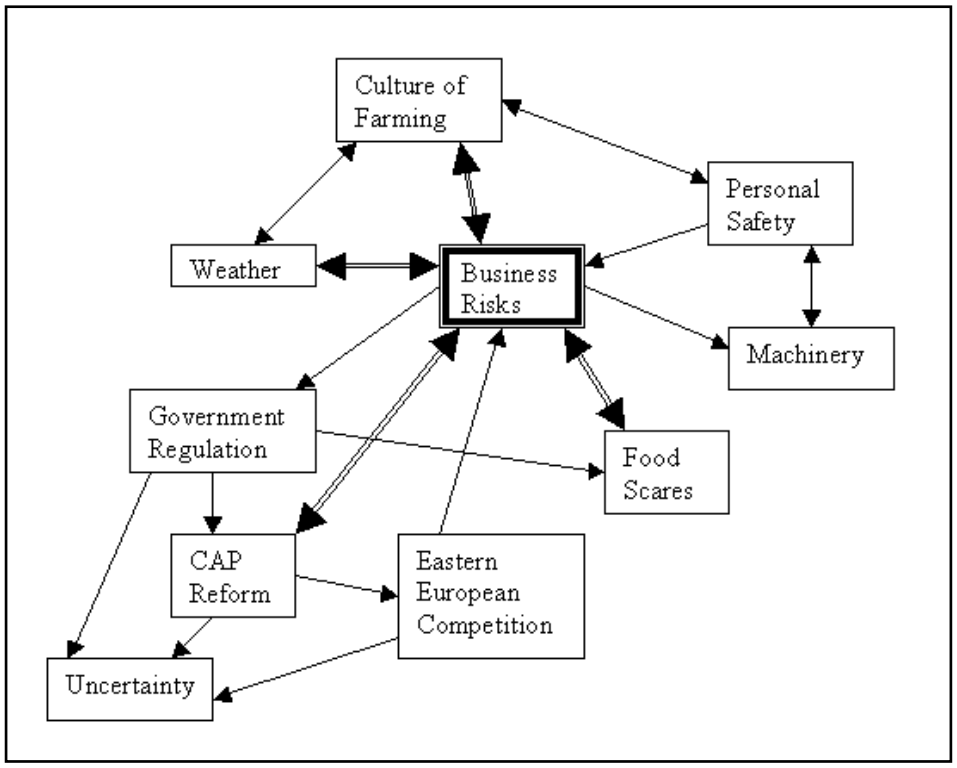

Figure 17: Diagram to show the business risks identified by the respondents, also showing connections between these themes.

Figure 18, above, is a visual depiction of the interrelationships within the farming business complex system as discussed by respondents in this study. It shows a system that revolves around the notion of business risks, and there are smaller interconnecting systems nested within this larger system. The central topic of the respondents' narratives was risks within the farming business and this is therefore the central box in the diagram. Business risks and the farmer's mindset regarding the farming business are ingrained within the culture of farming and this is depicted by a thick two-ended arrow. The culture of farming is influenced by the weather and seasons and this influences risk-taking attitudes towards issues of personal safety within the industry, which are directly related to the issues of machinery use and maintenance. Business risks were also discussed in terms of food scares and of government regulations and how they interconnect with CAP reform, and themes of uncertainty and Eastern European competition, which again feed back into the concept of business risks.

Work-related Stress

Work-related stress was defined by Cox et al. (2000) in a report for the European Agency for Safety and Health at Work as: "a combination of physical and psychosocial hazards that people may experience in their work". These also appeared to be the major causes of stress for respondents in this study. They were characteristic of farming in terms of the stressors associated with a number of areas: specific farming practices; issues relating to workload and organisation; features of the work relating to particular types of farming ('nature of the job'); paperwork demands; and issues concerning family farms. Amongst these, psychological and social risks stood out as having implications: that is, they were potentially damaging to farming communities.

Farming Practices

A small number of farmers identified features of their day-to-day farming lives that they found difficult or potentially dangerous. While some of these were more about personalities and occupational mismatches (such as the farmer who hated the process of milking his cows and became increasingly demoralised with this task – although the depopulation[32] of farms is likely to make such situations more common), others were more obviously related to physical hazards and would respond to intervention or support. For example, a farmer's son who worked on a mixed farm worried about the longer term effects of some of the pesticides used. Other respondents noted such concerns as: contraction of 'Farmer's Lung' from dusty hay and straw, contraction of animal diseases such as orf (contracted from sheep), leptospirosis (Weil's disease) from dirty water – in milking parlours among other parts of farms – and one respondent talked about the dangers to his pregnant wife from contact with lambing sheep.[33]

Respondents from livestock farms talked about finding the process of handling cattle stressful, and they worried about their safety. One respondent said he felt ashamed to admit it when everyone else seems to manage so well. I asked if this was actually the

[32] By this I refer to the loss of agricultural labourers due to increased mechanisation and higher wages/better working hours in other industries.

[33] The respondent experienced great stress regarding this. He felt he had no choice but to ask his wife to help with lambing. This was because he couldn't afford to pay a labourer, but had much anxiety as he felt he was risking her life and that of their unborn child.

case or just his perception of the situation, as it seemed to be a fundamental part of livestock farming. He was surprised that I thought other farmers might feel the same way, and this raises the possibility that perhaps farmers are unlikely to admit perceived 'weaknesses' to one another. Such feelings were expressed despite decades of experience that had not reduced their concerns. Relating to this, one respondent felt that as she and her husband get older, they are more vulnerable to getting knocked over (a much noted concern among the older respondents). One aspect of this problem is that with the pressure on farmers to cut back on labour and increase stock, these kinds of personal risks are intensified.

Workload and Organisation

Together with paperwork (which is discussed later), issues relating to workload and organisation – the psychosocial hazards – which stemmed from changing labour processes (also discussed later) were raised by respondents as stressful aspects of farming. Interestingly, this negative association with farming was raised unanimously by the sample population, and in particular by spouses, adult children and workers who had less control over these processes. It was also a particular concern of those working on small-to-medium farms where there was less chance of flexible labour. When discussing intensification on his farm, one livestock farming respondent discussed the impact that increased stocking rates had on the workload of a family farm: "if you've got a building where [you] put six animals… and then you need to put it up… The pressure on that building becomes more. It needs to be mucked out more often, it needs to be bedded up more often, there's a higher risk of disease [for] those animals because you put pressure on them. And that pressure ultimately comes back on you as the farmer". He went on to discuss the how these changes increased his work-related stress: "You can't switch off: there's always something in the back of your mind, whether it's what you need to be planning for next week, or what you need to be planning for tomorrow, or what you need to be planning for next year".

Many respondents remarked on the negative effects of the longer hours they needed to work, and on their upset at losing valued workers because their farms could no longer maintain a workforce. This had the effect of increasing farmers' sense of isolation, which is noteworthy for two reasons. Firstly, there is a loss of workplace

companionship and diminishing job satisfaction; secondly, the loss of a workforce increases the workload of those remaining. Respondents noted these aspects to be particularly detrimental in areas where farms were geographically isolated and when farms were small or run by one individual working alone. Respondents talked about isolation as something that exacerbated any existing stress.

In many cases, such working arrangements contrasted with farmers' visions of the future, in which they saw themselves taking a more managerial role in later life instead of continuing to perform the manual tasks of farming at a time when their health and energy levels may be less strong. Further to this, one respondent suggested that the larger farms, which benefit from economies of scale, are more likely to have the capacity to respond to this aspect of workload stress. A number of interviewees spoke of being "exhausted" as a result of the long hours that they are working. Farm women on more than one occasion described the distress they felt seeing their husbands making themselves "literally ill with work", and their frustration at being unable to persuade them to take time off or even a holiday. This was for two reasons: firstly, because they simply could not afford to, or secondly, because they were unable to find relief cover.

However, the drive to diversification is also putting strain on farmers and adding to their already extensive workloads. "We need to diversify", admitted one respondent who runs a large, owner-occupier farm; "trouble is, I've got to keep the farm going doing what it's always done in the meantime. Current farming practice will produce the money to fund the diversification. In the short term, I've got the old enterprise and the new enterprise to work simultaneously: I'm spinning plates. I can't afford to take on any more staff, so me and two lads are doing the work of five people: it's starting to cause problems".

The problems the respondent was alluding to concerned staff relations: the farmer was in the office and off-site with the new business, leaving the workers with no guidance. The previously happy workers were beginning to argue about what they should be doing, and their stress levels were rising as they found themselves in the position of making decisions with financial repercussions for their employer's business. The farmer explains: "I have to be away more and more and I rely on the [workers] to take on the responsibility of looking after the stock. I trust them, they know as much as I do. Trouble is they don't want to make a mistake. A cow [took ill] and they called out the

vet. It was totally the right thing to do, but they couldn't catch me on my mobile [because] I was in a meeting. By the time I did speak to one of them, they were in such a state: they'd had a big argument and weren't talking to each other. I had a hell of a lot of bridge building to do. Everything had 'kicked off' in my absence. I was stressed as hell".

Type of Farming

Aspects of different types of farming could make work more stressful. Livestock farmers argued that, in certain respects, livestock farming was the most demanding and stressful type of farming. While some demands were constant, such as the daily responsibility of tending to dairy cattle, others occurred on a more seasonal basis. One respondent explained that the tasks of animal husbandry were specific and unending: "I think livestock farming certainly, because you have such a huge responsibility for other live things… You can't not milk the cows, you cannot not care for them, you cannot not feed them! You cannot not deal with them if they've got a medical emergency. And that does add stress, but you've got to have that responsibility: it's the love that comes with the responsibility that makes a good farmer in my eyes". Another elderly respondent recalled what his father had told him as a child. The words had had a profound effect on him and he felt it summed up his attitude to animal husbandry: "We are like gods to the beasts of the field; we determine when they are born and the nature and time of their death. We owe them a good life… that's our duty".

Two dairy farmers talked about the stress that they experienced during silage time, since the window of opportunity for this was slim and heavily dependent on good weather, and the health of their cattle depended upon getting it 'just right'. This, in turn, affected their milk yield and quality, and by implication, the farmers' profits and standard of living. "It's always a challenge and it is a difficult time because if you get it right you feel good, if you get it wrong you feel pretty awful. You break your neck for a few days and you can guarantee it'll rain".

Lambing was identified as another stressful period for livestock farmers, when everyone on the farm was expected to work long hours to ensure the best survival rates of their animals. It was noted that it often fell to one individual to take operational control of the lambing process and that this person might find it hard to 'switch off' after the long working day, because there was always an animal that they were worried about. One

young farmer on a livestock farm explained how he found the anticipation of lambing the worst aspect: "one of the hardest parts of lambing is the run-up… before you're right there… I start to worrying about something I shouldn't be: I know it's a bad thing but it's hard not to. I start worrying about how hard it's going to be… anxiety drags me down; I can cope with the lack of sleep, the hard graft and that, but I just stress on all the time".

One of the issues with livestock farming was that it involved a large element of unpredictability that farmers could not control, and in an already tight economy, this increased the pressure upon them. The stresses of livestock farming were also tied up with the relatively low price of meat, milk and wool and the diseases that stock contracted. Animal diseases (and in particular animal death) were identified as an area of great stress by all respondents who had stock. One respondent in his early forties said: "I find it god-awful to see an animal in pain. When a sheep gets foot rot, I've got to get it in and dress its feet:[34] I couldn't sit and watch them struggling about from my armchair, I just get huge guilt. I'll rest when the stock's okay". A dairy farmer reiterated this point. He described the anxiety he felt when one of his cows became unwell: "what people don't realise is you get to know these animals – I milk them twice a day, every day, 365 days a year. You know their [personalities], their quirks; my cows are like my children. If there's a bad calving or the like, I find it very hard, very hard". Another respondent looked at it from a more economic perspective. "I find [stock illness] very stressful. It's not just that an animal is ill, it's that you know it's [going to] cost you a fortune. The vets fleece the hell out of you. It's forty quid for them to come out [to the farm], then you pay a rate for however long they're there and then for the medicine they give [the animal]". He went on to explain that in the current economic climate, with stock prices at a low, it had become economically unviable to treat a farm animal's illness and that he knew of farmers who were resorting to shooting sheep to save on the costs associated with veterinarian bills. This was very upsetting and stressful, he said.

Paperwork

[34] This involves trimming the hoof and releasing the infection.

Farmers have always had to deal with a certain amount of paperwork. However, in recent years, interviewees felt that this had increased exponentially, particularly in terms of the documentation that farmers have to produce to claim subsidies, account for stock, and comply with inspections. Such work has become a central part of the daily lives of farming communities, and farmers sometimes felt that it had become unmanageable, particularly at a time when farms had been forced to minimise their workforces. Paperwork emerged as a major stressor by those interviewed, essentially because it took farmers away from the work of farming and involved them in often quite complex administration for which they felt ill-prepared and often lacking in the necessary skills. One of farmers' main complaints was the "shifting goalposts" which made it more difficult for them to keep up-to-date with requirements. The terms "red tape" and "bureaucracy" were used a great deal, and one of the main problems for farmers was that there was often seemingly no obvious purpose in the increased paperwork burden placed upon them.

Individual farms divided up their administrative labour in a variety of different ways. However, a particularly common pattern was for the principal (usually older) farmer to perform the majority of the paperwork relating to claims for subsidies and regulations, and for his wife to do the "bookwork": the farm's business accounts and tax returns. "Paperwork, I've never caught up. [My wife] used to do the bills but she's working full-time so can't do it. The VAT gets left until holidays. When she did the bills it wasn't too bad but now I do them, it's a real chore. Invoices get lost and so on. My oldest daughter is doing accountancy at university, but [I] can't get her interested. She says our books are a nightmare. Our neighbour put his on computer. We have a student [who] comes here… he says the online registering of cattle is easy. I sent 30 bull passports off the other day but I forgot to put the stickers on them. So it was £6 to register them to go to Northallerton; it cost the same for them to send them back to me and then I had to put the stickers on and send them back, costing £6. The thing is if you send it off to BCMS, they check it and send it back. They post every 10 days which is 10 days wasted but if you do it online it'll say straightaway if you're wrong so you can check straight away". This kind of pattern meant that farmers generally took on the larger burden of this more stressful type of paperwork. However, anxieties continued to infiltrate through to the rest of the family, both to spouses who bore the brunt of their husbands becoming increasingly stressed about their work, and to farmers' sons who felt they were failing to

acquire the necessary skills of a farmer, and who consequently worried about the future and how they would be able to cope without their fathers' contributions.

One respondent talked of the "hopelessness" he felt when faced with the prospect of doing his "pointless" paperwork. He felt that a lot of the administrative requirements of farmers were unnecessary: that they were in place purely to keep civil servants in work. He also expressed his fears at the repercussions of making a mistake on a form: "Sometimes I get sick as a parrot, I have so much paperwork to do. Now there is a new ruling where your accountant has to [report] their clients if they find a discrepancy, of even up to £50. It's frightening, but it's not just farmers, it's everybody. But for £50? It's like Big Brother. It worries me; I think if I were 20 years younger it would worry me [even] more".

An additional issue was that farming is highly influenced by weather conditions and farmers' responses to crises, such as problems with stock. Such things are notoriously difficult for farmers to predict, and their commitment to stock and crops is likely to be such that in a conflict of priorities their farming work will win (indeed, their animals' lives may depend upon it). Therefore it was not always realistic for them to comply with rigid submission dates for administrative forms. Missing deadlines to claim for subsidies could have high financial costs for farmers, which would then become a secondary source of stress. Missing deadlines for regulation submissions could result in penalties, including legal proceedings.

A livestock and arable farmer talked about how in his experience mistakes made in paperwork are difficult to rectify, and how government helpline support has been inadequate or incompetent, or how representatives have been disinterested. He gave the example of when he had been summoned to attend the DEFRA offices to sort out a problem: "You go down with your I.A.C.S. forms. You could also have a query on beef subsidy: you'd have to talk to someone else, then if you needed to know about cross-compliance you had to talk to somebody else. You can be there for bloody hours. It could have been done over the phone in 10 minutes. [DEFRA], in theory, had an expert available in all forms of agriculture, yet the farmer is expected to be an expert on them all himself". The respondent went on to explain the frustration that such "time wasting" and attitudes had on individual farmers: "You used to go into a little office, [the DEFRA official would] be sat at his desk and you'd be by the door; they'd get so

pedantic about little piffling details. Some irate farmers have been known to get up and smack them one and I know of some old farmers who got so confused and overwhelmed by the smug way they treat you. They really talk to you like your crap on their shoe, they've had these old blokes in tears".

It was particularly galling to farmers when deadlines were compromised through inefficiencies in the system, which apparently happened fairly frequently when a new system was experiencing teething difficulties. One respondent exasperatedly stated that the most frustrating aspect of paperwork was that the systems were often designed with little thought for the agricultural calendars of those required to make submissions: "I get so fed up. Okay, so they send out the single farm payment forms on the 1st August, but we're in the middle of harvest. A bit of thought for those of us spending 15 hours a day in a combine wouldn't come amiss. It wouldn't be too difficult to send it out a bit before or a bit after. Trouble is, who do you talk to? No-one wants to listen to us".

Many of those interviewed were keen to show me the volume of paperwork they were expected to deal with on a daily basis, to illustrate how their time was being monopolised in this way. For many interviewees, paperwork was an ongoing source of work and anxiety. In addition, many farmers talked about how their heavy workloads on the farm meant that they would often only get around to their administration late at night (when it was dark and they were unable to farm), by which point they were tired, more likely to make mistakes, and therefore more likely to be penalised for mistakes: a vicious cycle.

An additional issue relating to paperwork, which was raised by several of those interviewed, was the diverse range of skills needed among farmers and farm workers, and the difficulty this posed in terms of an increased emphasis on written regulations. A move towards computerisation and electronic submission had also disadvantaged farmers who were unable to afford the necessary IT equipment or who lacked the relevant skills. One respondent explained: "[farmers are] already expected to be vets, animal nutritionists, animal behaviourist, logistics expert, builder, labourer, plumber, estate manager, now they want us to be computer whiz-kids and lawyers to boot. It's too bloody much. I left school forty years ago". This view was, to varying degrees, shared by the older farmers who participated in this study. They were apprehensive about the prospect of developing new skills at that point in their life, and felt that this new

emphasis was likely to completely exclude them; in effect, they felt marginalised by government policy.

Family Farms

While the organisation of family farms had a number of important strengths such as trust and flexibility that often represent these working relationships, their distinctive order also had the ability to act as the trigger for a number of problems. One informant commented on the potential for stress within generational farms, firstly for adult 'children' who worked on farms, who may have to struggle to gain recognition as adults and who may also remain dependent until late in their lives; and secondly, with regard to the 'parent' generation of farmers, who often worked on beyond their capabilities and who may have found it difficult to 'step back' from farming. Housing may cause limitations in the choices made by both children and parents. Generational farming can also create inheritance tensions, and farming 'children' sometimes lacked financial autonomy (no contracts, working on a cash-in-hand or ad hoc basis) and future security, but lacked the personal resources to negotiate any kind of an alternative. These factors can promote stress both individually and within families, which may lead to conflict.

I came across several examples of relationships between fathers and sons that were poor and characterised by bullying and compulsion, and the effects of enforced farm labour are likely to be highly negative. It seems likely, conversely, that abuse of the elder generation may be concealed within such family units. One middle-aged farmer explained the difficulties of negotiating a working relationship with his mother, who had total control of the farm and had no intention of retiring: "My relationship with [my] mother? Oh hell, I don't have one now. We can't get her to give up. She's in her seventies now and she still controls the books. I've been working full-time on this [farm] for nearly thirty years and I'm still a bloody employee. When Dad died I thought she might step back, let me take on some responsibility, but hell, no. I'm sorry I raised my voice but I get so mad, so frustrated. She's so out-of-touch with the wider farming world, it scares me. I'm sure we're in a hell of a lot more financial trouble than I know about. Honestly, it stops me sleeping at night. Will my kids have a farm to inherit when she's finished with it?"

The domination of the 'parental' generation over grown-up children was also found to cause stress between siblings. One respondent talked about the relationship he had with his late brother as the result of the domination of a controlling parent into adulthood and beyond. He talked in-depth about his father and his domineering, controlling and authoritarian approach to raising children and how he continued to treat the sons like infants into their adult life. Under normal circumstances this could cause friction between siblings and feelings of resentment towards the parent. However, combine this with the geographical and social isolation of a farm, long working hours in each other's company, lack of autonomy and control of future prospects for the 'children', and the excessive control and power of the 'parent' can produce explosive consequences. In this instance, by the time the sons were in their thirties, their relationship had broken down completely. They lived next door to each other, but such was the resentment and anger that neither family spoke to the other; even their children, cousins, had no contact, despite attending the same school. Eventually, this situation culminated in the elder son leaving the family farm with the intention of "bankrupting" the father and remaining son. This he almost achieved by demanding to be paid in full in one instalment at a point when the farm could not afford to do so. In the event, the money was raised by the wife of the remaining son, using her inheritance.[35] Despite these events having taken place thirty years previously, the distress and upset caused to the respondent were still very evident.

The family farm also encompassed a number of complex 'obligations', and with the knowledge that farming had been in the family for generations came a pressure that farmers must continue to farm, regardless of whether they enjoyed the work and whether the farm still represented a viable enterprise. Consequently, farmers sometimes felt compelled to remain in an occupation well beyond the point when it would have been rational to leave, with all the accompanying stresses of managing a flagging business.

Many of those interviewed for this study were so-called family farmers. Indeed, many respondents turned out to be related to other farmers in their locality, either by blood or (mostly in this instance) marriage. These respondents generally reported that the mentality of family farming was to provide a future for their children, they expected that

[35] This inheritance was in the form of a share portfolio that the couple were keeping for their retirement.

their children would take over from them in time and the family farm would pass in turn to their children, and so on. With this view came a fundamental pressure that failing to be able to leave a profitable legacy was a deeply troubling issue for respondents, especially in the current situation of change and anomie within the industry.

Personal Risks in Agriculture

The diagram below is an attempt to visually represent the relationships and correlations I will highlight in the following discussions. They are included as an aid to explanation, but in a greatly simplified form. I intend to show the strength and importance of said relationships and correlations to the central issue (as identified by the respondents: stress) by the size and density of the arrows.

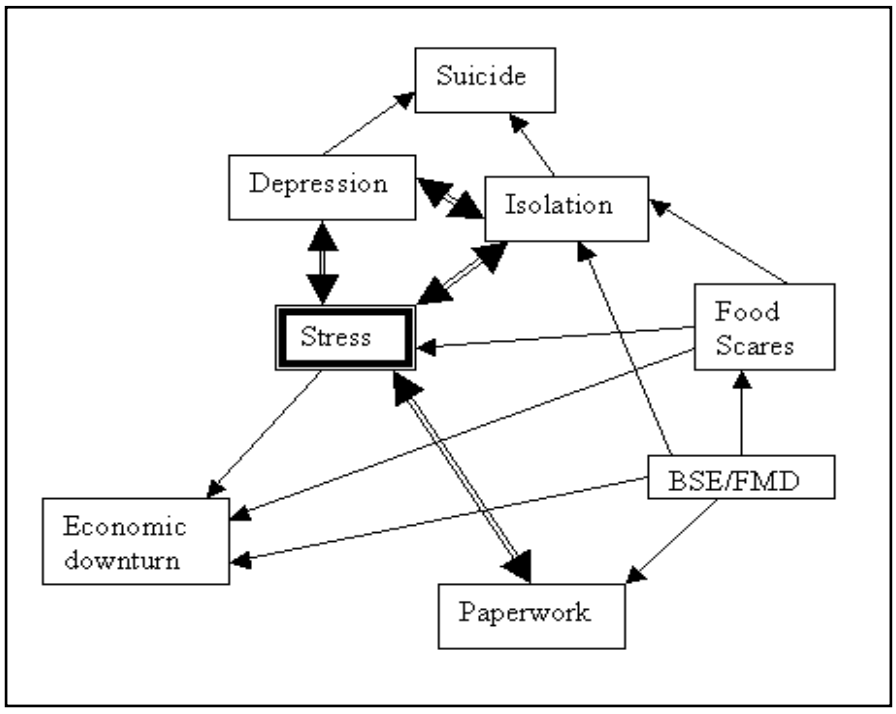

Figure 18: Diagram to show the emotional risks identified in farming by respondents. It also shows the relationships between these issues.

Figure 19 shows a visual representation of a complex sub-system relating to stress as discussed by the respondents in this study. The narratives described the central influences on the stress experienced by farmers as being those of isolation and depression and how these two factors can result in suicide. They also described how

increased regulations and ‘red tape’ and the associated paperwork (due to crisis situations of BSE, FMD and food scares) have all fed back to increase feelings of stress. Finally, the diagram shows the influence of the economic downturn as it is described by the farmers in this study.

Family and Personal Issues

Family issues (sometimes singularly, and sometimes in combination) were important contributory factors to interviewees’ experiences of stress. As discussed in the previous section, family problems had a somewhat disproportionate impact upon farming families who worked and lived together, and for whom any difficulties could therefore be greatly magnified. While there were obviously enormous advantages to working with family (e.g. trust, respect and flexibility of approach to situations and working patterns), there were cases, as mentioned earlier, where working together was problematic, and possibly even damaging. For some younger farmers, it was clear that a degree of parental pressure had influenced their decision to work with their families, and such relationships occasionally resulted in conflict, bullying and frustrated ambitions. For others, while family working patterns were more a matter of personal choice, the emotional intensity between workmates who were also relatives still created tensions in their daily lives. “You can’t leave an argument at work, it follows you about. They say you should never mix business and pleasure. Well that’s family farming in a nutshell. There’s no escape. And [because] you know someone so well, you know how to hurt them best too. Losing your temper can have personal and business implications. A ‘double-whammy’”.

Even in instances where the son and father had good, genial working relationships based on trust and respect, there were instances noted by respondents where personalities clashed, and different ideas about what was best for the farm were a source of frustration. Additionally, several farmers talked about the “disappointment” or “distress” their children had caused by rejecting a farming life. A number of interviewees talked about marital difficulties which had either been exacerbated by farming difficulties (such as taking work frustrations home with them), or which had been caused by them (for example, working long hours and not having time for one

another as a couple, or "not ever having enough money"). The financial pressures of family farming are also directly related to the length of time the elder generation insist on staying in control of the business, for instance through death duties. One respondent reports his fortunate escape, but some in this study were not so fortunate: "My Dad handed the farm over to my brother and I twenty years ago, and he lived seven years after that, so there were no death duties to pay. That cripples a lot of sons whose fathers won't hand it over. Then Mam died four years ago, she was a partner who went out so no death duties had to be paid then. So now we have a manageable overdraft and property that's ours".

For close-knit extended families, who often lived together or in close proximity, a family member being in difficulty could greatly affect the rest of the family. For example, one respondent talked of the effect his brother's depression and alcoholism, how it affected his wife and his children as well as his sister-in-law and their children. "We've always been a close family: what affects him affects us all. We've rallied around but there's only so much anyone can do". The loss of parents was also raised as an emotionally distressing time for farming families, who were often heavily involved in care-giving in the later stages of parents' lives, which could be physically as well as mentally draining.

In one instance, a farmer's wife and 'stay-at-home' daughter[36] reported how they felt responsible for their family's wellbeing and when their ability to perform this became compromised, they found it very difficult to cope. The wife and daughter reported taking on a great deal of farming work on the husband's/father's behalf when he had a sudden and near fatal heart attack. Following a serious operation and a lengthy convalescence, he was now much improved and able to do light work on the farm. In the interim, the heavy work of crop production and animal husbandry was undertaken solely by the wife and daughter. The wife went on to express her fears over her husband's health, and how it had become a constant source of worry for her: "It just hangs over me that maybe tomorrow, maybe next week, next month he'll have another

[36] While this might seem archaic, many farmers' daughters of the previous generation (aged late 40s onwards) stayed and worked on their parents' farm if they remained unmarried, and became carers to their parents in their old age. This was reported by a number of respondents as having been the case; I also observed the phenomenon in one respondent's family. For farmers' daughters in their 20s and 30s, there was a great deal more freedom from the farm. Among those farmers interviewed, there were seven adult daughters under 40 years old, all of which had a university education, all were in professional jobs (solicitor, accountant, pharmacist, academic) and this was regardless of the financial or owner occupier/tenant status of the parents.

heart attack. If he goes it'll just be me and [my] daughter and we'll have to go and do it all on our own. There's no way we could afford to pay someone to help us".

Depression and Suicide

A number of farmers had come into contact with, and some had been good friends with, farmers who had committed suicide. In these cases, the suicides had come as a surprise to those who knew the farmers. Many respondents spoke of farmers being "proud people" who were reluctant to ask for help, and it could therefore be very difficult to anticipate problems. This was a theme repeated by several interviewees and it represents a characteristic that support organisations will need to investigate if they are to reach the people who most need their help.

One respondent, a retired vet,[37] spoke of being used as a counsellor by many farmers he saw through his job and in many cases formed long-standing friendships. He described the way people would 'open up' to him for two main reasons above and beyond his *"amiable disposition"*: he was not a farmer so an admission of problems in their working lives would not be harshly judged, as they suspected would occur with farming peers. He would also often be the first person who was not family that the farmer had seen in several days. He attributed this to the increasing isolation of farmers due to reducing workforces and increasing working hours.

As a result of his special position as confidant he was occasionally able to help troubled farmers before they were tempted to take drastic action. However, there were individuals whose suicide he had not foreseen. "I had one client who'd never borrowed money before and his son left school and started working on the farm and decided they should expand so persuaded him to borrow money. They had no problem paying it back or anything but the idea of it was praying on his mind and he was worried about this. But he was a heavy smoker and got a bad cough and [he] got it into his mind he had lung cancer, which he didn't. So he went out to the farm buildings and hung himself. Another one shot himself. Actually two hung themselves… one was a strange chap. The

[37] This individual worked in the study area throughout his entire career, and was asked to participate because of his innate knowledge of the area's farming population and culture but from a slightly removed social position.

one who shot himself was a cheerful chap but had no-one helping him". He also felt that there was a culture in farming in which to admit that you are not coping is to admit that you are a bad farmer: "There are very few farmers who would admit if they were getting into difficulty". Many respondents also recounted such stories: all the interviewees knew, or knew of, a farmer who had taken his own life. One respondent, a farmer's widow, recalled in a very emotionally charged account the loss of her husband. His death had been classed as an industrial accident, however she believed wholeheartedly that it was no accident and due to the mounting financial pressures on his business: he had engineered his own death so his family would profit from his life insurance policy.

Seasonality

Issues regarding seasonality and adverse weather conditions were of particular concern to the arable farmers in this study, although those with sheep also noted the effect of a 'bad winter' on lambing season. To many respondents the weather was an accepted stressor that was as much a part of farming as cattle and crops themselves. It was described more than once by one respondent as part of the "nature of the job", which also included animal and crop disease – things that farmers innately factored in and could occur despite the best arrangements and forward planning and completely ruin a year's planning. This was an aspect of farming that was out of interviewees' control which had very practical impacts upon their profits and working practices.

One issue concerning seasonality raised by a number of farmers was that the effects of 'good' and 'bad' years in farming were quite variable, with bad weather not always ruining a crop. "If it pisses down after harvest, that's fine: we can have the worst, wettest year on record but as long as it comes after harvest, I'll be a very happy man". Another farmer who combined arable farming with a suckler herd commented that the issue with bad weather conditions for arable farmers was that these disrupted their anticipated workload, and had knock-on effect upon other aspects of farming: "you get a wet week or a wet fortnight in harvest time and you don't do anything and then all the work's piling up. If it all runs smoothly you can be finished in a week, but with a wet harvest, I've seen it drag on for two weeks, even three. In that time you spend hours

occupying yourself with other jobs and then it's a mad rush when it's dry to get it all in".

Balancing such demands could be particularly challenging for mixed farmers. A large-scale arable and stock respondent explained that delayed harvesting and replanting are stressful for farmers because they disrupt their plans for the following year, effectively putting them at a disadvantage to other farmers, with very little that can be done improve the situation. "If your wheat is in late, it's going to be ready late, you'll be sowing late and the following year's screwed too. Ideally you want your crops ready at the start of the harvesting period: you get the best chance of good weather and then you have time to work the land and replant at your leisure. Stress is reduced".

Change

This section addresses the respondents' attitudes to business change that have not already been addressed in this chapter. This section looks at the views of those respondents who are not directly employed in agriculture or who do not derive their main earnings from the industry. It centres on the issues surrounding business and political changes: the effects of CAP reform and the other contributing factors detailed earlier in Chapter 5, *The Crisis*.

An agricultural banking expert with a national banking firm had a different perspective on the current changes in agriculture from the farming respondents in this study. He was involved in the business side of farming, he dealt with farmers on business matters on a one-to-one basis and he had some very interesting notions on the problems within the industry. He explained: "You talk to any farmer and he's happiest doing what he does best, tending the stock or the land, simple as that. These are not simple jobs in themselves and require knowledge and understanding far greater than you could ever get from reading books. Where a lot of these very knowledgeable men have problems is thinking business into a farming equation which is more influenced by seasons and weather than any kind of strategic business plan. For example I have real difficulty getting some farmers to factor in their own time: they don't see that if they take time spent into the equation they might be better off financially ditching what they're currently doing and spending that time on earning money in another way".

He went on to contend that while farming has changed to the point where every farmer has to be a "switched on" business man, farmers themselves are yet to make this change. "I see this a lot: the industry is changing very rapidly, and the older farmers are struggling to keep up. There are very few using computers, which would be unheard of in any other industry. They farm the way they always have because that is what they know, and that is what they are confident doing". He predicted that this rapid change would result in a lot of "natural wastage from the industry" which he said was likely to stem mainly from the retirement of the older generation. He also predicted, for those younger farmers who refused to "embrace business", that bankruptcy would reduce the numbers of farmers in the UK further.

However, when he began to talk about the job satisfaction he gets from working with the farming industry, he was much less negative: "Actually, I don't personally want farmers to change. I love my job and I enjoy working with them. I spent a good few years working in corporate banking with the 'big boys', with companies in excess of 2 million turnover. It was grim, cutthroat, serious and emotionally draining. It's been a breath of fresh air to deal with men who still 'seal a deal' on a handshake, who'll help each other out in a tight spot and not charge for their time, who work for the lifestyle, not the economic benefits and whose primary goal is not the bottom line".

One younger respondent (31 years old) who has businesses in non agriculture-related industries explained the intricate nature of farming compared to his own business experiences. He contended that farming is far more complicated than his usual business transactions where he explained he could buy an item manufactured in China for £1 and distribute it in the UK for £2. "Farming is a spider's web of cause and effect. Here's an example from my father in law: if he were to stop one small part of his business, such as over-wintering store cattle, he would no longer have an on-farm use for all the straw he produces at harvest time and no manure would be available for the fields. This in itself has a large number of repercussions that have to be factored in to the decision".

He went on to list those questions a farmer would be required to address, as he saw them: the cost saving in not baling the straw from harvest; would such a change in farming practice affect any payment through the Single Payment Scheme or any of the additional rules and regulations from DEFRA? Would he then require a straw chopper for combine to recycle the excess straw? If so, what cost would this incur? Is it

financially beneficial to still bale the straw but sell it? If straw is baled and sold would the farmer be required to deliver? If so, would there be an investment in better machinery for delivery purposes? If delivery time is factored in does this affect profitability? No store cattle would result in no manure to spread on the arable land; would this require extra fertilizer input and increased cost? Could growth regulator reduce the amount of straw produced? If so, what is the cost of the growth regulator and is this a financially viable proposition? Will not having store cattle affect the number of on-farm staff required? Could this free up a family member to acquire an off-farm job and increase income?

He finished by pointing out the problems inherent in the process of change for farmers: "there's a lot of pressure for farmers to change and diversify their businesses, but then you look at the sheer volume of issues kicked up by just one change, what would be the result of a massive shift in focus for a farm business. In addition to the practical and business considerations, theses [farmers] are [experts] at what they are currently doing and so the diversification requirement is also taking them out of their comfort zone and away from what they know works and what they know can provide for their families. All in all the easiest thing to do is not to change, to hang on and hope things [improve]".

Conclusion

It is necessary to disentangle those issues that could have occurred at any time in farming history (which are examples of incremental change) such as family tensions from those issues which are contiguous, for example the increasing isolation of farming individuals and the mounting external regulation of farming practice by governmental and European edict. In effect, those changes which are continuous: those that are novel and specific to this point in time.

What is different? Which changes are novel and will drive change within the system as evidence of crisis? Capitalist agriculture has occurred in the UK since the seventeenth century. What stands out in contemporary farming that has not been an issue prior to this point? I am sure that there has always been a degree of stress in farming: animals have always gotten ill, crops have failed, families have failed to live and work together. From the narratives in this chapter I think there are several modern differences that

stand out: paperwork, for one, was mentioned by almost every respondent as a major 'stressor' which has appeared only in recent times. In perpetuity, a farmer has been judged – and his business has survived or failed – on the quality of his stock or crops and that was based on his/her knowledge of animal and crop husbandry. Not so today: a badly filled out form can prevent a substantial government payout in schemes such as IAICS and Single Farm Payment. The transport of animals is now highly regulated and requires passports, ear tagging and meticulous record-keeping for every single animal on a farm; mistakes here can result in prosecution for fraud (in the very worst case scenario). All of this paperwork has to be done in addition to all the daily tasks of usual farming practice and eats into free time and adds stress to daily life.

The shrinking agricultural workforce also compounds this loss of free time. Increased mechanisation and technology have aided the wealthier farmer, but for the less well-off there is the prospect of longer hours and less human contact. But for either the wealthier farmer in the technologically advanced tractor or the less well-off farmer working longer hours, both face the isolation and loss of camaraderie that once typified a busy working farm. An example of how top-of-the-range machinery can also be extremely isolating for farmers comes from some family friends in North America. They have a 17,000 acre farm growing wheat, beans and other cereals near the Canadian border. As a result of the investment in state-of-the-art farm machinery the entire 17,000 acres is now tilled, sewn and harvested by two brothers in their thirties.

6.2. BSE AND FMD

Introduction: Stock Crisis

The main stock crises to affect the interviewees in this study were the incidences of BSE and FMD. Smaller scale cases of disease such as viral infection or parasitic infestation were seen as 'normal' and 'to be expected'. Respondents were accepting of the need to constantly monitor the health of their herds/flocks as an intrinsic feature of farming animals; this was described by one interviewee as "the nature of the job". It was the scale and intensity of BSE and FMD that set them apart. They were not only part of the farming world and system but had major repercussions for wider society and politics, for example. FMD was acute and BSE was a 'slow burn' but both had significant disrupting influences on the complex system of lowland mixed agriculture. FMD outbreaks had repercussions not only for the infected farms but also for farms in the immediate region, which had to take precautionary measures and which were often extremely fearful of being closed down too.

Major stock crises additionally result in acute economic consequences, which are then shared by the entire farming community, both locally – and in the instances of the major crises – nationally. Stock crises were a source of stress for the entire farming workforce, and in particular for farmers' spouses, adult children working on the farm and – less regularly now due to their infrequency – farm workers. Often this was because their work on the farm involved developing a strong attachment to the animals, having often raised them from birth.

In this chapter I will examine the effects of the BSE and FMD outbreaks on the respondents in this study. I have attempted to gain an understanding of how farmers in County Durham were personally and financially affected by these two diseases and how that shaped their attitudes to the industry and those in positions of power. The chapter deals quite a lot with narrative on blame: either in terms of farmers feeling they became scapegoats, or in terms of blaming those in more powerful positions within the food system.

Scientific Evidence

BSE

Much has been made of the scientific evidence justifying policies and procedures laid down to deal with the crises. The vast majority of interviewees, bar a couple of individuals, felt that government scientists were somehow influenced by their political patrons. This has been a theme throughout the study: that farmers have a tendency to accept 'conspiracy theories' as a justifiable explanation of events. As a result, their acceptance of scientific advice was often grudging at best, unless it came from their trusted local vet.

Respondents were very keen to talk about what they "knew to be" true. Science was considered dubious and the innate knowledge of fellow farmers was very often seen as preferable. As has been mentioned above, the local vet or the Farmers Weekly, Farmers Guardian or other agricultural publication provides the main source of scientific reason for most farmers' arguments. A respondent explains: "you couldn't trust what the media were telling us or the public: most of it was shit and conjecture, we had to rely on our own experience of animal husbandry. Our vet was excellent, he came out and a few or my neighbours with dairy herds came out and he tried to explain what was happening [as] best [as] he could. Trouble was, he knew virtually as much as we did when it first kicked off".

There was also a degree of scepticism among respondents as to the lack of BSE cases in continental Europe. BSE, they felt, had to be as rife on the continent as it was in the UK herd. "The French and Germans, for example, have pretty much the same farming practices as we do, they probably buy and feed the same concentrates too, so how the hell do they not have BSE? I'll tell you why: because the French and German governments aren't idiots like [the British Government], they know if they hold their hands up they'll bugger up their beef industries so they're keeping their heads down and protecting their own. As we're British we have to be squeaky clean, so we get shit on yet again". Another respondent explained that through a friend who was a vet in MAFF at the time of the BSE outbreak he had been told that the French in particular had

numerous cases of BSE that went unreported to the authorities: “of course now we know BSE was on the continent too but my mate, who is a vet, said [the French farmers] were just shooting anything that looked a bit like having BSE and then burying it. The French didn’t have BSE, they had JCB”, he joked.

It later became apparent from research that there was a link between the feeding of concentrates [high protein cattle food used mainly in the dairy industry to increase milk yield] to cattle that contained protein sourced from the rendered carcasses of other cattle. One farmer explains the shock he felt at the revelation: “We just fed the stuff. I for one had no idea what it was made up of. It was legal so I fed it, simple as that. Bloody hell, when I think about it those [cattle] aren’t designed to be cannibals but we all just trusted the so-called experts and fed them what they recommended we feed them. Then when the shit hit the fan [when the BSE outbreak was confirmed] those experts disappeared and we were left with sick animals and a media determined to blame us for the whole thing”.

Many respondents were not persuaded, even after the results of many years of scientific study into the causes of BSE. One farmer was convinced that the scientists blamed the feeding practices and (indirectly) the cattle feed manufacturers to deflect attention away from the real cause. He contended that the real cause of BSE was ‘pour-on’ organophosphate chemicals poured along the spines of cattle to keep flies off the animals. He argued: “government vets suggested we use these pour-ons, so we trusted them and went ahead, at that time: I’m thinking back to the ‘60s when we started using them; we didn’t know OPs [organophosphates] were dangerous and here we were pouring them down the spines of cattle. Now tell me if that’s not a bit worrying? We now know OPs cause Parkinson’s Disease in humans, so why not cause BSE in cows?”

The way BSE was transmitted was also an area of major conjecture among respondents: “If you’d got BSE in your herd, it was a hellishly worrying situation: would the whole herd be culled? Certainly that cow would, what about its calf? There was talk of horizontal and vertical transfer within herds, what the hell does that mean anyway? But it was all speculation on the scientists’ part. As far as anyone knew they could pass it by contact like TB [tuberculosis] or FMD and that was a terrifying prospect”.

A retired vet who was working in a County Durham practice during the BSE crisis believed BSE was present in the British cattle herd dating back decades: “in fact I think

it would be true to say we actually were seeing cases years and years ago, you know, I'd say almost all the years I've worked here [County Durham]. I could go back to [19]66… We would get these very odd isolated cases showing the signs that we now know as BSE, but of course we had no idea as BSE was a unknown quantity then, so they were simply put down as perhaps a brain tumour or they had some sort of injury or even on odd occasions they put it down to grass daggers that didn't respond to treatment. Basically, I think it might be true to say that BSE in a form had existed for a long, long time".

The vet believed that it was only when the media took up the 'mad cow' story that he and other vets became aware that this was a national problem, and that BSE was a disease in its own right. He was particularly interested in the methods of transmission of BSE. However he did not blame the farmers: he cited the Government and meat rendering companies as being responsible for BSE. He contends that the renderers approached the Government to be allowed to use brain and spinal material in the rendering of carcasses to be used in cattle feed as it meant they could increase the protein content of the foodstuff while also allowing the renderers to drop the temperature and timeframe of the rendering process to allow them to maximise profits. "The Government said 'yes', but of course they were importing large amounts of material [animal carcasses] to incorporate in animal feeds and of course the poor old farmer had no idea what was in them because the bags never had a straight analysis: only so much protein, so much carbohydrate, so much ash in the feed but it didn't tell you the source of the protein, for instance".

He accepted that the feeding of meat and bone meal was the likely cause, but he questioned animal-to-animal transfer. "I think they still haven't proved in anything other [than] odd isolated cases that it can be transmitted vertically or horizontally for that matter, because it doesn't seem to spread from one animal to another either".

FMD

A retired vet respondent questioned the quality and ability of vets in MAFF at the time of FMD. He contended that MAFF was massively restricted if terms of the quality of vets that they could employ: "go back to the '60/'70s (early '80s) even, the Ministry of

Agriculture then generally would not take people onboard unless they had spent quite a number of years [in] practice first; now they are so desperate they take them straight from college so of course they have almost no experience at all". He went on to explain how it was a widely held belief among vets that it was only those who were incapable of working in general practice who would 'take the easy route' and get a desk at MAFF. This lack of general experience of vets may have caused major problems during FMD "because a lot of [vets] who were going 'round the farms had very little experience of farm livestock, and indeed I've got a feeling probably a lot of minor foot ailments were put down as foot-and-mouth and they [culled] quite a lot of stock… for instance the old-fashioned, 'foul [in] the foot':, you get a nasty sore between the cleat which you can get with foot-and-mouth".

Many of the respondents in this study had little time for the 'experts' from the Ministry who were drafted in during FMD. One respondent summed up his opinion of the MAFF experts thus: "you take the term 'expert': well an 'ex' is a has-been and a 'spurt' is a drip under pressure. That's what every one of them from the Ministry that I came into contact with [was] like". He went on to explain: "A good example is that chap that came up from the London Ministry during the foot-and-mouth carry on. I was standing in a gateway and asked him to help to stop the beast getting through the gate – two of us, no problem. But the guy, when I turned round, was standing behind me doing exactly what I was doing, he wasn't plugging the gaps. He hadn't a clue, he'd come from working for the Government in the produce section of the vegetable market in Newcastle, but they sent him out to handle cattle and he didn't have a clue. He was a 'tryer', but he hadn't a clue".

Respondents were particularly critical of what they saw as the "mismanagement" of animal movements in first week of FMD: "there was a bit of mismanagement as well. They suspected they had foot-and-mouth in Essex at the beginning of the week on the Monday and they didn't put a clamp on until the midnight on the Friday. They had a week. If they [made] an immediate movement on Monday when they had a suspected case or confirmed case it would never have got as far as it did. It came from Newcastle; it was traced back to Newcastle from Essex. It was Friday morning before it was confirmed and the stock had moved all over the country from that area".

FMD and BSE showed to respondents that tighter restrictions should be enforced for food imported into the UK. A number of respondents argued that with the "excessive" regulations now in place on farming practice in the UK, bringing in cheaper food from overseas is doing a disservice to both the consumer in terms of lower quality food produced using less ethical practices and with lower animal welfare standards – and the British farmer (who has much higher overheads than "foreign" producers and produces a high quality product) cannot compete with the price of imports.

The other argument from interviewees was that imports certainly could be blamed for the FMD outbreak, as many blamed infected meat for contaminating the pigs in Heddon on the Wall and therefore triggering the outbreak. In addition to this, one farmer interviewed vehemently believed that BSE was purposely brought into the UK from Europe. He contended that this was purposely done to stop Europe importing "superior British beef" being eaten in continental Europe, meaning that European farmers would get a better price for their animals.

Economic and business implications of the stock crises

An obvious and near immediate effect of both FMD and BSE was the financial impact it had upon farmers. This section will examine the perceived effects of these stock crises on financial and business aspects of the farming industry.

BSE

One former dairy farmer respondent recalled that profits for dairy cows, prior to BSE, were averaging £1,500 to £1,700. A good bull calf: £350 to £380 at three weeks old. A good geld[38] cow: £800 to £1,200. A good in-calf Friesian heifer: £1,000 to £1,200. He continued: "a good cow was making £1,600; say this was on the Monday, then BSE hit on the Wednesday. By the following Monday this was down to £500, the following Monday they were down to £300 and [it] stayed there for months. The value of my herd dropped by £60,000 in two weeks and suddenly the assets against which my business could borrow were massively depleted".

[38] A cow sold for meat at the end of its working life.

In addition to assets being massively depleted overnight, dairy and beef farmers saw their income and earning potential markedly reduced. “We couldn’t sell our animals as the markets slowed up”, said one former dairy farmer. She continued: “the animals still had to be fed, vet’s bills still had to be paid; in dairy particularly, animal welfare was a priority as only a healthy, happy cow produces good milk volumes”. This was an often-repeated issue raised by a number of respondents who were in dairy at the time of BSE. “Our outgoings and maintenance costs were still the same but our income was now only coming from the milk we were selling. The sale of a geld cow went a long way to paying for a new cow to replace her in the herd. This was no longer the case: if she was over 30 months she couldn’t go into the human food chain so she was worthless: my God, it was tragic”. This sentiment was echoed by many respondents: the sheer desperation caused by owning a valueless animal was often too much to take. “I just couldn’t take it in: these animals weren’t valueless in my eyes, they were good stock that I’d calved and reared and loved – yes, loved. We love our animals and sending a dairy cow to slaughter after a long life… is bad enough, but to not get anything for her life was like a kick in the guts”.

Another dairy farmer explained that prior to BSE, the dairy and beef industry worked in a mutually beneficial way. Dairy farmers tended to own a ‘secondary’ beef bull[39] so that if artificial insemination (AI) from a Friesian bull was unsuccessful, the beef bull would service anything that slipped through. This ensured ‘replacement’ pure bred calves to go back into the herd and also guaranteed a lucrative market for the mixed Friesian/beef calves who were bought as store cattle or as replacements for suckler herds. BSE halted all this: “we couldn’t do anything with the calves: people had stopped eating beef and the beef farmers were on their knees”, explains the respondent. “I heard some bloody awful things, the financial burden of these worthless calves… well, I’ve heard that farmers were shooting the calves themselves as it cost them more to take them to the [market] in diesel and time, and wear-and-tear on their vehicle than what the calf fetched in the auction”.

[39] A dairy breed of bull, for example, a Friesian or Friesian Holstein, is by law considered too dangerous to be run in an open field. Beef breeds of bull are much more docile and therefore are favoured as a back up to AI.

FMD

In the FMD outbreak, there wasn't the overnight price crash that followed media revelations about BSE. The animals lost no value: the problem that faced the farmers was a complete inability to move them or sell them. "We were stuck: I had sheep 'coming out of my ears', all this stock and not enough space to keep them but the Ministry wouldn't let me send them out to the pasture. They had to stay in the lambing pens and in the yard". He continued to explain that he had brought in a few hundred lambs from the pasture in order to take them to market and then a nearby farm was suspected of having FMD.

Animals exceeding the 30 month rule were no longer deemed fit for the human food chain (a residual measure still in place from the BSE outbreak). Suddenly these animals were valueless and the farmers were powerless to move or sell them. Another disturbing side effect of the movement restrictions imposed on farmers applied to animal welfare. A beef farmer explains: "I know a bloke up in The Dales and he was on category D, stuck on his farm and he had stock about 5 miles away on the other side of the village but he couldn't get to them to feed them. The feed was on the farm and it couldn't be moved. He was getting bloody desperate, as there were heifers among them… ready to calve. Fortunately there was a good village community and the locals pitched in and kept an eye on the stock for him, fed them with hay from the local stables and the like and things were okay". This was a fortunate example; other respondents talked of animals starving to death in fields within sight of farms and their owners powerless to do anything about it. There were also RSPCA cases where calves drowned in the backed up slurry which farmers could not move due to the restrictions or instances where animals were culled, not because they had FMD but because they were in such a poor state they had to be 'put out of their misery'.

One farmer that over-wintered other farmers' cattle and sheep from Northumberland reported that his overdraft doubled during the period of the FMD outbreak as he had no income whatsoever during that time. "Oh yes, our overdraft doubled! Nothing happened for a year: we had no stock on the [farm]; the corn [fetched] no price because there was nothing to feed so no market demand as all the animals had been slaughtered, so everything stopped. Totally, I think the majority of people who went out of farming

because of foot-and-mouth hadn't got it. Those that had it are doing well now, they've restocked".

This was a recurring theme among respondents' accounts and it was reported with a fair amount of resentment of those farmers who were compensated for losing their stock to the cull. "The trouble with it was that those that didn't have it were so restricted in movement and everything else that they [had] lost money; they weren't compensated. Everybody should have got a 'piece of the pie'. I know people that got it; don't know if it was deliberate or not. One chap, not far from here: he got it, he was the only one, and now he's driving around in a big top-of-the-range Mercedes [that] he wasn't driving around in before. We had the knock-on effect. We came out of it worse than the people who got it for the simple reason [that] we couldn't source livestock, we had problems selling it. We were stuck with beasts that went over 30 months and we ended up losing money on that. I would think we came out of it a lot worse than some of those who had it".

A farmer and his wife gave an extreme example of the financial blows of FMD. They explained how they were hit by a number of coincidental misfortunes which caused additional complexity and financial burden during the FMD outbreak: "We are one of the unfortunate ones. We are trapped in the system. We were affected by foot-and-mouth and trying to go out of dairy at the time so we scaled down. We decided to diversify and traded in beef, pork and lamb. We worked with the guidelines of ourselves as an end user, so we decided to buy Aberdeen Angus beef because that's what was wanted. We went through all the farm assurance guidelines, but we were trapped because we couldn't have suckler herd quota and milk cows. We stopped milking but then all these cows calved during foot-and-mouth so we had to start again". By the end of the crisis they described how they were left with "a little bit of arable, a little bit of beef special premium, no suckler cow entitlement and we'll have sold our milk quota so have no milk entitlement. As a result we won't come of it very well. I'm hoping for an appeals procedure but I can remember the appeals when [the] milk quota came in: that wasn't much use".

However, it was not just the beef and dairy farmers who experienced the knock-on effects of FMD: it had a 'ripple' effect throughout other sectors of the agriculture industry as this respondent explains: "one of the guys who sells us chemicals, autumn

2000 when hardly anything got drilled in the North East, they had reduced sales, no doubt about it. This year has been 'dry' so the chemical boys have not sold any chemicals. I think the corn merchants have had a more steady time. Corn sales have been by and large more steady. Machinery: since foot-and-mouth compensation people bought more machinery. I'm guessing there has been a 'mini recovery' in the last 12/15 months so people are buying tractors and drills. But there was that period in the late '90s early 2000s when the machinery guys had a really tough time. So people made the machines stretch a little longer".

Media Representation of Farming during BSE and FMD

The media's approaches to FMD and BSE have marked differences and respondents repeatedly noted these. They were all too aware of the differences in reporting that FMD and BSE received and were very adamant to get these points across to me during the interviews. In fact, this was one of the topics that raised the most anger in the respondents in this study. They felt both victimised and patronised by the way the media represented farmers and rural dwellers.

An issue that caused some degree of personal distress for interviewees was the way they felt they had been represented by the media in recent years, and connectedly the declining public esteem in which they felt they were held. This had an important effect upon their morale and sense of self, which was strongly tied to their occupational identity.

A farmer's daughter explained: "There's been so much bad publicity for agriculture over the years – I don't think we're held in the same light". It was mainly the principal farmers who felt most concerned about their public image and who reflected upon the sea change in status that had occurred during their lifetimes. One interviewee described a situation in his youth where farmers had been considered "pillars of the community" but that there was now very little respect for the work which farmers did. He felt that this was partly because food was so cheap and readily available, and also because farmers had recently received such a bad press.

This feeling of loss of status in wider society was echoed by a mixed farmer in his late 50s: “we were business men: people would come to a farmer to get a passport reference or something, we had standing”. He went on to explain: “But farming’s not a job, it is a way of life; it’s still a way of life now. You get too involved… you work too close to nature. You work with nature all the time, people don’t understand, because they don’t want to understand. Kids don’t even know where farming produce comes from anymore. They asked some kids in Manchester ‘Where does wool come from?’ and they said ‘From a bush’. Well… that’s how back farming has slumped, people don’t see farming anymore except to criticise or blame. Gone are the days of the James Herriot ideal”. When asked if he thought the population at large understood the food system, he was scornful: “now food is so plentiful and on the shelf and in front of you, people thank the supermarkets. People play war if a shelf’s empty: ‘Oh, don’t go on a Monday: the shelves aren’t stocked up’. I think what would put farming right is if the housewives in this country had to go and kill the food and they might realise that food doesn’t come in a lorry, it doesn’t come plastic-wrapped… I once spoke to a woman who thought that when you milked cows you put the units [milk suction devices] on [in the] morning and you took [them] off at four: that was a cow’s ‘working day’. How stupid can you get? But it’s the state the country is in! She thought the cow had a working day, with a briefcase”.

Other respondents were keen to point out that it was the children who needed educating: the media were only powerful in their eyes because people accepted what they were being told as they had no experience to make an educated decision. While all interviewees were in favour of ‘town’ children learning where their food came from, many were keen to point out the problems of this ever coming about: “…but schools are worried to take children on farm visits because of e-coli [present in the digestive system of cattle and excreted in their faeces]. Unless they take them… when I was young the dirtiest kids were the healthiest: we are too clean, our food is far too clean. Nobody has any immunity! It’s like I said before, something ‘naughty’ will hit this country and we’ll have no immunity because our food has been so clean we won’t cope with an imported infection. But we kill the food, we hydrolyse it, we irradiate it, and they put this wax on fruit to keep it shiny, but that can’t be good for you. Sterilise milk: remove all the goodness”.

In light of all this negative reporting, one young respondent commented that: "you feel like farmers are not respected anymore really: we've always been bashed around in the press for, you know, taking subsidies and sort of living off the tax payer… We are honestly persecuted, we really are persecuted". Many farmers mentioned that they found this perceived media vilification of farmers, and subsequent shifts in public opinion towards farmers, very hard to bear. One interviewee described this as "Five or six notches below paedophiles, I would think!" Farmers spoke particularly of the tabloid or 'gutter press' misrepresenting the situation during the BSE crisis and blaming farmers for poor farming practices, and a fairly common view was that farmers were an easy enemy to attack, and made for good editorial copy. Similarly, Raine's (1999) research found that one cause of stress for farmers was what they felt to be media distortions in terms of their treatment of animals and their financial position. "Suddenly all over the press were pictures and [videos] of these mad cows and it was all supposed to be our fault; trouble was none of us knew why cattle were getting sick. People had theories but no-one knew. The trouble was the scientists had no clue either, outside [of] farming, though everyone had decided it was us. I for one was bloody worried we'd get these animal rights loons coming round to lynch us!"

This fear of reprisal was echoed by a number of interviewees who felt very isolated and often felt themselves looked down on by the rest of their local community. One farmer recalls how a local community reacted badly to the news that their village farm had a case of BSE: "my mate had had his first case [of BSE] diagnosed and he was feeling pretty low and worried so his wife sent him to the local pub to relax. But by God, bad news travels fast, think the Ministry vets must have been in there or something [because] he arrived and he said the atmosphere was frosty, people stared at him and eventually the landlord asked him outright. He was so ashamed he went home, and it was a couple of years till he went back to the pub". His was quite an extreme example; however there were other accounts of public fear, and general ignorance at the time, resulting in farmers at least feeling marginalised.

The respondent felt that the furore about BSE was just dying down when the media got hold of the possible link between BSE and a little known disease, (new) variant Creutzfeldt-Jakob disease. "There has been a lot of crap talked. Scaremongering. That lad who died at Chester-le-Street who was a drug addict, but [his] mother says it was BSE that killed him. They say there is a link; there should be an increase now but there

isn't. It was the start of a slippery slope that we are on at present. The public lost confidence because of what was in the papers". Farmers felt that yet again they were victims of "hatred whipped up by the media", as one retired vet referred to it.

A retired arable farmer who now keeps rare breed pigs, he felt that BSE was just another example of how farming is misrepresented in the media. He gave another example to justify his argument: "We're made out to be making a fortune from the EEC which certainly isn't the case. They look at the EEC figures and see that the farmers are getting this much, but they're getting it all wrong: about 49% goes on administration, I think, of the subsidies that are paid. But subsidies have never made food cheap like they should; it's a total misconception. Free trade, free market would be much better. The thing is, as I say, BSE was the watershed of public opinion of farmers and we've had a bad press since that. No matter what you do it's hard to reverse it. It was the start of 'bashing the farmers' time".

Most of the respondents in this study found the media's reporting approach to farmers during FMD to be much more 'friendly' and 'forgiving' compared to the experience of BSE. However, this was countered by a feeling that they were being stereotyped to a degree as "pathetic, bumbling, emotional wrecks". This respondent suggested that the media created a new stereotype of 'farmer' to suite their particular purposes for FMD reporting. He felt the media had purposely simplified FMD and were very keen to avoid the real issues, as he saw it. "[The media] concentrated on the pyres and the dead animals in the fields and farmers crying on the other side of fences. They completely ignored the incompetence and mismanagement of the Government [because the media] were still in love with Blair and Labour at that point. They criticised the army when they were the only ones prepared to get in there and get the job done, and they totally missed the incompetence of the thousands of foreign vets who were culling herds left, right and centre [which turned out not to even have] foot-and-mouth".

For one respondent the 'final straw' of the media's reporting of FMD came when even the rural-focused media – in this instance in the form of BBC1's 'Country File' programme – misrepresented farmers: "If you watch Country File or anything while foot-and-mouth was on, they talked to an organic farmer and suggested that because she was organic her cattle didn't get foot-and-mouth: that was wrong to say the least! That's the way it came across. That's just one example".

Government

A local NFU activist was incredibly critical of the Government's attitude to the FMD outbreak. "Foot-and-mouth wasn't handled! They haven't got a clue". He explained how he sat on a number of committees with DEFRA representatives and he found them lacking in knowledge and understanding of the farming industry. In his opinion, the main problem with MAFF/DEFRA was that it was run by civil servants who may not have had any background in or appreciation of the farming industry, and even less ability to deal with the intricacies of a crisis such as FMD. "There were farms on [D restrictions[40] which] shouldn't have been, farms culled that shouldn't have been. Some farms should've been culled that weren't. It was a nightmare. We said 'Get the NFU secretary; get a farmer in to identify the area'. It took months before they listened. They said that a farmer would mess it up. I went to the DEFRA office; I spent two hours and I could identify most of the farmland between here. All they had to do was ring the farmer and say 'Is that your farm or a neighbour's?'"

He considered the use of the army the best decision made to control FMD. "Finally they [bring] the military in; they wanted to do the job and get on with it. It was always DEFRA who was pulling them down. If you went into a room where DEFRA and the vets were, it was absolute mayhem. People were running about like headless chickens. It's because of the turnover of staff: people stay two months then they get someone else". This particular individual was also involved in his role within the NFU in the logistics of FMD, and was scathing of the disorganisation and bureaucracy evident in MAFF/DEFRA's handling of foot-and-mouth. "I spent my time amazed. It was just 'red tape' constantly. I mean, the Environment Agency had a look as well. Simple things, like we said when the outbreak started: we asked why they weren't securing the area. [The] answer was [that] it's an infringement of human rights to put a policeman on the drive of the farm. It's common sense: you seal an area off and stop the disease spreading. What did they have to come back to eventually after killing all those animals? It was a farce. One particular farm not far from the man road into Newcastle… It took them days and days to get the fires going and burn the pigs. The most efficient

[40] 'D restriction' refers to the movement restrictions imposed on farms to prevent the threat of the possible spread of FMD.

way is to kill them in a hole, finished. But [with] all the environmental pressure we're not allowed to do that so they ended up hauling animals all around the world, through 'clean' counties".

Another respondent who worked on the culls from the start of the foot-and-mouth outbreak was similarly critical of his bosses in the Ministry: "I mean, the first thing we did when [FMD] broke, it was on the national news about Heddon on the Wall, and we were told we couldn't visit any farms initially. So we had to sit at home and twiddle our thumbs. I went up to Carlisle to our office up there. I was in the licensing office, which is where the licences to take vehicles on and off farms which were culled initially [came from]". His narrative further stated that he believed he would only be required to work in Carlisle for a week until the situation was brought under control. However, "it just grew and grew and I was doing licenses up there for about two months. It was extremely stressful, especially the early part because it was so fresh: people didn't know what the hell was going on. [Farmers] were like 'Licenses? What are these about?'"

The confusion regarding licences was compounded by the Ministry deciding to reuse the 1960s licences which were written manually on typewriter. This caused several major problems for those in the interviewee's position in the MAFF office: "so it's all so out-of-date and you've [got to] read it out on the phone and say 'Look, you can't leave the farm without having this licence'. Initially, there was such confusion, it was all chaos. After about three or four weeks they had form B notices and all that. [With] 'word of mouth' and NFU helping out, farmers knew what the licences were so it was more a case of [issuing] them. But [for] a fair few weeks, especially when they'd just been culled out, they didn't want to speak to someone and be told you need a license to get off the farm".

Even in the delivery of coal to fuel the pyres for disposal of the bodies, amid strict movement criteria, there were examples of major error: "they delivered the 600 tonnes of coal onto the site, but it was the totally wrong farm. These huge [articulated lorries] tipped all this coal in, so the ADAS guy rang up the Carlisle office and said 'What do I do?' so the lady at that end said 'Can't you hand shovel it to where you want it?' There were 600 tonnes of it. At the time it was hilarious, we just couldn't believe it had happened". Most respondents had multiple examples of how simple logistical tasks were mismanaged during FMD; in fact, I could have devoted an entire chapter to their

examples. I feel it is enough to report the varying degrees of what could best be described as disgust for those in positions of responsibility.

One respondent, who had formerly worked for ADAS, suggested that one of the major mistakes made by the Government prior to FMD was in the privatisation of ADAS and the removal of its expertise from MAFF. This, he argued, had a detrimental impact on the handling of the FMD crisis. He contended: "They privatised ADAS in 1997 so all their technical staff disappeared overnight basically. What was MAFF, now DEFRA, they've specialists higher up but it's a lot of [administration], and people who are higher up who are agricultural specialists, I guess, but guess not farming people. I mean, they are good at managing budgets and decision-making but I don't think they'll have a proper grasp on what's happening on the ground. So I guess knowledge-wise there is a lot of that. [At] ADAS alone there were 1,000 staff before it was privatised, 1,000 specialist people. They pay ADAS technical staff to do work for DEFRA [because] they don't have the staff to do it".

He went on to explain how DEFRA was forced to draft in people with expertise during FMD from agribusinesses as the emotional strain of the crisis was affecting MAFF staff to such a degree that they "couldn't do their normal job". He continues by explaining the influence drafting the army in had on the way FMD was dealt with: "ADAS was one company involved with it but there were loads of others. People were helping out. It's an amazing experience to see; not a good one, but amazing. The army did a lot when they came in that was quite interesting. The thing that the army [was] good at, and [is] good at, [is] the logistics. They had all the radios. The problem before the army came in was there wasn't a continuation of staff: it was a nightmare trying to organise who was going to be there. Whereas the army had a set unit, set divisions, all the walkie-talkies and communications. It's literally just the logistics. It's easier for them. Before there was such a turnover of staff [because] people had to do their normal jobs still, whereas the army were in there and dedicated to the task. Money was no object: they were hiring all these wagons. If they wanted it they got it".

Legislative and Political Framework

The regulatory framework of farming was a theme returned to repeatedly by farmers since, in essence, this governed their daily farming lives, and these pressures were virtually unanimously deemed 'restrictive' instead of 'protective'. The numerous managerial procedures and regulations relating to agriculture were often felt to be poorly considered and felt to make contradictory demands on the farming population. A common complaint was that systems were changed before farmers had time to adjust to them, and that new systems were not introduced with sufficient "lead-in time". Farmers stressed that the nature of their work was such that they needed to be able to plan ahead, but that more commonly they were met with an "information blackout" from the agricultural authorities, followed by a rapid demand for compliance.

DEFRA's (MAFF as it was at the time) political leadership came under particular criticism with regard to BSE and FMD, which many farmers felt had been dealt with heavy-handedly, and in a way which unduly penalised and demonised farming communities at a time when they would have benefited from transparency and external guidance. One middle-aged dairy farmer commented that the FMD outbreak had been a particularly fraught time for them because of the way the Government had handled the crisis. He felt that this had done little to stem the rate of infection and had been scientifically questionable: "I mean, the feedback we were getting was that… the vets, they were banging their heads against a brick wall because they could not do what they wanted to do. They couldn't get on with their jobs because you've got the bureaucrats in London that didn't really understand".

Other forms of regulation which caused farmers worry and upset included the six-day rule, milk quotas, and cattle movement passports. For example, a large-scale Devon dairy farmer explained that the six-day rule was "tearing the farming world to pieces", and that such were its restrictions that "decent farmers" could find themselves transgressing these by accident: "it's a sledgehammer to crack a nut, and you know farmers are under a lot of pressure because they do everything themselves really: buy, sell, do the paperwork, do the whole lot". Another respondent commented that the atmosphere of rigorous regulation made him feel uncomfortably scrutinised and "ill-at-ease" going about his daily farming work: "You go to market… you've got the RSPCA stood watching you. You've got the vet watching you and you've got… DEFRA

watching you. Marking his sheet, that sort of thing. When you're struggling, you're doing about fifteen hours a day to earn your living, and you feel they're stood just trying to catch you out somehow: just waiting for you to put a toe out of place and they'll pounce".

The situation was further complicated in circumstances where organisational arrangements had altered to such a degree that farmers were unclear on the correct course of action. This point was made by several interviewees in relation to carcass disposal, an issue which had clear health and safety implications. One respondent noted that the tone of the Government's dealings with farmers had materially changed and become hostile, and he found this upsetting: "the whole bureaucracy of the job now: it's terrible, everything is a threat, everything that comes through from like DEFRA and that is accompanied by a threat, a threat that if you're late… you know that you'll forgo a payment or you're liable for an imprisonment… they treat everybody as a crook".

Several farmers, particularly the larger scale ones, talked about the ongoing worry of inspections, and that they would be found to have unintentionally slipped up and subsequently be heavily penalised. One livestock farming respondent felt that the sheer volume of officials now routinely coming onto his farm was becoming unmanageable and provided a constant source of unease: "I think it's a depressing scenario, because it's almost a sort of threat. You never know whether you've recorded everything completely right and done everything that you're expected to do in terms of being inspected: you don't know, so you've no way of testing".

Notably, in the current climate where policy is rife, there has been a shift towards regular inspections of larger farms which have greater resources to respond to the demands of inspection regimes. There were clear policy issues in terms of unduly complex regulations and a strong case for a streamlining of processes, with farmers having to deal with fewer organisations, and for deadlines to be coordinated and simplified so as not to penalise farmers whose businesses were based on mixed farming practices. A further interviewee commented that the style of inspections performed by the authorities was often unhelpful to farmers, and that there needed to be greater recognition; that spot-checks could have serious implications for farmers' daily routines. One farmer's wife made the point that it was the demands of inspection combined with declining farming incomes that made many farming families wonder if

the benefits of farming continued to outweigh the burdens. A number of interviewees also questioned whether other European farmers were subject to the same degree of regulation as the UK, and felt undeservedly victimised.

Conclusion

By examining the testimonials presented in this chapter, one can see that both BSE and FMD became points of pivotal change for the farming industry in terms of attitude and legislative or financial constraints. Indeed, one farmer said that following BSE and FMD, farming was faced with the decision to "change or die". In no way do I contend that FMD or BSE resemble each other in any way, other than in their effects on stock health and on farming stress. They are both examples of novel change and both endogenous factors which emerged from within the farming complex system.

The foot-and-mouth disease outbreak started and ended in a relatively short timeframe when compared with the years during which BSE 'dragged on'. FMD was an acute incident involving the loss of hundreds of thousands of animals and which caused acute anxiety to farmers and their families. The countryside was essentially shut down, and as with the earlier BSE crisis, the media were 'on hand' to beam pictures of culled animals lying in fields and carcasses burning on huge pyres into the front rooms of households across the UK and abroad. FMD highlighted the vast distances animals were being moved from market to slaughter and also put a spotlight on the inept governmental attempts to contain the outbreak. However, for some who were compensated for the cull of their livestock, the payment provided them with a route out of farming, especially for those individuals who were of retirement age.

BSE, however, was a severe crisis. Its effects have lasted many years to alter the way farming is now conducted in Britain. Its greatest legacy has been the increase in legislation, restrictions, 'red tape' and bureaucracy as the Government tried to restore public confidence in British food. There was a change in attitude as people saw the effects of the 'drive for production' and other financial incentives such as those present in CAP to maximise production at almost any cost. It could be contended that the attitude change that came about as a result of 'mad cow disease' was the first nail in the

coffin of the Common Agricultural Policy: the realisation that productionist policies did indeed have repercussions.

6.3. THE DECLINE OF FARMING

Introduction

This chapter is intended to give an account of the meanings and motives that this North East farming community attaches to its perceived farming life and livelihood in relation to the changes in agriculture of recent years. The intention is not just to consider the business and economic issues in this 'agricultural recession' but to also look at the emotional, cultural and social changes that such a transformation also brings about.

It reports the experiences and views of farming life described by respondents regarding the changes that have occurred in farming during their lifetimes and their views on the presence of a 'golden age' of agriculture, if one did indeed exist. This is followed by the respondents' views on the Common Agricultural Policy, mechanisation and the changing agricultural labour force. This is followed by a detailed look at farmers' views on those in positions of power within the food system, including discussion of the Government, the NFU and supermarkets.

The diagram below is an attempt to visually represent the relationships and correlations I will highlight in the following discussions. They are included as an aid to explanation, but in a greatly simplified form. I intend to show in this diagram the strength and importance of said relationships and correlations to what is the central issue (as identified by the respondents: stress) by the size and density of the arrows. All the issues cited in this diagram will be discussed in turn and in detail, providing the respondents' points of view on each and demonstrating what they feel they has influenced their farming livelihoods.

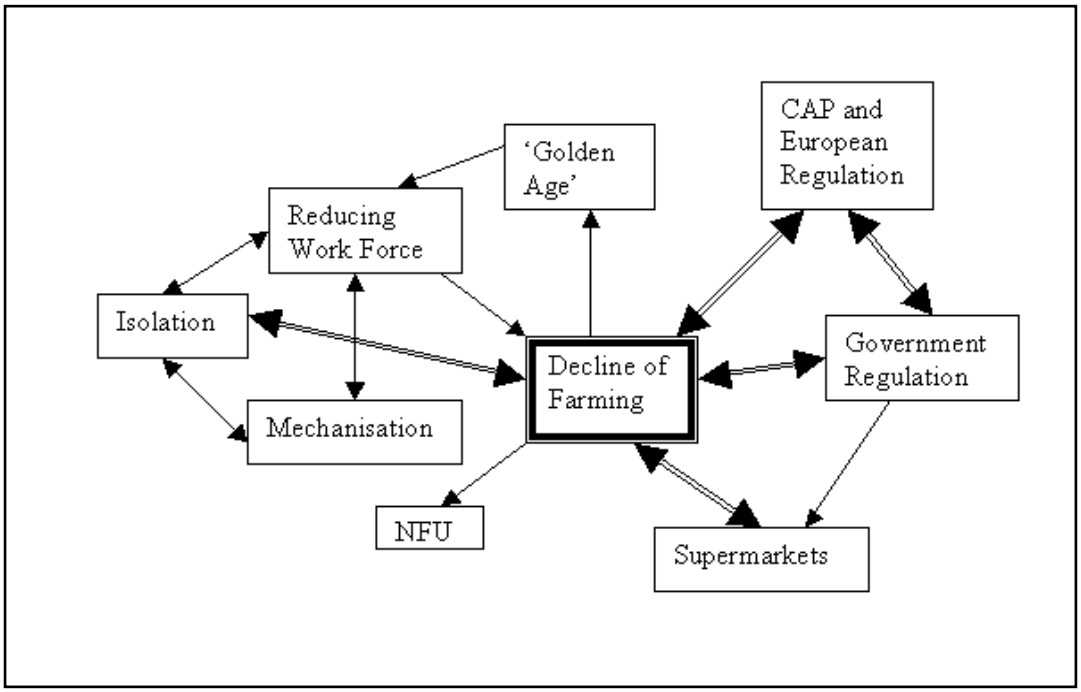

Figure 19: Diagram to show the issues relating to the perceived decline in farming by respondents in this study. It also shows the relationships between these issues.

Figure 20 gives a visual depiction of the interrelationships within the complex system as it relates to ideas of the decline of farming. The nested system within this shows the interplay of significant issues of external regulations (government, CAP and EU influence) and also the influence of the supermarkets. The respondents discussed a 'golden age' in British farming and how long-term trends such as a reducing workforce have further promoted this decline. The reduced numbers of workers in the industry forms part of another significant nested system as it sits with notions of isolation and increased mechanisation.

The Golden Age of Agriculture

The vast majority of respondents in this study believed that farmers had a better quality of life in years past. 90% of those from the 'older generation'[41] (those over 55 years of age) believed that farming was now in "a worse state than it has ever been". When questioned further on this, the opinion was generally expressed that (looking at their parent's life and then looking at their own) they were worse off. The younger

[41] This is purely my determination of the age range and is not based on any other research.

respondents had a less romanticised view of the past: as would be expected, the younger farmers had only really experienced the modern agricultural practices and therefore had little frame of reference for the changes.

One elderly retired dairy farmer became quite emotional when questioned. He remembered the pace of life and the returns he had on his work during the 1940s and '50s. He compared them to the hours of work required of his daughter and the relative returns on that work, and hung his head. "In my day we could know our animals and our family. Work was not a duty: it was a privilege... My daughter has no time for herself. She runs five times as many cows as I did at the start of my farming life and she's only managing to get her head above water. She has to jump through all the hoops of government, has to buy expensive chemicals and pay huge vet's bills. In my day *all* food was organic! No-one messed about with it; it was good and wholesome and fresh, and most importantly we were paid a fair price for our efforts".

For dairy farmers, the general consensus was that the best period was immediately preceding the BSE crisis in 1995. One respondent recalled that dairy cows were averaging £1,500 to £1,700. A good bull calf: £350 to £380 at three weeks old. A good geld[42] cow: £800 to £1,200. A good in-calf Friesian heifer: £1,000 to £1,200. He continued: "so a good cow was making £1,600; say this was on the Monday, then BSE hit on the Wednesday. By the following Monday this was down to £500. The following Monday they were down to £300 and [it] stayed there for months. The value of my herd dropped by £60,000 in two weeks and suddenly the assets against which my business could borrow were massively depleted".

Many commented on their increased pace of life. Indeed, across most of the questioning in this study, the fast pace of life and increased paperwork formed the major complaints. Many farmers commented on the impact such extended working practices can have on the family. Many respondents discussed the nature of farming, which requires long hours at certain times of year, but that was always balanced with times of less work which generally meant time to spend with wives/husbands/partners and children.

The younger respondents in particular felt that they miss out on their children growing up. In general, farmers' children (speaking here from experience) are in the enviable

[42] A cow sold for meat, at the end of its working life.

position of having their parents at home – albeit on the farm – all day, everyday. This was my understanding, and that of my friends and relatives growing up in agriculture. This has changed however, with the increased emphasis on diversification and second jobs to maintain farm businesses as economically viable. Many farmers have now begun using the less busy periods of the farming calendar to supplement their income through additional work, and therefore further extending their working hours. Of those questioned in this study, individuals were taking jobs such as construction industry work (JCB driving), landscape gardening, 'odd-jobbing' and other activities where farming skills are transferable. This was greatly improving their income, but also greatly diminishing their free time and 'family time'.

Respondents also talked about the lack of pressure and stress in the past; the vast majority of those questioned cited stress as a major factor in modern farming. Many respondents reported this stress as the main contributing factor to the loss of the 'golden age'. One 65-year-old respondent commented: "when I look at my job, I still love it: I love the animals, I love the harvest, I love the ploughing, I even love the early mornings and the late night lambings… what I hate is the worry [that] I've filled out my AICCS forms wrong or my cow has the wrong ear tag or passport, or there's antibiotics in the milk… I used to sleep well at night. I was a happy, fulfilled man. Life now is not so good".

This was also the view of a retired non-farmer whose work was nevertheless tied to the industry. He had worked in the county all his life and believed that he had seen a definite shift in people's attitudes towards each other and the industry in recent years. He talked about there always being farmers with money worries regardless of the economic climate, but he believed that the farming community in years past was much closer, more vibrant and more supportive than at the time of the study. He joked in sociological terms of being a 'participant observer' in the local farming community, the nature of his job meaning that he was in regular contact with many farming families and that he built up strong friendship networks during his career. He noted the shrinking size of the farming population and its increasing age, and also cited the few offspring that were now neither financially able nor interested in taking on their parents' farming legacy (which he noted was "a poor legacy indeed" in many cases). Some of these issues will be discussed in later sections of this chapter.

The Common Agricultural Policy

The vast majority of those questioned believed that the Common Agricultural Policy (CAP) had been a good thing for British farming. It had resulted in the adoption of more intensive farming practices that are now the norm today, the use of hybridisation technologies and chemical fertilisers and pesticides, increased mechanisation, etc. all brought about by the guaranteed prices and secured markets that CAP gave to farmers. In effect, CAP removed market forces from European agriculture.

Not every respondent was so keen on the CAP. Indeed, one university-educated and very well read farmer had a completely different take on CAP. He believed that it was the worst thing that could have happened to British agriculture. He argued that CAP may have been needed to offset the shortfall in food and food insecurity that was experienced during the immediate post-war period; however, he pointed to all the major crises in the industry stemming from the continuation of this policy far longer than it was required.

He contended that if the CAP been phased out in the 1960s and '70s, we may not have had the BSE crisis, the sudden need for diversification, the loss of ecological habitats and environmental degradation, the current collapse in the number of family farms, and the negative public perception of farmers. "[After the Second World War] we needed food, so CAP gave us the financial security to invest in the means to grow more… we knew we'd get paid. When this carried on after it was necessary for the benefit of the country, it began to damage the industry directly and indirectly. We were producing too much. Suddenly farming was in the press: 'Butter Mountains', this mountain, that mountain… negative stuff! Farmers began to be portrayed as 'fat cats' swanning about in Range Rovers and some were, but many too were not. It should never have got to the stage: when quotas came in the '70s, the alarm bells should have rung". He went on to explain that he felt his children's chances of enjoying a life in the farming industry had been materially damaged by the implementation of and ongoing adherence to CAP. Another respondent noted that, in his opinion, far fewer farmers would have left the industry if CAP had been reformed in the 1970s. He also argued that businesses were less reliant on CAP and farmers were on average younger, and therefore less set in their

ways than they are now.

Another farmer talked at length about the ecological and environmental legacy of CAP. He was now very involved in the Countryside Stewardship Scheme and felt the weight of his previous actions on the land. “We were growing too much wheat and barley, but we were paid the more we grew, regardless of excess: there were no incentive or market forces to limit the production”. He stated that he looked at his farm ‘with new eyes’. He was in the process of replanting much of the hedges that had been removed by his father. He spoke of a twofold benefit of restoring the hedge rows: “There [are] the obvious environmental benefits of having more trees growing, reducing CO_2 and so on, and it also gives the animals and birds some shelter. But it actually makes a lot of sense in farming terms: the thorns on the thing work better than barbed wire for keeping stock out, posts aren’t being used so you’re not replacing them or the wire every so many years, it repairs itself by growing, and I just go round once a year and keep them trimmed and I can do that from the tractor. It’s nowhere near as back-breaking [as] buggering about with post thumpers and rolls of pig netting”.

Coming in the current climate of British agriculture, the reform of CAP was causing a good deal of worry for the respondents in this study, particularly because at the time of data collection there was very little public knowledge of what the reform would entail or how long it would take. In effect, the uncertainty was resulting in further anxiety at a time immediately following the FMD outbreak. This was in many cases making the farmers interviewed more anti-government than they were already in light of the FMD outbreak.

Mechanisation and the Workforce

The vast majority of those questioned in this study were of the opinion that mechanisation was a good thing in the development of the farming industry. It was seen to have many benefits: it improves the quality of tillage for example, and reduces the time and costs associated with manpower because one individual can do more alone. However, this was almost always contradicted when the respondents were challenged and asked if they personally appreciated the shrinking workforce and increased personal workload.

Those with large-scale grain farms in particular hailed the increased mechanisation as a very positive and efficient development in farming. They cited the reduced reliance on vast numbers of additional staff and the need for maybe only one or two highly skilled employees who could perform high quality "precision agriculture" – as one respondent described it – utilising highly technical, often computer-assisted machinery. "I can download data from the combine [harvester] onto my laptop that'll tell me exactly how much grain has been harvested that day, the acreage covered by the machine, and so on; it even uses GPS technology so you can pinpoint exactly where on the field you have the best cropping, and so on. Not just anyone can work these things, but then they allow one man to do so much work that the days of a large workforce, certainly on our farm, are over".

Less well-off farmers who were running older machinery (which was often more expensive to maintain due to its age) on smaller farms with smaller fields were generally less in favour of the increasing move towards mechanisation. One individual argued that the difference between a larger workforce and machinery was negligible once time was factored in for machinery that had broken down and was not running. In years past, he argued, a more labour-intensive approach to farming could take the same time as the more mechanised approach he now used because of the frequent breakdowns his "tired, old" machinery suffered during busy periods such as harvest. "When I first started farming, machinery was much simpler and there was a lot less to go wrong; if you had a basic understanding and there [were] a few of you, you could keep something going even if it was limping a bit. We were also more reliant on [workers], the human body being less likely to break down: we could get on and accomplish an awful lot". When asked if he preferred the use of labour to machines, he replied that if money was no object then he would indeed employ men over machines. However, he argued that the price of labour has risen dramatically and people are not prepared to work the hours that farming requires: "even though the price of machinery is now higher and it costs a fortune to get someone out to repair it, it's still the cheaper option".

Some older respondents commented that the increased mechanisation resulted in a loss of companionship at work, and that the camaraderie of working groups was missed. One respondent summed up the feelings of many: "we'd work hard all day and spur each other on; it was almost a competition and there was banter, and we could achieve so much without realising we'd done it. Nowadays, I do most of the work on the farm

alone, or sometimes my wife and daughter come to help out if [required]. We have big machines, I can get a lot done myself… but I've no chat, no banter, just me and the radio and a lot of time to think and ponder. I'm a thinker by nature and it doesn't suit me to spend too much time on my own: I tend to worry".

There were many other stories about the "fun and antics" that were associated with groups of farm men (most often men perform the hard physical labour of farming) given by other respondents. A number of interviewees, who were now farmers in their own right, had begun their working life as labourers on other people's land. In one instance, the worker had married the farmer's daughter and later inherited the farm. In another instance, the elderly farmer had gifted the farm to his labourer and family when he retired, having no family of his own. The shrinking workforce would suggest stories such as these could be much less common in future generations and paths into farming for those who were not born directly into the industry have become much less accessible. One of the younger respondents in this study, a businessman who was looking to return to farming after making "his fortune" in an unrelated industry, rued the loss of farm workers for this reason: "my family are military, not farmers: I have no farming background whatsoever, although I grew up in a very small village in the centre of a very agriculturally-orientated community. My first job was picking wild oats for the village farmer at the age of about 8, and as I got older he took me under his wing and taught me. I loved it: I spent all my free time working on his farm, and as I got older and more competent, I got more responsibility, both with the stock and with the crops. By the time I was doing my A-Levels, I was virtually running the farm for him on a daily basis; he was a good man and I'm still in touch with him now. I got a degree in animal nutrition and went to work on a huge 17,000 acre farm in North America for a couple of years. [I] came back to the UK during BSE; couldn't get a job so I set up my own business, and the rest is history".

The respondent continued that he felt 'doors began to shut' around the time of BSE: the industry began shrinking rapidly in terms of size of workforce. He argued that his was not an unusual story in terms of unemployment. Of those individuals that attended university at the same time as him, the split was approximately 50/50 for farmers' children and those born to labourers or outside of the industry. The vast majority of those he studied with could not find employment in agriculture and were forced to seek employment elsewhere. He stated: "I find myself in a very fortunate position; [BSE]

shit on me when I got back to the UK, as it did to many of my contemporaries. I've been the lucky one. I've been able to make enough money to realise my ambitions of owning my own [farm], but I'm the only one from my year that's reached it so far. I know a lot that still harbour the desire, but as time is passing it seems that some of my old uni mates are losing faith [that] they'll ever achieve it".

There were, however, downsides to the close farmer-labourer relationships described earlier. One sorrowful interviewee described having to sack an employee who he regarded almost as a son: "we'd had him coming along here to work since he was a [child]. It got him out of the way of his Dad who knocked him about, and he was such a nice kid: me and the wife took to him immediately. We went on to have two girls so it was nice for them to have a big brother of sorts too. We started having trouble when he was in his late teens. He got in with the wrong crowd and started drinking and we'd not see him till lunchtime some days, and then he was too hungover to work when he arrived. We were milking cows in them days and I was paying him a good wage, and it all came to a head one morning and I had to let him go. It broke my heart". The respondent explained that he stayed in touch with the young man, who moved away to work in the South East of England and was married with children and had a good job.

Another older farmer rued the loss of the workforce for the effect it might have on his children working in the industry. He worried that they would have few friends in the industry and that they would lack the support he had felt from his close-knit group of farming friends. "Our [son] sits on the tractor from morning till night, seven days a week during busy times, and if it wasn't for his mobile or the CB [radio], he'd have no contact at all with the outside world. He goes out with his townie friends, and if it's harvest they don't understand if he has to work and he gets grief. His girlfriend is the worst for not understanding. Her Dad's an accountant with pots of money and she just expects our lad to do as she pleases. If we get a fine day and the corn's running dry, it has to be fetched in: no argument, no stopping for so-and-so's party, just 'get'. Farmers' kids just know this: they're born in it. Townies have no idea of what a day's farming involves".

Supermarkets and Corporate Influence

There was uniform mistrust among respondents of supermarket 'cartels' which were felt to dominate the food industry. One respondent was very uneasy regarding the influence supermarkets have: "What worries me is [that supermarkets] have so much influence over the Government. Lord Sainsbury, who is the head bloke at the supermarket chain, is science minister in the House of Lords and he is in charge of deciding where the money for scientific research goes. No wonder there's so much GM food knocking about: it's all in his interest. I'm sure I read somewhere too that there are former Cabinet Ministers on the boards of [Tesco] and Asda and another [supermarket chain] that slips my mind at present. It all smells very badly to me and I don't see how [we], as a bunch of small businesses, could ever sway these guys into giving us a fair deal".

This was a virtually unanimous view, as far as power and government influence were concerned. However, three respondents were less prepared than the majority to accept the status quo. All three had strategies to exert influence over the supermarkets and all three had determined the best way to achieve this was through the media. Only one respondent had actually attempted to address this issue in practice. He explained: "I figured that the lifeblood of the supermarkets is the media, it's all about public perception for them. If they're seen as good and ethical by the public, their share prices rise and they get richer – at the farmer's expense, because they all court the public with cheap food. We need to make the public realise that this cheap food comes at a price, but to the people who produce it (be it a sheep farmer in county Durham or a mange tout farmer in Kenya)... How we do that is another matter, but I'm going to write to the Northern Echo [local newspaper] every week till they publish one of my bloody letters. There's no point waiting for the NFU to help: we'll all be bankrupt by then".

The other two respondents held similar views, one suggesting that he might even try to 'drum up' some interest among his farming friends to see if they could not perform a PR stunt and picket the ASDA head offices in Leeds: "it's not that far away…", he argued, "…and we might even make it into the national press. Providing we are dignified and sensible, we could really work the situation to our advantage". This respondent's main motive for such action was to make the public realise the quality of British food as opposed the much less regulated farming that he contended goes on in other parts of the world, but that produces cheaper food than the UK: "As a result of

things like BSE, foot-and-mouth and the furore about GM that we're currently in, the UK produces the safest food with the highest animal welfare practices in the entire world, bar none! But to be this safe and caring, we're regulated to the nth degree. We can't scratch our backsides without filling in a form. The supermarkets trade on this: get good PR on the back of it but screw us down on price at every turn. They keep their profit margins and [the farmers] pay. But if we don't give in, they'll go and import some muck from the Eastern Bloc, so we give in. Market forces they call it. It's bollocks!"

Another interviewee also extolled the virtues of 'buying British' in terms of quality and freshness and, again, the welfare standards. He explained how when he worked on farms in the US, farmers would just go out into a field, shoot a cow with a rifle and BBQ it that evening. There is no way that a British Farmer could do that, he argued: all UK animals must be slaughtered in an abattoir with vets present. He also said that for the herds of thousands of cattle the US Ranchers would be raising, there was little or no veterinary attention for a sick animal unless it was carrying an expensive calf. He also cited factory farming techniques which he had heard of taking place in certain countries which import food into the UK. He particularly emphasised chicken and poultry farming in Poland: "I read this thing on the internet (I forget where) about the conditions of hens in poultry farms in parts of Poland. They cram them in, in the dark. They can't move about, sitting in their own filth that burns their undersides, force-feeding them till they go off their legs. It's totally grim. This is where you get your supermarket value chickens. No wonder they [are] so cheap".

Another respondent contended that supermarkets seemed happy to ignore some welfare issues. He pointed to the importing of veal and *pâté de foie gras* from France and the continent. "You can get both veal and foie gras at my local supermarket. We couldn't produce that stuff here: we'd be jumped on by every ethical and government organisation going. Stuffing a calf in a crate so it makes a tender meat, and shoving a funnel down a goose's throat to force-feed it to make its liver all fatty so it makes good pâté: the supermarkets call it fine dining; bloody awful if you ask me". He argued that if a person bought from their local butcher who sourced their meat locally, it would be tender and have more flavour because the animal had be transported as short a distance as possible and would therefore be less stressed and tense, and this would be reflected in the quality of the carcass. He also contended that a happy animal would give better-

tasting meat and that if it was allowed to roam around with a good degree of freedom, it was better than forcing it in a crate. These were principles he wished the supermarkets would adopt: to source their meat locally and have it butchered locally for the store it was destined for sale in. This, he argued, would provide a better product for the shopper and ensure the best life quality and most humane death for the animal. But he was sceptical that a supermarket would adopt such measures as it would not be the cheapest option and this would not appeal to shareholders. A second interviewee took this point further: she argued that if everyone in the world sourced their food locally and paid a little extra for quality produce, there would be no need for quotas, no surpluses would exist, animal welfare would be higher and public confidence could be absolute.

Another respondent elaborated slightly on this point. She argued that the public should be urged to use the phrase 'buy local, think global', insisting that it is economics that ultimately control human behaviour, whereas politics can only limit the effects of economic situations as far as their policies can allow them. She continued: "Britain has to maintain a viable agriculture industry; it's vital that we could respond to another world war and feed ourselves. Everything we can produce in the UK is both an economic benefit to our economy… but it also means that maybe some of those farmers in third world countries who are growing mange tout for [Tesco] can grow food for their local community and the best land is not for export crops". If the world buys locally, all farmers everywhere benefit: all farmers, everywhere!"

Supermarkets were also widely condemned by respondents because they generally felt that the policy of letting profit margins and tendering determine the market and abattoir (and therefore the often excessive travelling experienced by animals going to slaughter) had directly resulted in the FMD outbreak being so rapidly spread across the UK. "The best example I can give you is that of the foot-and-mouth-infected pigs that went to Hexham mart and were bought by a supermarket. They then shipped them all the way to Kent to be slaughtered, other end of the bloody country. It's no wonder really that foot-and-mouth spread so far and so fast as that'll be only one of hundreds of similar movements that day alone".

Government

In addition to their displeasure with successive governments in recent years (the Conservatives for their handling of BSE and Labour for their handling of FMD – which are detailed in Chapter 3), respondents also had more general complaints about the Labour Government. Numerous interviewees blamed the British Government for its lack of care or interest in the British farming industry and felt they were being ignored because they were not the Labour Government's priority for votes in the next general election. It was also felt that the "townies" in government misunderstood the rural way of life, and saw it as somehow wealthy and elitist. This upset many respondents who felt the countryside as a whole was populated by the less wealthy, with a few rich exceptions.

A further 'bone of contention' was government policies to dissuade car use and persuade more people to use public transport. These policies were aimed at city dwellers and their 'Chelsea tractors' who had excellent public transport provision and could opt for a car other than a 4x4 as fashion dictated. The argument from the respondents was that due to the geographical isolation of many rural dwellers (and indeed the downscaling of rural public transport between villages, for example), rural dwellers are forced to pay higher prices as they lack an alternative. In addition, country roads are less likely to be cleared of snow and ice during the winter, and the off-road driving capabilities farmers especially require from their vehicles were thought to be an unfair sacrifice.

The Government received criticism (and blame) for the sheer volume of paperwork farmers felt they were being forced to complete to comply with regulatory "whims". One dairy farmer explained: "I understand the need for regulation and I can even cope with the requirements for tracing animals in the light of BSE and foot-and-mouth, but hell, it's totally unnecessary: the sheer volume of paper that lands on my mat. The civil service and several government departments must be being kept afloat purely by the sheer volume of forms and regulation that they have heaped on us in recent years. For example, I'm a dairy farmer so I have my cattle passports and ear tag requirements – all [requiring forms to be filled in]. I have some arable land so I have my IACCS forms to get in, I have soil management plans and slurry management plans to do among others;

now I'm doing my bit for the environment, joining the stewardship scheme and guess what? More bloody forms and another help-line from the Government".

A further display of this general feeling of disaffection with the NFU, and particularly with the governments and mainstream politics, was evident in the number of farmers who were now no longer voting for the Conservative Party (widely noted as the political party of the agriculture industry): political alliance had shifted to the Liberal Democrats, or in rare cases Labour, and some farmers were also now considering the UK Independence Party for political representation. Political apathy was rife among respondents, with some even considering not voting and therefore opting out of the political process. One farmer stated: "I don't care anymore what goes on down there [Westminster]: they're all a bunch of self serving crooks. They don't care about me, up here in the middle of nowhere: my one vote holds no sway. No politician has ever visited me to ask if I'll vote: don't see why I should bother myself. [Politicians are] all as bad as each other". Another respondent, however, had taken his right to vote very seriously and was determined to use it as a protest. "I'll be voting for the BNP [British National Party] next elections and I'll be trying to get the people I know to do the same… I have no issue with immigration or race. These things don't affect me and my life, but the bloody European Union and those smarmy gits in Westminster: at least I'm making a bit of a point".

NFU

Except in the case of two respondents, the National Farmers Union (NFU) was greeted with derision when it was raised with interviewees. Historically, the NFU was said to have been "useful" and "worthwhile", but as a modern day voice for farmers, it was generally believed to be "inept", "incapable" and "gutless". One farmer, stunned by the NFU's ineffective approach to every problem in UK farming, became quite animated when I mentioned the NFU. He joked (but with a degree of feeling): "NFU you say, you know what it's known in the business as? 'No Fucking Use!'" And in response to me asking his opinion of those who hold office in the NFU, he remarked: "a frontal lobotomy is a prerequisite for a job in the NFU".

The two respondents that remarked favourably about the NFU were both heavily involved in the union and were both larger scale farmers. They felt it was their duty to use the free time their semi-retirement had given them to represent their fellow farmers.

However, most respondents conceded that – in the past – the NFU had provided a valuable meeting opportunity for farmers; it also provided annual events such as dances which allowed the whole community to get together. It was also noted that this was mainly the case in the time preceding the quotas and other limitations brought in through CAP when "we [farmers] felt we had some control: we chose our own destiny, if you see what I mean? There was no 'little man in Brussels' interfering". A number of respondents commented that they felt the NFU lost its effectiveness when the EU became involved in British farming policy. "When the EU got their sticky little mitts on UK farming policy, the NFU was weakened. There's no NFU representative in Brussels as far as I know, and [the EU] have all the power. It's no good: the likes of [former NFU President] Ben Gill going whinging to Blair: he has no power unless it suits him".

Mistrust of those in power within the NFU was rife among interviewees. Some felt there was some sort of conspiracy to keep farmers in their place, that the NFU was 'dividing and conquering' the British farming community; indeed, that it was some sort of "tool for the Government", a means of placating the farming masses with a "pretence of representation" among those in political power. One respondent argued with derision: "don't NFU bosses tend to get gongs for being supportive of Government policies?" (referring to Ben Gill's knighthood). He went on to contend that ulterior motives, in his opinion, could be attached to anyone who was still supportive of the NFU in light of BSE (and particularly the "spineless performance" of the union during the FMD outbreak).

Of those questioned in this study, the vast majority said they would be more likely to join a more militant group such as Farmers for Action (FFA) or The Countryside Alliance than ever consider joining (or returning to) the NFU. Their motives for such a choice were that they collectively felt these emergent groups were made up of the grassroots farmers: the smaller scale, family farmers that they related to. It was also contended that these organisations were more proactive in their approach; one member of Farmers for Action said of his involvement (during the fuel protests of 2000): "we [FFA] were less likely to just sit there and wait for the Government to get its thumb out

of its ass, unlike the NFU. We organised people, we 'rallied the troops' if you like. All in all, we got the [farmers] out there and on the TV, and we made the Government listen to us. We made a noise and hit them where it hurt: in public opinion". The very purpose of the NFU, he argued, was to protect the welfare and living standards of British farmers. A determined NFU, promoting civil action, would cause the British Government to "…sit up and listen. The trouble is they seem incapable of anything requiring a spine".

The influence, efficiency and effectiveness of the Government and the NFU during the FMD outbreak and the BSE crisis perceived by the respondents in this study will be outlined in further detail in the *Agricultural Voices 4* chapter.

Conclusion

This chapter clearly shows the animosity (and in some instances vitriol) felt by the respondents towards those exogenous stressors (external) to the farming system, be they the Government, the NFU or the supermarkets.

The Government is painted in the narratives as lumbering and indecisive, and is not shown to be standing up for the rights of farmers in Britain compared to their EU counterparts. It is interesting to note that there is little reference to political parties: politicians are portrayed as universally bad in these accounts, regardless of their particular political affiliation. Perhaps the crisis has indeed isolated the farming industry to such an extent that it feels marginalised from the political process, possibly further compounding feelings of powerlessness and lack of support.

The NFU is again disparaged by the respondents for being weak, indifferent and ineffective. Farmers expressed the need for a strong union that would stand up to government at times of uncertainty and distress – that they were currently facing – and that would provide their members with the benefits enjoyed by their European neighbours.

There was definite animosity expressed by respondents regarding the EU and the 'easy ride' that they perceived European (and especially French) farmers received in comparison to the UK. The joke that was widely recounted to me: the acronym 'NFU'

standing for ‘No Fucking Use’. This displays the mistrust and derision in which the union is now held, certainly by the respondents in this study. I would suggest that this also points to a phase shift situation as the once strong unions are not trusted or appreciated by their members.

The supermarkets and corporate arm of the food systems are really perceived as the ‘villains of the piece’. Irrespective of the effect other aspects of the crisis have had on the farming industry, it is the supermarkets that receive a great proportion of the mistrust and general hatred of farmers in this study. Their ‘cartel’ status and low food price ethos hits at the heart of profitable farming, as seen by the majority of the respondents. Another facet of this is the lobbying power that the supermarkets wield in Parliament, compared with the ‘ineffective’ NFU (as it is perceived).

This chapter again displays the uncertainty felt by the vast majority of respondents, and their anxieties about their own ability to alter the direction in which the industry and their own individual businesses are heading. The overriding impression gained from this area of research is one of sheer despondency and the powerlessness of farmers to fight against a system which has developed through the crisis, or in tandem with it, and the lack of optimism that anything can be done to redress the balance of powers as it stands.

6.4. CHANGING ATTITUDES AND THE FUTURE

Introduction

This section deals with the respondents' attitudes not only towards the future of their industry but also to the futures of their own businesses and their families' futures in the industry. The section begins with the actors' narratives on the reform of the Common Agricultural Policy and how they perceived it to have affected them and farming as a whole. This is followed by a discourse on the opportunities offered by diversification and the taking of secondary jobs to increase farm incomes and to maintain the family farm.

This is followed by a discussion of the importance of familial and friendship networks within the farming community, and the impact the recent changes in the industry have had upon the quality of life as reported by the respondents.

Finally, this section contains an autoethnography of my attempts to re-enter the farming community and buy a farm with my husband. This would not have been an issue even ten years ago, but the current phase shift has virtually barred two educated and reasonably wealthy individuals from buying land, or even a small farmstead.

What I hope to show here is that there has been a great impact on the farming population due to the undermining of long-standing networks of importance, including cattle markets. In addition, this chapter will examine the effects that this may have had on friendships and communities as well as on support for the individual experiencing the crisis. I also intend to provide an insight into the optimism of farmers regarding all aspects of their industry in a post-crisis future.

The diagram below displays the main themes, and links therein, of this section and was derived from analysis of the respondents' narratives on subjects discussed in this section. It is meant purely as a visual guide, to be fully understood as this section is read.

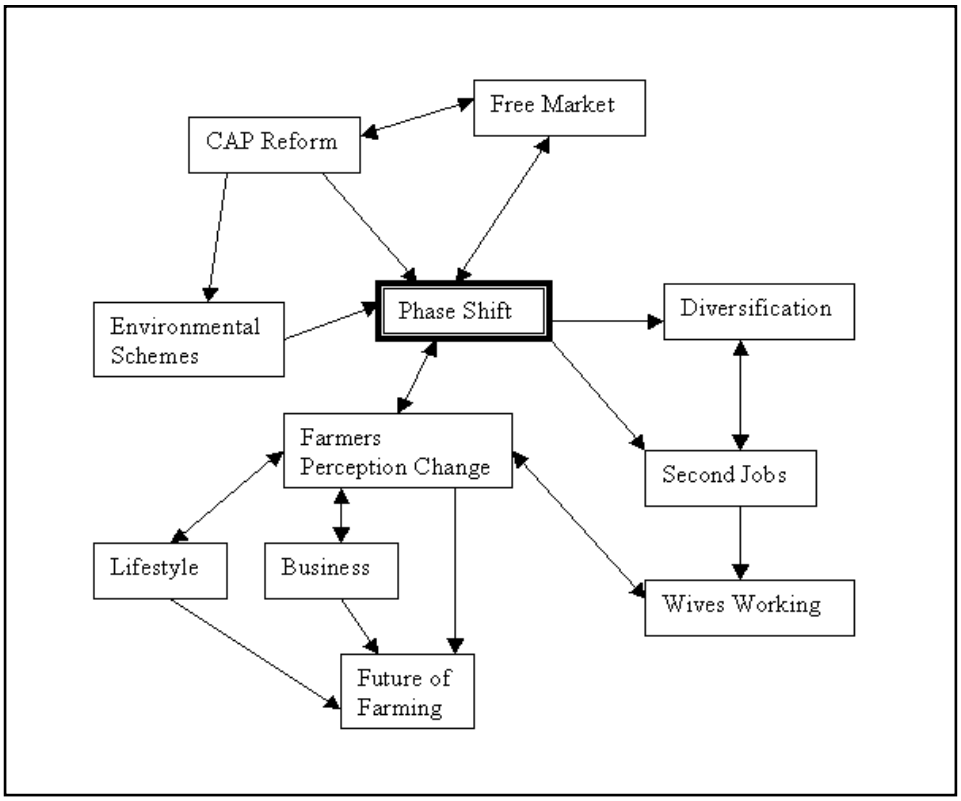

Figure 20: Diagram to show the issues relating to the potential futures for farming identified by respondents in this study. It also shows the relationships between these issues.

Figure 21 depicts the notion of phase shift: of the change promoting crisis and the factors which have led to it. Within this wider system are smaller systems and interconnections articulating around issues such as CAP reform, free market economies and Environmental Schemes. Another significant system identified by interviewees dealt with farmers' perceptions of change, with discussions of lifestyle, business and possible futures for farming. Finally, there was a need for additional income outside of the industry and this required consideration of diversification strategies, of second jobs and of wives and partners working, which fed back into farmers' perceptions of change.

CAP reform and Free Market Competition

At the time the data for this study was collected, the nature of the proposed CAP reform was still speculative. With the unknown came fear. There was a good deal of rumour and gossip, and each interviewee had their own take on how bad it was going to be for

their respective sectors of the industry. Unlike BSE and FMD, this "lurking spectre" (as one respondent referred to CAP reform) could affect farmers across the board.

The fear seemed to be justified from the farmer's perspective: "What these changes signify is a total shake-up of everything the farmers have relied on as normal", commented an agricultural banking manager respondent. He went on to argue that the farmers now know nothing but subsidies: "Their entire working lives, be they [until the ages of] 26 or 66, have been conducted in the economic environment of 'Grow more and be paid more'… Now they're being told this won't happen anymore, and they have to wait to find out how (and if) they'll receive the monies their business rely upon". The respondent went on to note that the Government had little choice but to reform CAP. He argued that in his opinion the proposed expansion of the EU (to include Hungary and Poland) would have a devastating impact on EU finances if the subsidies system remained in place. "The sheer numbers of farmers and the potential production capabilities of the massive acreage of land in countries like Poland would likely bankrupt the EU in one year… [the EU and British Government] have panicked: they're making decisions on-the-hoof and it's the finances and mental health of the British farmers that are bearing the brunt".

One tenant farmer expressed his fear that the money he was receiving through subsidies, and on which the future of his farm business relied, would be paid direct to his landlord as the owner of the land. "I've heard that we're going to be paid by the area of land we own rather than by the amount of corn I grow. But, I mean, I don't own the land: my landlord does". This respondent's situation was made more stressful by the land agent who represented his landlord refusing to speak to anyone concerning the CAP reform until a concrete decision came from the Government. The respondent continued: "I can't get him to talk to me… what am I to think? I'm expecting the worst; what else can I do? I'm really worried, I don't mind telling you. I'd wanted to hand my tenancy over to my kids; at this rate I'll be bankrupt by the end of the year".

It was not just the tenants that expressed financial fears regarding the reform: the uncertainty even affected the larger landowners. One owner-occupier respondent, who farmed over 1,000 acres, confided that: "I've stretched myself very thin in recent years buying more land to try and make this [farm] a viable concern. I doubt if any of the [local farmers] know how tight things are for us here financially. I've got a huge

mortgage on the place and another ten years to run before it's all paid off". He was particularly concerned at the potential delay in payments, and the implications this would have for meeting his mortgage repayments. "I'm less worried than some that we'll get paid: the Government and the EU couldn't stand farmers going [bankrupt] left, right and centre, it'd be a PR disaster. What concerns me is when the new payments might come through. I don't have much faith that they'll get their fingers out and pay us immediately. There'll be a mountain of additional paperwork too to go with it".

During this period of uncertainty, the anxiety this was causing the farming community was noted by a number of organisations. One example of the response of these organisations was to hold a public meeting for the farming community in the County Durham area. The meeting had speakers from ADAS, a firm of chartered surveyors, and Barclays and NatWest Banks. I attended this meeting as an observer.

The meeting was oversubscribed; it was held in a local hall which was full to capacity, the number of chairs required had been underestimated, and people were standing at the back and at the sides. There were a lot of very worried people, and as it turned out, they left without much information. The meeting had been arranged to coincide with the EU detailing its intentions regarding CAP, reform and to provide an opportunity for farmers to ask questions of the 'experts' who could explain the reforms to them in detail. Unfortunately, there was a delay in the information being made public and the focus of the meeting became one of allaying fears by reason rather than fact. The speakers had hurriedly put together a talk on the possible replacements for the CAP. However, as no definitive answers could be given to the farmers' questions, both speakers and the audience described the even as "unsatisfactory" when quizzed at the end of the evening.

During the interview process, further worries were expressed by farmers regarding the perceived threat of market competition from the new European countries (as mentioned earlier), China, and from former Eastern Bloc countries such as Russia. The 'spectre' of CAP had opened a "can of worms" of fears for farmers. Suddenly the farming industry had to acknowledge market forces and the uncertainty of supply and demand: all alien to the safe, protected world of CAP production. "How the hell can we compete with the likes of Poland? They have millions of acres of really good [land], and if they get their act together they'll swamp the market with wheat. There isn't the same amount of land

in England, or the same quality [of] land. It's pretty hopeless, I think". This was a fairly typical response from respondents.

"The Poles could feed the world; why don't we go over there and buy it ourselves?" Respondents often expressed this opinion, but one individual urged caution as he knew of an instance of a British farmer buying land in Poland with the intention of applying western intensive agricultural techniques to the new farm. As the land had not been previously farmed and was of excellent quality and totally organic, the farmer believed that he would receive a premium for the crops he could harvest. However, the respondent went on to explain that the Polish Government were less enthusiastic when they discovered his plans. The Government was well aware of the land's potential and also the benefits that owning this land would have when they became a member of the EU, and the subsequent subsidies the land would also bring. The land was taken back from the British farmer by means of a compulsory purchase by the Polish Government and he was asked to leave the country.

There were more propagandistic, anti-EU stories circulating at the time of data collection. A number of respondents reported similar 'sinister' stories. They describe a local farmer's son who went to Russia to buy land in an attempt to profit from the cheap, high quality arable land the country possesses. This young man had travelled to Russia, having bought a tract of land through a UK agent. Here the 'rural myth' element of the story takes over: different respondents gave opposing accounts. He was there for several months, organising the building of a house and other legal issues. The respondents went on to describe, in varying degrees of detail, how he became embroiled in the local mafia, or got on the wrong side of corrupt local government officials, or failed to pay the bribe required by the local police. All respondents did agree, however, that his body was returned to his parents in an urn following cremation, without autopsy details or an 'adequate' death certificate.

Environmental Schemes and Stewardship

The adoption of the Environmental Stewardship Schemes is now quite widespread but many of the respondents in this study had their reservations about the change in mindset and approach the schemes required.

The schemes were welcomed on the whole: the respondents saw them as an opportunity to increase their income while still farming (this appealed even more to the older farmers who – in general – preferred this option to diversification). Some talked as if it was almost a way of 'cheating' a small amount of money out of the Government. "Being paid not to farm" was a pretty universal rationalisation among the farmers questioned here. There was also a sense of 'getting an upper hand' finally, after a period of time when they felt they had little control over their own destinies.

For one respondent, the environmental schemes appealed immensely. "We just have a load of wild birds. Hundreds, and rare ones too… tree sparrows and lapwings and the like. Don't know what it is about this [farm] but out of the blue we get these rare birds nesting. Suddenly we're overrun with birdwatchers from all over the country. Then the RSPB turn up and tell us we have a 'superb habitat'. Well, you have to make the most of what you've got, so I went into the stewardship".

Not that the schemes were welcomed wholeheartedly, however: the familiar problem of increased paperwork that the schemes application procedure required was mentioned as being detrimental to the farming industry and contributing to stress and dissatisfaction.

It was noted on more than one occasion that governmental and EU approach to policy had taken a "dramatic shift". One respondent commented that it was a "sudden about-face" in the attitude and approach of the Government and the EU. He contended that the principal of the stewardship approach – when linked with the decoupling process – turned the drive for production and the intensive agriculture policies of CAP completely around. Another farmer commented that it was: "…just too much at once: one minute they were telling us [to] 'produce more' [because] everyone wants cheap food. Then the next minute it's suddenly 'save the earth', which takes a while to get your head around".

I think this represents the mindset that has been propagated across the generations that farming and enterprise, for most farmers, are not necessary bedfellows. In general, farmers had no approach other than pushing for greater yields in their area of the industry. There was safety in the protection afforded by CAP that stunted the industry and made it uncompetitive in global market terms. The new schemes and diversification now required of farmers is removing them completely from the CAP-induced comfort zone, and the associated stress and worry that this has elicited is very evident to see.

Diversification Strategies

As with the environmental schemes mentioned earlier, at the time of this study, the idea of diversification as a means of benefitting individual farmers was really just beginning to seep into the collective farming psyche. Strategies adopted among the respondent group included: using fields as airfields, farm shops, construction contracting businesses, agricultural contracting businesses, holiday cottage lettings, landscape gardening businesses and storage for caravans. All of those I spoke to who were over the age of 55 found the prospect of work that was not 'farming' – in its purest sense – daunting. Younger farmers were more accepting of the change. They saw themselves more as businessmen than their parents' generation and seemed keener to take up the challenges that diversification offers.

One young farmer said of his off-farm work in landscape gardening: "I like it; at least I'm meeting people this way. I'm outside, I get to use my hands; it's not really that different to farming and I have a steady income with less paperwork". This is not the universal view amongst the young farmers attempting diversification, however. A second respondent counters this positive view: "I'm working all hours now; before the farm took bloody hours but now I'm trying to fit in a second business: there aren't enough hours in the day. The worst part of this… and it does make me question the whole thing, is that I'm missing my boy growing up: I'm never at home".

Older farmers also expressed their fear of longer working hours. They worried about not being young enough to cope with diversification, and also with the investment some schemes might require to start a new business. Would they see the benefits in their working lifetimes? This was especially the case for those farmers without children or those whose children were not willing to take on the farm. Diversification seemed to them to be a "pointless exercise", and a number were resisting it for those reasons.

The fear of the perceived financial expenditure in diversification strategies was the overriding reason that tenant farmers in the study resisted diversification. Another tenant commented that he would never spend any money on a diversification strategy that involved the land or buildings on his farm: "I don't own this [farm] and I'm not prepared to improve it so the landlord benefits". He went on to point out that as a tenant

he also had much less borrowing potential, as he did not have the assets in the land that an owner-occupier would. He argued that this made it much more difficult for tenant farmers to fund a diversification strategy.

One respondent refused to consider diversification as he felt it would reflect on his ability as a farmer. He was sure that "any farmer worth his salt" would be capable of farming without the need to "resort" to another industry for income. This individual was a farmer on a large scale and aged over 55; perhaps his more financially secure position influenced this stance.

Second Jobs and Wives Working

This section of questioning elicited some interesting and widely different responses.

The older, financially secure couples occupied the 'traditional' farmer/farmer's wife roles, in that the farmer and his workforce looked after the daily farm work and the wife had raised the children, cooked the meals and 'kept house', and occasionally she looked after the paperwork and helped at busy times such as lambing and harvest. This was not always the case: it appeared that when wives had had a career prior to marrying a farmer, they often continued their careers throughout their married life. Examples of these careers included: teacher, head teacher, hairdresser, banker and solicitor. In one instance, the respondent was able to retire early and hand over his farm to his sons because of the excellent pension his wife received when she retired as head teacher.

Often respondents of all ages contended that they could not afford to keep farming without the additional income that their wives and partners were bringing in to the farm. It was often said that the second income was all that had kept their farms going – this was particularly true for stock farmers – during the difficult recent times such as the FMD outbreak.

One respondent who was suffering acute financial problems expressed this issue eloquently: "I fully understand that my intelligent wife has much greater earning potential off the farm… she can turn her hand to anything. The problem is we can't afford to pay a worker to help me: there's too much work for one man to keep the farm going, and she's needed here to work". He went on to explain that if they weathered

their current problems that perhaps his wife would then get an off-farm job to increase their security and spread their risk, but ironically they could not afford for her to do that at that time.

Farming as Business versus Lifestyle

Farmers are widely seen as having few interests outside of farming and little or no time/interest for hobbies. Many interviewees described themselves falling into this category. Some responded to the concept of 'spare time' with considerable scepticism – and in some cases mirth. Others described leisure activities, interests and voluntary activities that helped offset the stresses of their farming lifestyle. The traditional mainstays of rural and farming social life – the pub, the church and markets – were noted as being in widespread decline, partly because of competing time pressures on farmers, and partly because of the changing nature of the rural population. This was seen as a factor that continued to increase. That said, individual respondents' accounts show that these meeting opportunities, for some at least, continue their traditional social role.

Pubs and Drinking

Overall, the respondents in this study did not drink heavily or frequently.[43] Many did attend a local pub and some mentioned drinking and socialising as an enjoyable aspect of attending auctions and agricultural shows. Farmers who were naturally sociable were often seen as being more able to deal with stress and having more outlets, and pubs provided a popular venue for informal socialising and relaxing.

One respondent, a farmer's son, talked about the mutual support he received from his friend, who was also a farmer: "it is nice too when he comes round or we're having a pint that we can just sit and have a good old moan about, you know, the rules and regulations usually, what's going on. I think it's just good to know that there's someone

[43] However, some talked with affection of their drinking exploits in the YFC (Young Farmers Club) as something of a rite of passage.

else out there that's having the same shit to deal with as you, you're not on your own, you know?" Conversely, the benefits of socialising with those not in the industry was also noted by several respondents: "I find it very helpful; we all do because, I suppose, we talk rubbish! I don't know what we talk about; I don't know, what's been on telly, what's in the papers… whatever". Another respondent talked about how nice it was to see his best friend who was not a farmer. "We've known each other for 60 years or thereabouts and if I'm stressed he'll listen; he doesn't always understand, but he'll always listen. Our kids are good friends too which means there's always plenty going on and plenty outside of farming to talk about. We go to the cricket too, have a pint in the sunshine. It saves my sanity".

Drinking, however, could also be associated with more problematic coping strategies, and some farmers were wary of drinking to excess. One respondent opened up and confessed to drinking a bottle of whisky a day. He said he had started by just having a drink on a night when he came in after work. He continued: "but as farming took a downturn, so did my marriage. My wife and I weren't getting on and I was working longer and longer hours just to make ends meet. She left, I drank more [and] the farm started to suffer. I realised what I was doing and got help. It was a dark time".

Another respondent talked of the loss of a worker because of drinking and erratic behaviour. This particular individual, who was sacked, had been helping on the farm since he was a child and lived in the local village. He had had a difficult home life and was afforded a degree of tolerance by the farmer. "He was like a member of the family; it's the hardest thing I've ever had to do but the work on the farm [involved] early starts, operating heavy machinery and working with dangerous chemicals. He was on the way to killing himself, or someone else, and that's if he turned up. I couldn't keep letting him off: he had to get himself sorted out". This culture of heavy drinking did appeal to some of the younger farmers interviewed; there was evidence that drinking occurred less as they got older and gained families and greater farm responsibility.

Cattle Markets

Livestock markets have traditionally been a source of business and have acted as social networks for farmers, and they remained important to some interviewees as they afford

farmers an opportunity to 'talk business' and meet with friends. The markets may not be places where 'sensitive personal issues are discussed', but they provide an important form of social contact for some respondents, especially for those farmers who have no hobbies or interests outside of farming and would otherwise see few people, and therefore constitute a particularly important form of coping for those in more rural areas.

Markets have declined in recent years, a trend further accelerated by the foot-and-mouth epidemic and the mass exodus of individuals from the dairy industry. Many respondents expressed regret at the loss of what had been a big part of their social lives: "When you go to the [market] nowadays, there's not the life there that there used to be: there's not the number of people to talk to. I used to spend a whole day at Darlington; the wife [would] take the kids shopping or my [eldest] daughter would come with me if there were calves to sell. We'd do a bit of business and I'd catch up with friends in the rings or in the café, have a spot of lunch and just generally enjoy the [gossip]. I'm sad it's changed".

Other farmers echoed these concerns: "it's hurried, it's urgent and it's not a pleasure anymore. You can feel the stress in the air. There's no time to speak. There are now cheaper and more efficient alternatives for buying stock". Another respondent that travels throughout the north attending markets echoes this trend through his experiences at Carlisle and Hexham.

Those respondents who were stock farmers universally lamented the loss of the social contact associated with the market. It was not an issue for those who solely grew crops and who did not rely on the markets for their social interaction. The crop growers relied more highly on the pub as a means of social networking.

Local Networks

Agricultural networks were an important source of support and have, to some degree, an almost pastoral care role. These kinds of networks included the NFU, Women's Farming Union (WFU), Women's Institute (WI), discussion groups (which tended to be loosely linked to the local YFC) and local farmers' groups (such as show-organising

committees). These tended to be more important for older and more established farmers and seemed less attractive to younger people, who often described having more confiding relationships with their friends and through the Young Farmers Clubs (YFC).

In this study, three groups were mainly highlighted as beneficial networks for the local farming community. These were the Discussion Group (a male-only event), the Women's Institute and the local YFC.

The Discussion Group met in the function room of a local pub and was run in a similar manner to YFC meetings: a formal welcome by a member of the committee, and then a brief introduction to the night's speaker. This was followed by anything from a lecture to a debate on a particular topic, followed by an informal discussion and a pint downstairs in the bar. I was fortunate enough to be invited to join one of these discussion evenings: I was the first woman to have been at a meeting in the 25 years one respondent had been attending – and possibly in the 75 years the group had been meeting. It was a very clear reminder of the male/female divide that still occurs in the farming community, certainly in the older generations and certainly when it comes to the 'business' of farming.

I must report, however, that I was made to feel very welcome. After an initial period of staring and muttering, and once I had been introduced to the group and my role as 'research student' had been explained, I took a seat near the back.

Approximately 50% of respondents in this study had some sort of involvement in the Women's Institute. This included narratives from both farmwomen and farmers' wives, and also from husbands and partners discussing their wives' interests. The general consensus among those women interviewed was that it gave them something to do: an excuse to meet their friends and have a chat, and a night away from the farm where no-one had to talk about farming. Despite this, I did find that the women spoke almost as much as the men about the farm during these social occasions.

The YFC was an organisation of which 90% of the respondents in this study had been a member, or were currently involved in. The YFC membership started at 14 years of age and went on to 26. The junior members, 14 to 18 year olds, are 'chaperoned' by the older members and take part in specially organised junior activities that often run parallel to the 'senior' gatherings and include such agriculturally oriented activities as

stock judging. The main focus, however, is a social one. It gives the children of farmers (who are often geographically isolated) the chance to meet others from the same background who share interests and the chance to make friends and socialise within their local area, their local club, or within the region – and nationally with other clubs at different gatherings (such as rallies and national agricultural shows). The clubs offer education in rural pursuits and a chance to get involved in the organisation of clubs at local, regional and national level. The YFC is jokingly referred to as the "marriage bureau" by a number of respondents. Of the respondents in this study, all reported knowing farmers who had met and married other YFC members. Indeed, in my peer group at YFC, there were three marriages among the 25 members and a lot of inter-dating. It proves to be quite "incestuous", as one interviewee suggested; she went on to add that "in some respects it's not the ideal situation: we all live in each other's pockets, everyone knows everyone else's business. That said… it's the most wonderful chance to spend time and make lifelong friendships with like-minded individuals. These people know exactly what it's like to be you, to have your worries and your experiences. It became especially beneficial during foot-and-mouth. Some of our members were quarantined on their farms… we all stay in regular contact by phone. We couldn't visit and risk bringing the disease beck to our own farms but we really rallied round. It was quite special".

From an older farmer's perspective, established local representatives like the NFU and TFA were felt to play a central role, backed up by local vets and doctors, organisations and individuals with longer-standing reputations of local support. Activities such as cattle societies and judging animals at agricultural shows could also be important for maintaining local networks with other farmers.

Alongside traditional sources of social contact and support were other activities and groups, often organised along leisure or family lines. Interviewees' involvement in sporting activities included golf, cricket, football, canoeing, car racing, rugby, running and sailing, as well as activities such as shooting and hunting which are traditionally associated with the countryside.

Families

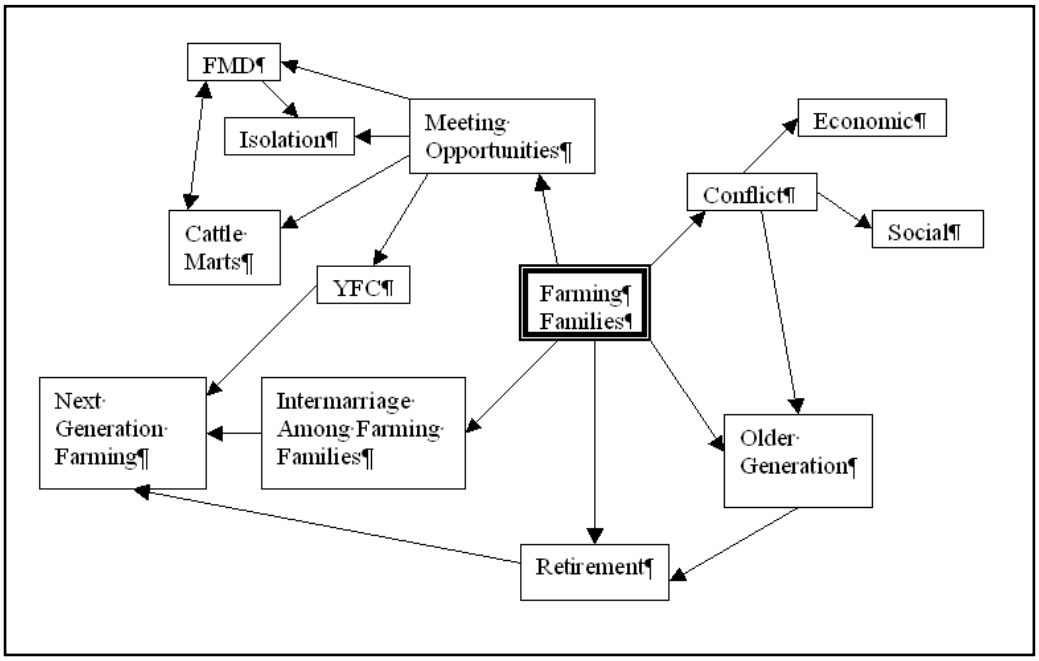

Figure 21: Diagram to show the issues relating to the social networks in farming identified through own experience and through discourse with respondents in this study. It also shows the relationships between these issues.

Figure 22 was produced using the interview data in this study. It is an attempt to visually display the relationships and contributing factors cited as important by respondents in a farming community. It revolves around the central notion of farming families. Within this wider complex system, nested systems are identified, such as those dealing with isolation, of the lack of meeting opportunities and how this has been exacerbated by the FMD outbreak and by the reduced number of cattle markets. This diagram also represents the role of the Young Farmers Clubs (YFC) in the promotion of the next generation in farming and also the high degree of intermarriage that occurs within farming families. The diagram shows the roles of retirement and the older generation, and their connections with discussions of the succession of the next generation – but also of conflict, be it social or economic, which can occur within the farming family.

Those interviewed placed a strong emphasis on the benefits of having a close and supportive family. There were no instances of 'cohabitational' couples living and farming together. The respondents were often very traditional in their views of marriage: regardless of their age or economic status, both the male and female

respondents agreed that it was important for farmers to marry. It was important from a companionship perspective, due to the geographical isolation of many farms, but it also made financial sense as it allowed the individual marrying into a farm a financial stake – and therefore the same incentives to work as any other family member.

Family name was also very important: often farms had passed through generations and the name of the family and the farm were bound together. One young respondent (who had very modern and radical business plans for his parents' farm) was surprisingly traditional in his views on this. He suggested that he planned to get married, to have children in wedlock. When I asked him why this was so important, he said: "it just is… it's tradition, I suppose: ultimately I want my children to have what I've had and I want the farm to continue too".

A further interesting set of replies came in response to the question of where and how relationships began. Many respondents said they met their future spouse through some farming-related contact. Two respondents said they had met through the local Young Farmers Club (YFC), and other respondents reported knowing many couples that met through YFC (it was jokingly referred to on more than one occasion as 'the countryside marriage bureau'). This seemed irrespective of the age of the respondent, or their economic position or farming type. Of the older generation, in addition to YFC, there were dances arranged, such as the Farmers and Tradesmen's Dance, and the dance held after the local agricultural show. Agricultural shows themselves and farming pubs were cited as places where couples met. This closed circle explained, for some young farmers, the degree to which neighbouring farming families were often related by marriage. This had other benefits too; the intermarriage of farmers' children often meant the cementing of business links between the farms also. Machinery sharing and knowledge transfer were also cited by respondents as important benefits.

There were respondents who talked about farmers being like any other young people and meeting future spouses in pubs, at school or being introduced by mutual friends. However, when asked which marriages had been the most 'successful' in their eyes, respondents reported that spouses had been 'country persons'. When asked why this should be the case, the general argument was that a country person would "appreciate the farming way of life" or know "what they were letting themselves in for". One respondent went on to explain: "Unless you have experienced farming at close quarters,

you have no idea what you're letting yourself in for… it's early mornings and late nights, long days and no breaks – especially during the harvest and lambing time. Holidays are infrequent and the stress levels are high. You're geographically isolated and skint, and if you don't love the fresh air and animals and outdoor life and enjoy your own company then… well, you're sunk".

Despite some of the survey population having negative family experiences, this comment was typical: "I think living with a close-knit family… I think that helps. I think if you were on your own then things would start to get on top of you, I can imagine". Another farmer referred to his family as a motivating force, saying "I think it's family that keeps you going really". Respondents described how leisure time was spent going out with partners or children and going away on holiday, but such outings were generally infrequent, partly because of finances, but also because of the demands of caring for livestock or the summer harvest. Those able to go on regular holidays considered themselves very fortunate, in striking contrast to the usual expectations of most UK families; the lack of a regular holiday away from home is a widely accepted indicator of poverty.[44] Those who were engaged in dairy farming were especially likely to comment on the restrictions this imposed on them, and those who had been able to stop milking (whether because they no longer kept dairy cattle or because they had been able to hire paid help) spoke of the "freedom" this gave them.

It was common that the farm's administrative work was delegated to a single family member. In addition to having practical benefits, maintaining a relatively strict division of labour within the family was also a strategy that helped 'compartmentalise' possible areas of stress. In one instance, the young respondents on one farm took on quite different worries, reflecting their different occupational roles. Both spouses referred to aspects of the other's life as "not my department". The husband elaborated: "I stay out of stuff to do with the kids and their education and what jabs they're having and so on, and she doesn't get involved with the animals and the corn; it works better that way".

Adult sons and daughters – whether still involved in the farm or living away – were mentioned by many respondents as a valued source of support. This support was of a conditional nature, however, with interviewees "not wanting to worry the kids too much". Many respondents noted that while their children of whatever age gave them an

[44] Citation needed?

interest outside of the farm, they often felt that their worries were too great to "put on the children's shoulders". This often meant talking to their children about the minor problems to unburden themselves but not talking about the "big worries" (like overdrafts and rent repayments). Many married farmers described their wives as the main (if not the only) person they would talk to in a stressful situation. One respondent noted: "I'd probably speak to my wife first of all: we have… we've got a good marriage, we've got a good relationship, and I think providing you've got a strong marriage I think that goes an awful long way to supporting you in your business outlook, especially if you're somebody who tends to work alone".

From the children's perspective,[45] those I interviewed were all farming themselves and were fully aware of the worries of their parents; indeed, as they were also farmers, they often had the same fears. The respondents expressed annoyance and a sense of frustration that they could not get their parents to share their fears with them. This may not purely be a fault of farmers but a reaction of parents trying to protect their offspring. One newly married respondent had a different perspective on the situation: "my parents are giving me a real headache at present… they don't realise I know what's going on with the business… Dad won't give up the bookwork; he doesn't understand computers and can't do email but then wont let me help. I think it's his control. I want him to retire: he's at the age where he should be slowing down, but he won't. He guards the accounts and I'm more like an employee… but then he frets [about] the state of the business. I'm settled in life: I'm young, I want to take over, explore new business opportunities. But he won't give it up. I find it all very frustrating".

A number of respondents referred to feeling angry ("blowing a fuse"/"losing my temper"/being "narky"[46]) in response to the stresses of farming life. Some of them described this as a means of coping, a "safety valve". One man who admitted that he tended to "bottle up" his feelings commented that his wife often bore the brunt of this, and there was also evidence of frustrations being taken out on adult children .The extent of support provided by farming families could place strain on marriages and other family ties, as could the constant companionship in cases where both members of a couple worked on the farm. When observing a friend's marriage, one respondent

[45] I only interviewed adult children of farmers.

[46] Vernacular local expression for being grumpy or irritable.

suggested that marriages in farming families continued past the point where others would divorce because of the practical and financial difficulties in separating. However, interestingly, he went on to point out that "some folks did very well out of foot-and-mouth: good compensation, you know! This made a real difference; let those couples who were miserable together walk away… it happened to a few people I know. Gave him the cash to pay her out. Very satisfactory".

Friendship and Community

While the majority of respondents described social circles consisting mainly of other farmers and people living locally, engaged in related industries, there was some difference of opinion among interviewees about the extent to which they preferred to socialise with, and receive informal support from, people within or outside farming communities. One can postulate that the extent and diversity of social contact was determined partly by the area's geographical and socio-economic characteristics, and interviewees' responses to changes in their area.

Many interviewees looked to others within farming communities as an obvious source of mutual support. In addition to pragmatic reasons, such as shortage of time and proximity, these networks reflected the respondents' need to socialise with people who shared similar values, concerns and interests. The general consensus was that farmers "understood each other", "talked the same language" and were "dependable" and "honest people". Most respondents said that they would rather talk to another farmer if they had a farming problem that they needed to discuss. Many talked of receiving support from friends who were also farmers or vets or from other related professions. One interviewee talked about how improvements in technology such as mobile phones had improved the situation when they were having a frustrating day: "I might be having a shitty day; all I want to do is meet [my] mates in the pub and have a moan, but I've got 150 acres of wheat to spray, or a ton of paperwork or the like… I just give a mate a ring on [my] mobile. Next best thing really: I don't have to sit and chew on [the problem] on [my] own. There's always someone there".

Some respondents talked of the benefits of having friends outside the industry: "At some point you just need to get away, be someone other than a farmer. I've got friends

who I've known from school. I'm sure if I needed to vent my spleen they'd listen, but generally we talk about rugby, cricket and what's on TV and the like…" Another respondent referred to his best friend of sixty years' standing and the support he has had from him over the years.

There were also practical benefits from farmers having strong friendships in their local farming community. This was most evident at busy times of year, such as sheep sheering, silage or harvest, or at times when help was required quickly, such as when animals escape. One farmer talked at length about the strong working relationship he had with a neighbouring farming family: "We've shared the load for years. They're good, honest lads and easy to work alongside. When we were both [working with dairy cows for milk production], we'd do silage together, double our manpower, buy machinery between the two places, share the cost. We'd work hard for each other but we could get it done well and quickly. We'd do whoever's [were] ready first then go over to the other [farm] for the next lot. Now neither of us have cows and don't do silage, we help out in other ways. He fixes my machinery; I've helped him with his sheep and lambing".

A further instance of the practical support offered by friendships between farmers was detailed by a respondent. He explained that during a severe illness, in which he was bedridden and hospitalised for long periods, his neighbour and his father-in-law shared the milking of his dairy herd twice daily on top of the workload they already had with their own dairy herds. "They saved my business. I couldn't have got through it. I couldn't afford to pay a relief milker; in the end I didn't need to. Didn't actually have to ask them either: they just did it the first day I went into hospital and kept it going till I was able to take over. My children are too young and my wife isn't confident around the cows. They saved a really difficult situation".

This positive note was countered by an interviewee who pointed out the year-on-year reduction in the numbers of farmers due to retirement, bankruptcy, etc. "There [are] less of us around: there used to be more small farmers; there [are] big farmers around but you feel out of their league". Similar issues were faced by those involved in a minority

type of farming for their area, such as dairy farming[47] in a largely arable area, who felt they had little in common with other local farmers.

[47] At the time of data collection, there were only two dairy farms remaining in the study area. At the time this chapter was being written, both of those farmers had stopped keeping dairy cows and had moved into other areas of the industry. No other farmers have started dairy farming to replace them.

6.5 AUTOETHNOGRAPHY

My own experiences of attempting to buy a farm with my husband highlight a problem facing the next generation of farmers in the UK. I do not believe my experiences are unique: I would say that there are many in a similar position – wanting to farm, with the knowledge and skills to be successful, but without the access to land and accommodation this requires.

I was raised on a tenanted, 200 acre, dairy and cereal farm in County Durham, which is still run by my parents. The farm was taken on by my grandfather in 1954 and my father, at the age of 9, moved onto the farm with his elder brother, father and mother. The eldest of the three sons remained to run the family-owned farm in a village five miles away. Over time, my father's middle brother left agriculture, but the farm supported my grandparents and later my parents too.

I am the eldest of two daughters, and as such, on a small farm where the labour force is restricted, I was raised as 'honorary first son' with the responsibilities, training and workload that goes along with it. My intention from a young age was to work for my parents on the farm until my father retired, and I would then take over the farm and inherit the tenancy (which has one generation left to run). Despite my parents' best endeavours to dissuade me, including actively encouraging me in education and my entry into a 'well-paid job', I have always found myself 'hankering' for the farming life. This is despite living through the effects that both BSE and foot-and-mouth disease (FMD) had on our farm and on our animals.

BSE had a huge impact on our farm. To begin with, virtually overnight, we saw the value of our cows halve. BSE's major effect was not on the beef industry (as was so widely reported in the media), but in the major consequences it had for the dairy sector. The income of a dairy farmer did not solely rely on the income from the sale of the milk. Instead, dairy farmers had two very important income streams, which were virtually destroyed overnight by the BSE outbreak. The first was the sale of bull calves. Most often, female (heifer) calves were kept and reared by the dairy farmer as herd replacements and the bull calves were sold as beef finishers, which would be taken by another farmer and reared and sold for their meat. Also, before the 30 month rule was

introduced due to BSE, there was a thriving market for the old (geld) dairy cows that had finished their milking life and went into the human food chain. In both cases, this was a valuable secondary income for the dairy farmer and, to an extent, tempered the fluctuations in milk prices that came with the abolition of the Milk Marketing Board. BSE was the 'final straw', and after thirty years of milking cows, my father loaded the cows onto two cattle wagons and they went to Darlington Mart to be sold. That is the only time I have ever seen my father cry. It was a harrowing experience for us all, and the experience still lives with me.

It can be argued that it was those farmers who did not lose their animals but who were tightly constrained by movement restrictions who were the worst affected by the 2001 outbreak. It was those farmers, like my parents, who were not compensated. Sheep, for example, could not be brought down for summer grazing and died of malnutrition. Unable to leave the farmstead, farmers in more remote areas were unable to ensure that their animals stranded out to pasture had sufficient water and food. Even those animals that were at the farmstead suffered as food and bedding could not be brought onto the farm and they could not be let out to pasture. Such situations could prove as emotionally distressing to the farmer as a cull, but without the economic compensation. In the case of my parents' farm, we had recently sold our dairy herd and were providing housing for other farmers' suckler cows over winter ('bed and breakfast', as my father described it). However, during the outbreak, no animals were moved to our farm so income was lost. To add to this problem, our neighbour was put on a category D notice as he had bought sheep from Heddon on the Wall (the suspected source of the outbreak). As one of the neighbouring farms, we were also restricted. I was an undergraduate at the time and had to miss lectures as I was on-farm when the notice was applied. Fortunately, the test came back negative and our neighbour's animals were reprieved from the cull. However, the ending of the outbreak did not bring us better fortunes. For the following two years, as the national herd numbers recovered, there was not sufficient excess of animals to warrant off-holding winter housing. Such cases show the animal welfare and economic impact of FMD but also the longer term damage to the finances of those who had to survive on greatly reduced incomes.

From this reflexive account, I shall now move on to more contemporary issues.

I met a 'like mind' in my husband. We both have an agricultural background and a love

of the farming lifestyle. Our plan has always been to own land; we thought a second farm that could work in conjunction with the tenanted farm already in the family would be a prudent move. It was decided that while we looked for the second holding, we would diversify the current enterprise to make it more profitable and labour-intensive to work. This would also give us a transferrable business which we hoped would help us when approaching a bank for a mortgage. After much research, we decided that North American bison would be a viable proposition: my husband had worked on a bison ranch in the US and had knowledge of the animals, and the low calorific value of the meat meant that it could prove very popular as a beef substitute. To keep bison, we needed a Dangerous Wild Animal licence from the Local Authority. We needed adequate fencing; eight-feet-high high-tensile steel bison wire was brought in from Texas (due to a 'quirk' of the exchange rate at the time – 2007 – it was cheaper to buy it there and ship it in than source it from the UK) and we fenced an 80 acre pasture. We sourced four bison to start our herd; all were two years old, a male and three females. We subsequently bought females when they became available, and waited for our herd to grow as a result of breeding. 80 acres with four juvenile bison in it was not going to earn us any money, so we supplemented this with a small herd of red deer. We started with thirty females (hinds) and a stag, and now have over two hundred. The deer were a wise move as they began breeding, and unlike the bison (which take three years to mature to slaughter size), the deer were ready in less than 18 months. Both deer and bison require much less 'hands-on' husbandry than domesticated animals; indeed, it is in the best welfare interests of both species not to disturb them with unnecessary human contact. Contact is kept to a minimum: often as little as once a year when they are brought in to their specially designed and built handling facilities where their health is checked, they are wormed, and the calves are weaned and tagged. The low contact nature of their husbandry has relieved my parents of the physical burden of farming: their workload has reduced, and despite being in their 60s, they have no plans to retire.

We decided to open a small farm shop to sell our meat directly to the public; we converted the old bullpen from the farm's dairy past. In addition, we have been lucky enough to secure a supply contract for our venison from the Waitrose supermarket chain and this has given us the ability to expand the deer herd because of the guaranteed market. I have given this extended explanation of our farm business to illustrate how serious and determined we were to make our own farm work when we eventually got it.

In our search for a home/farm, we had a suitable deposit and the bank was prepared to give us a mortgage of an appropriate size to allow us to buy what we thought a reasonable size farm of 200 to 300 acres (which certainly would have been a reasonable size 20 years ago). We had the finances, the backing, a working and growing diversified enterprise, and the knowledge to farm the land and raise animals. This was not enough, however, as we encountered two major obstacles:

1. Farms, at the point of sale, were being split into several lots and were frequently not available as a whole; and

2. The price of land was so high that no farming return could meet the mortgage repayments on the land.

The reason behind the sale of farms as lots was that the selling farmer could realise a greater price if the fields were sold separately and the house was sold with a small field or a paddock or two, and any traditional farm buildings in stone or brick were sold with planning permission for conversion to dwellings. Neighbouring farmers could buy individual arable fields and the pasture paddocks are therefore accessible to people who only require a few acres: to graze horses, for example. The farm buildings could be sold as a lot to developers for conversion to dwellings and the farmhouse and a block of land sold as a separate lot for a hobby farmer or someone wanting an equestrian property. If one is looking to buy an entire farm, one is faced with the prospect of bidding on every lot and not being guaranteed to acquire any.

Today, the investment potential of agricultural land is such that it has brought a new breed of buyer to the table. There are those who are looking for a sound investment for their money which will increase in value, and there are those for whom the rural idyll is an additional strong draw. Investment banks have bought up large chunks of land as pure investments, but investors are also looking for a perceived 'better way of life' – exemplified by TV programmes such as BBC 2's *Escape to the Country*, which brings city dwellers out to the country to find their 'dream home'. This desire to live the 'good life' is something of a cultural phenomenon. In a recent Daily Mail article (October 4th 2011, p35), celebrity chefs such as Hugh Fearnley-Whittingstall have been accused of driving up the prices of houses in rural areas, especially small holdings and small farms, by what the Mail article called "*The River Cottage Effect"* (*River Cottage* is the name of Fearnley-Whittingstall's very successful Channel 4 series). The series charts the

successes and failures of buying a small holding and producing your own food – fruit, vegetables, pigs, sheep and chickens – and a surplus, to sell at a profit, through farmers' markets and food fairs. While such aspirant individuals would generally be looking for a considerably smaller farm/small holding of perhaps just a few acres, they may have the money to want a traditional farmhouse and possibly outbuildings, which has made the division of larger farms a considerably more sensible and profitable approach for those selling.

This wish to own land and keep animals has become an aspirational desire of many city, town and even village dwellers. Indeed, many people now keep chickens in their gardens. This accompanies the rise in horse ownership of recent years which has also seen people who might once have kept their animals at a livery stable wanting to buy a house with land to accommodate their animals themselves. Horses are an expensive luxury, however, and the recent downturn in the UK economy may see this trend diminish, and small farms which are currently being marketed as having "equestrian potential" may become more readily available to those wanting to farm.

To live on the land you own (and therefore to purchase a house with the farmland) is very important if you intend to farm it, particularly if you want to raise animals, as we do – and particularly considering the animals we wish to raise. Close proximity to the stock has many benefits as it makes it possible to monitor health and detect illness more readily, as well as allowing the farmer to keep an eye on any fence damage, for example, and also be there to round up the stock if it escapes. You are there also to protect your stock from poachers, stray dogs and other threats that they may face. For example, local youths have been threatening to kill the red deer herd with dogs. The herd was moved into a field in front of the farmhouse, a security light was erected and the police were informed. Under such circumstances, a presence is essential at all times. Buying a block of farmland without a house could be a huge risk.

Considering this, should we stop trying to buy land and rely on the tenancy? This is not a guaranteed situation as it might have been for my father, inheriting from my grandfather. Our farm tenancy was issued on a three lifetime basis. My grandfather took it on in the 1950s; on his death in the 1980s, my father became named tenant. There is one lifetime left. However, as such things cannot be predicted, we have begun to look into succession and making the land agent and landlord aware of my wish to inherit in

time. This has thrown up several interesting and worrying problems due to recent changes in the farming industry. To satisfy the terms of the tenancy, as entered into by my grandfather in 1954, I have to meet certain criteria (Tennant Farmers Association, 2006):

- Close relative
- Livelihood
- Occupancy
- Suitability.

I meet the *Close relative* criterion as the daughter and granddaughter of the previous two generations of tenants, and I meet the *Suitability* criterion by virtue of my years of work on the farm, my partnership in the new diversified aspect of the business, and also as I have secured referees in our local farming community who are prepared to attest to my abilities and suitability. The *Livelihood* and *Occupancy* criteria are, however, proving difficult to reconcile in the modern farming climate. I have had several discussions with the Tennant Farmers Association's legal representatives regarding my predicament and it would seem this is not an uncommon situation. However, my gender makes the situation slightly more unusual in this instance.

Ideally, I would be employed full-time by the farm and be residing there permanently. This was a fine and easy stipulation one generation ago when my father inherited, but the farm is no longer big enough to generate enough revenue to pay me a wage. Our 200 acre farm has been supporting two families. My grandfather (who continued to draw a wage into his 80s) and five or six full-time workers and seasonal help were employed then. Today the farm can pay my parents a wage, but there is no extra money available to pay me or my husband for our time. There is also not enough work, due to mechanisation, to provide full-time occupation for me on the farm as the whole point of the diversification process is to reduce the workload and maximise the use of machinery to carry out the main daily tasks. I have demonstrated that I can run the farm, and I take on full responsibility and all chores when my parents are on holiday (or when they need a break) but I cannot work full-time while my father is also there as there is simply not enough work for two people, nor enough money to pay me for my time.

As for living on the farm full-time, this has also proved difficult. There are two houses on the holding but the cottage is used by my parents as a holiday let. This is a very

important regular income stream for the farm business. To remove this income so that my husband and I could move in would be detrimental to their income. Indeed, we could not afford (neither would it be sensible for us) to pay an annual rent for the cottage that would match the income the cottage can generate annually. As these issues are 'cloudy' and therefore difficult to circumnavigate, my case would probably be transferred to the Agricultural Land Tribunal (ALT). However, the ALT is known to be very rigid and more often than not finds in favour of the landlord's best interest (Tennant Farmer Association, 2006, p4).

One possibility is *Succession by Agreement*. In this instance, it is possible to agree a succession with a landlord – either on death or retirement – without the consent of the ALT (Tennant Farmer Association, 2006, p4). This is down to the discretion of the landlord, however, and a compromise of benefits by the new tenant, for example, could lead to a sizable rent increase (as a member of the TFA's advisory team suggested).

Thus we are faced with a predicament. We have a new venture of deer and bison and a non-guaranteed succession to the land (and particularly the fencing required to keep the animals safely) and our meat retail business through the farm shop. Not succeeding the tenancy without a back-up plan would see us homeless and our future business, in which we have invested so much time and money, ruined. Why go into a new venture at this stage? Well, it really was the only way to make the business viable for our and future generations. Two hundred acres is just is too small to support a family in the twenty-first century without some form of diversified income.

We are therefore faced with a predicament faced by many couples or individuals looking to take over a tenancy, buy land and farm in Britain today. Our options are: to try and conform to the tenancy criteria and plan towards a dubious succession due to all the factors discussed above; wait and invest in a house, which we can sell at a later date and use the proceeds to buy a farm – with the hope that land prices subside and farms begin to be sold as whole concerns again; to buy any blocks of land in the vicinity of the rented farm, in the hope that we can build up, over time, an area that justifies travelling between fields and is close enough that animals can be grazed and monitored productively; to look outside of the UK for farms and farmland where prices are not too high and a serviceable return can be made from farming.

We have given a great deal of thought to the third option. The best man at our wedding was a farmer in North Dakota, USA. He has 25,000 acres of crops and is regularly extending the size of his farm at not too great a cost. My husband lived in North Dakota for several years in the 1990s and we spent part of our honeymoon out there. We discovered, by talking to a local land agent in the US, that for what we would pay for 100 acres and a basic farmhouse in the North East of England, we could purchase 1,000 acres with two five-bedroom houses and extensive buildings in North Dakota. This is, of course, helped by the often favourable exchange rate of the US Dollar to Pound Sterling. An important point to note, however, is that the return a US farmer gets for their crop is equivalent to that gained by a British farmer in relative terms, and therefore land and farming are still an option for the next generation in the USA. Emigrating would be a huge step, and not one we really feel would be suitable for us. In addition, we have invested so much time, money and effort building up our deer and bison herds that leaving the UK is not an option. Thus the third approach is ruled out.

In effect, the farming industry is inadvertently restricting the next generation's entry into the industry. I spoke to a few farmers who were selling their farms when viewing land prior to auction. The farmers themselves did not seem happy with the situation, which, by their actions, was splitting up holdings that may have been farmed as a block for hundreds of years. However, the financial benefits of selling their farms in lots gave them little or no choice. Often the children of farmers are not willing, or indeed able, to afford to follow their parents into the industry, and the sale of what is a very valuable (and possibly their main) asset – the land – becomes a highly profitable way out of agriculture. Farming does not appeal to all farmers' children as it has done to me. Farming means long hours in often cold or wet weather, even in the summer. The financial rewards are not always great, particularly for tenants who have none of the land assets upon which to borrow from banks that owner-occupiers enjoy, making it a much more precarious existence.

This therefore raises the question of who indeed is buying farms? There has been an increase in the number of people owning horses in recent years. This has had a number of effects on the agriculture industry. Many farmers now have a diversification option in that they can rent out stables or land for livery and summer grazing, which has proved a useful revenue stream for some smaller farmers. The converse side to this is that demand has risen for rural dwellings with a small land acreage attached. To refer back

to my earlier discussion, this has contributed to the fragmenting of farmsteads. Within three miles of my parents' farm, a former premiership footballer bought a smallholding comprising around 15 acres and a crumbling farmhouse. On this he has developed a small equine estate, with extensive landscaping having taken place to manicure the land. There is now an extensive modern mansion and luxury stable block, a ménage and all-weather gallops on what was previously a neglected small farm.

The concept of a farmer taking advantage of this change in horse ownership and the increasing demand for all things equine can be seen in the example of a family friend. He inherited a farm on the brink of bankruptcy with massive debts. It had been a cattle and arable farm, and after mismanagement over a prolonged period, this farmer chose to differentiate and diversify into the growing equine market. He was a skilled horseman and had the required certificates to teach. He added livery stables to the farm and rented out paddocks to local horse owners. Over a ten-year period, he has completely turned the failing farm around. He has a successful indoor riding school with an all weather ménage and cross-country course, a large stable yard for livery, and a well-regarded breeding and breaking service.

Conclusion

In summary, my concern here is to disentangle those issues that could have occurred at any time in farming history – for example, family tensions that do not result from 'modern' pressures, such as power struggles – from issues such as the increasing isolation of farming individuals and the mounting external regulation of farming practice by government and European edict. In effect, those issues which are continuous from those which are novel and specific to this point in time.

The reform of the Common Agricultural Policy and the unknown 'threat' of free market competition may well have been anxieties that the respondents would have had to face regardless of a crisis. What compounds this issue and unsettles the respondents most is the lack of a 'level playing field' for British farmers in a free market situation, as a result of the regulation that exists in the UK from crisis components such as BSE.

The respondents contend that because the beef produced in the UK is subject to tight regulatory and welfare constraints, British farmers can therefore not compete on price with other producers in other parts of the world. Respondents also believe that the UK adheres far more closely to the EU dictat than other farming nations in Europe. The farmers in this study felt that due to BSE they were again penalised in terms of their ability to sell their meat when the disease also occurred in every major beef and milk producing area and it was only the UK that admitted to the disease freely, thus compounding the UK crisis and permanently tarnishing UK beef's reputation.

The section also deals with respondent's perceptions of the UK Government and EU schemes designed to shift the influence of agriculture away from maximising food production and towards other means. The Environmental Stewardship Scheme was received with great derision at its inception but has become more popular as farmers recognise the financial benefit of such schemes for their businesses. This, however, runs contrary to the 'drive for production' ethos that the majority of the respondents have held most of their farming lives. The Environmental Stewardship Scheme is one indicator that the trajectories in the phase shift have begun: they are a reaction by government to the crisis and are accepted not for their benefit to farming but for the economic remuneration they offer. They shift the emphasis of the farming business model away from farming and towards making money to sustain farming.

Such schemes are not the only means farmers have adopted to subsidise their businesses with non-farming income. The term *'diversification'* is now synonymous with farming: all the respondents in this study had diversified, or were planning to do so – again a major indication of trajectories of change within the UK farming system. For some, diversification offered opportunities to branch out and improve their businesses, to spread risk and to take charge of the crisis situation and have some influence on their own futures. However, this was not the case for all respondents: many of the older farmers in this study were intimidated and apprehensive at the prospect of suddenly having to leave the security of protected agriculture that they had experienced under CAP, and the thought of starting again at what was the end of their farming life was described as a particular strain. The need to diversify causes strain within families, strain that might not otherwise have been present if it were not for the need brought about by the crisis. Strain between generations was probably the most extreme, as in this study the younger generation was more enthused about pursuing trajectories

involving agri-environmental schemes and diversification and it was the elder farmers who wanted to remain in familiar, traditional farming for as long as possible.

Finally, this section looks at the farmers' views on the loss of community networks that have come about indirectly as the crisis has taken hold. The respondents talk about how their opportunities to meet with friends and the wider farming network have dwindled as a result of certain mechanisms of change, particularly due to the dwindling workforce through increased mechanisation and the loss of farmers through retirement, bankruptcy, etc. and the loss of meeting places due to the closing of cattle markets.

I included the autoethnographic account to illustrate the problems faced by young farmers, or those wanting to enter the industry who cannot do so because of the inflated nature of land values. This land price situation, discussed previously in Chapter 5, has come about by several means but has resulted in land being too expensive for farmers to make a profit from it. It is somewhat indicative of the state of the industry when the main component of production, the land, is too expensive for farmers to acquire.

7. CONCLUSION

Introduction

This research was explicitly conducted within a grounded theory 'lite' approach. In the introduction to this thesis, a series of simple questions was postulated as a preliminary framing of the issue, and further themes emerged in the 'doing' of the research (outlined in Chapter 4) which highlight other questions and issues that appeared in the course of the research and analysis process.

The initial and emergent questions are as follows:

- Is mixed lowland farming in Britain a complex system?
- If so, is this system at a point of phase shift or crisis?
    - What is different? and
    - Does this demonstrate a time of change?
- What is incremental change and what is novel?
- What are endogenous factors in the change?
- What are exogenous factors in the change?

The Nature of Evidence

The above questions have been addressed by reviewing evidence in the following form: historical materials (Chapter 2); documentary materials (Chapter 5); and autoethnography and interview materials (Chapter 6). It has been very important for this research to gain an understanding of the attitudes of those within the system. Indeed, as the offspring of a tenant lowland mixed farmer, I am within this system myself – hence the inclusion of the autoethnography (Chapter 6, section 5). I interviewed a number of people in and around the system (including a butcher, a land agent and a vet) to understand their views of the system and to help inform my examination of farming as a complex system.

I have used many different sources as evidence, and all of this material is important. However, in this research, I set out to discover the attitudes and opinions of those individuals experiencing the system and its disturbance(s) in particular. For this reason, I believe Chapter 6, *Agricultural Voices*, is of paramount importance. The evidence presented in this thesis shows that many aspects of the wider farming system are experiencing forms of crisis, which is felt personally by the participants in this research (who are experiencing their own sense of crisis). The respondents do not use complexity language when discussing the issues they are living through; however, the description of fundamental points of crisis in their testimony is strong and powerful.

What seems most in crisis is not farming as a production system but a particular form of farming, and the ways of life essentially associated with it. This particular farming form is the tenanted holding in particular, but the owner-occupier farmer of the typical medium-sized lowland mixed farm is also under threat. It is this lowland mixed farming that stands as the archetype of 'the farm' – discussed in the depiction of farming in Chapter 1 – which stands to be lost. A major driver for this which has emerged from the research is the degree to which social isolation and the "burden of the job" have affected the wellbeing of the individuals concerned.

The Case for Farming as a Complex System

This thesis has attempted to show that through complexity thinking, narratives can be used as a tool to describe a crisis in the farming community. The notion of crisis, or phase shift, is developed through an understanding of how people are living through and experiencing the crisis and how the elements of the crisis have impacted upon their own lifeworlds (Chapter 6). The farming world, like many other complex situations, can be described and understood in terms of a system: there are inputs, processes and outputs. However, farming is also 'open' to influences from other surrounding systems (such as society, the economy, politics, nature and the biosphere) which govern its parameters and cause change (Chapter 3). These changes, both endogenous (from within the system) and exogenous (external to the system), govern the path the industry is taking in the present and will take in the future. It is also through knowledge of the historical 'journey' that farming has made (Chapter 2) that one can understand the present

situation and best hypothesise where the system might lead and what shape it might ultimately take in the future.

As discussed in Chapter 2, it is the food shortages of World War Two and the following decade that resulted in a protected agriculture that has, in part, led to the system that is now in phase shift. The advent of the Second World War saw the status of the food producer rise: farming was classified as a 'reserved occupation' and farmers were therefore not called up to fight. Food production became absolutely vital to the UK as the presence of German U-Boats in the Atlantic made imports dangerous and difficult (Chapter 2). Suddenly the uncertainty of the 1920s and early 1930s[48] among the farming communities was replaced by a 'shielded' situation where farming and farmers became a protected profession (Chapter 2, also discussed by respondents in Chapter 6). There was a guaranteed market for farm produce which was regulated and controlled by successive sympathetic governments, and incomes were guaranteed. This became the pattern of the post-war years and can be seen most markedly in the advent of the marketing boards and their production of food (Chapter 2). These feelings of protection and safety are also discussed in the narratives in section 6.3 of Chapter 6. Most of the respondents in this study, and indeed most of the farmers in the country, were born into this 'safe' system[49] and this is what they were brought up to understand (Chapter 2 and Chapter 5). It is this protected system that produced the current socio-production system of mixed lowland farming that is now at a point of phase shift.

A representative case sits at the heart of the thesis (Chapter 4). The farming system as a whole is far too large, and too complex, to be appropriately investigated within the constraints of this thesis. As a result, the study population focused on farming individuals involved in the mixed lowland farming of County Durham. This gave me the scope with which to investigate the notion of change within a geographically specific system. While it is a case that is framed in a particular context, it is not a-typical. This is a case that is fairly general for much of the UK farming world; away from the hills and uplands, and away from the big grain barons of the East of England, much farming is done this way (Chapter 4). While the individual cases and personal narratives of those in the study cannot be used to represent the experience of all farmers,

[48] Discussed in Chapter 2, but mainly resulting from the downturn in world commodity prices, the Wall Street crash and the advent of the Great Depression.

[49] The age profile is on average 58 to 62.

the themes that come through are universal and should be acknowledged (Chapter 2). This form of agriculture in County Durham was chosen as a system familiar to me (as a member of the community) and also as an aid to illustrate and understand a changing point (a point of crisis) in the system affected by a range of complex issues which led to a point of phase shift.

When this research started in 2004, the farming industry had been hit by many successive blows, both exogenous and endogenous, such as EU subsidy reform, BSE, and foot-and-mouth. These discrete events, though catastrophic to individual businesses and lifeworlds, could perhaps have been absorbed and 'buffered' by the wider system (Chapter 5, Chapter 6). However, coming together, they produced a phase shift which resulted in the system becoming imbalanced and equilibrium shifting. This thesis seeks to explain what the crisis is, but it is also about explaining how people 'live through the crisis' – personally, socially and economically (Chapter 6). It should be noted that although this may have been a significant shift, others have occurred in the past, producing the trajectories which brought the farming system to its current situation. Significant shifts resulted from mechanisation, which is in itself a form of incremental change which has led to the depletion of the workforce in farming and the growing isolation of farmers, which is a novel change in the social system of farming (Chapter 2, Chapter 6, section 6.3). Indeed, there may be contractors, but they are often farmers in their own right, deriving additional income away from their own farms. The theme of isolation present in the modern farming system and experienced by farmers is discussed by the respondents in *Agricultural Voices,* section 6.1, and later in section 6.4.

This is not a thesis about British agriculture in crisis, and I would stress again that agricultural production figures show that the industry, as a whole, is relatively healthy (please see the extended discussion in Chapter 5 which details the crisis). It is instead about farming as a 'way of life'. This thesis details a way of life in crisis resulting in changes in the composition of the whole set of factors which are internal to the system, such as BSE and foot-and-mouth (see my discussion of complexity theory in Chapter 3 and Chapter 5, which puts forward the notion of crisis). Both of these incidences are detailed below as endogenous factors in the change. However, the thesis does not solely focus on these two episodes, but rather considers these two occurrences in relation to the general account. Exogenous disturbing factors, such as CAP reform, also had an impact on the system and will be discussed.

Endogenous Factors

Endogenous factors are those which occurred from *within* the farming system, and include issues such as animal health and consumer issues, specifically foot-and-mouth disease (FMD) and BSE. On their own, and taking a system-wide view, these instances were not excessively disrupting to the system, with the exception of one specific facet of FMD. This was an acute occurrence of radical intensity which happened over a relatively short period of time, compared to BSE, which lingered for many years and slowly 'eroded' the farming system. Perhaps the major difference between these two endogenous factors (BSE and FMD) and the reason BSE impacted so much on the system is that with FMD came compensation (Chapters 5 and 6). This offered those hit by the disease a means of leaving the industry. An aging farming population, traumatised by the events surrounding the loss of a huge proportion of the national herd, may well have seen FMD compensation as a means of 'stepping away' from agriculture and retiring with a sizable payout (Chapters 5 and 6). As a result, FMD interacted with the age profile and also perhaps impacted upon the tenant/owner-occupier profile (Chapters 5 and 6). The incentive for retirement for tenants was far greater than for those who owned their farms. This is a fundamental point and is discussed in greater detail in terms of official publications in Chapter 5, and in terms of respondents' testimonies in Chapter 6. Capital payouts to tenants were taken as an opportunity to retire, partly based on the fact that tenancies are not guaranteed to pass to the next generation (Chapter 5 and Chapter 6, section 6.5). In addition, investment in the landlord's farm would not make economic sense (Chapter 6), unless the tenant was young enough to qualify for a mortgage to buy their own farm, and only then if the compensation was of a certain size to facilitate this (Chapter 5). Conversely, owner-occupiers had the ability to invest their compensation in capital works and farm improvements, barn conversions, or in new diversified income streams such as opening farm shops (Chapter 5 and Chapter 6, section 6.2). Owner-occupiers also have the ability to take a longer term view of their farm businesses, and plan for future incomes for future generations; this is not always an option for the tenant farmer, certainly not if the farm is occupied on a Farm Business Tenancy which can be as short as ten years (Chapter 5 and Chapter 6, section 6.5). This poses issues for the notion of family

continuity in farming and the generational development of family farm lifeworlds which have always been central to the culture of farming and the wider farming community (Chapters 2, 3, 5 and 6). The crisis in farming is a crisis of a lifeworld. It is a crisis affecting the way that people live as farmers and the idea of the farming family, and in particular the tenant farming family (Chapters 3, 5 and 6).

BSE had a different impact on the farming system to the FMD outbreak. BSE impacted acutely for a time, and perhaps the greatest effect was the uncertainty it produced for both producers and farmers. It was a media phenomenon with 'mad cow disease' appearing in headlines across all forms of news media for a protracted period. But the uncertainty and fear that BSE created was greater than the disease itself. There is no denying its impact as a distributing factor within the system. However, it also conceivably reinforced the impact of other factors acting in the same timeframe. BSE moved through the farming system and disrupted it at a specific point in time (Chapter 5 and Chapter 6, section 6.2). The biggest effect was on dairy farming – in the words of one respondent, "it buggered it up". This was due to the devaluation of dairy cows which resulted from the exclusion of old baron cattle from entering the food chain. In addition, with the loss of the export market, bull calves bred from dairy cattle lost their monetary value (Chapter 5 and Chapter 6, section 6.2).

A further disruptive element came from changes in subsidy regimes in the guise of CAP reform, which was only a mooted issue at the time of data collection for this study (Chapter 6). In some respects, subsidy regime changes had only been modifications of the Common Agricultural Policy brought in to protect agriculture after WW2 (Chapter 2) until this point. What was being suggested at the time of data collection later became the 'decoupling' of payments from production (Chapter 5) and other measures. What it amounted to was the 'beginning of the end' for the CAP. The respondents reported this as particularly worrying and possessing great potential to completely change farming as they knew it. This caused much anxiety (Chapters 5 and 6).

Exogenous factors

Exogenous factors are influences that occur to a complex system originating from outside the system itself. As discussed above, a result of endogenous factors would be the impact of FMD, which led to farmers leaving the industry: tenant farmers leaving an estate give up their legal rights to the land and the farmhouse and buildings. This, in turn, allows estates to consolidate the holdings. The estate could then sell off the farmhouse – the house now being classed as an asset, priced into the farm as an additional cost (Chapters 5 and 6). In the past, farmland was valued by its grade of quality and at a set value per acre (Chapter 2, Chapter 5 and Chapter 6, section 6.5). The farm was valued by the number of acres, and the size and quality of the farmhouse and farm buildings was not factored in. Today, the farmhouse is often worth an equivalent of (or more than) the cumulative total of the land and, coupled with the development potential of any old style and stone-built farm buildings, they have become a commodity in their own right (Chapter 5 and Chapter 6, section 6.5). These factors, together, have pushed the cost of a farm beyond the reach of many of those qualified and able to maintain it (Chapter 6, section 6.5). In addition, farmers 'selling up' have found that splitting their farms into lots allows them to maximise profits. Farm sales today will more often see the farmhouse, buildings and around 30 acres marketed to the equestrian buyer and the bulk of the land sold separately – often to neighbouring farmers, leading to further consolidation and extensification of farming practice in the locality (Chapters 5 and 6). In effect, the marketing practices of the land agents are resulting in the emergence of three main types of farm. The first type is the smaller holding of less than 50 acres targeted at the 'good lifer'/'River Cottage effect'/rural idyll/equestrian market (Chapter 5). The second is land sales without buildings or accommodation, allowing existing farmers to expand (Chapters 5 and 6). And finally, the large-scale farms which cost many millions of pounds (Sterling), and which are financially out of the reach of the vast majority of those wanting to buy farms *to farm*, such as a tenant who wishes to become an owner-occupier (Chapters 5 and 6). What may be the major result of this is a vast loss of farming knowledge and/or expertise as a generation of new farmers are prevented from entering the industry. The loss of farmland to other leisure or lifestyle uses may have a long-term and unprecedented impact on farming and future food security in the UK.

This new intersection is explicitly an exogenous factor. In any business, there is a requirement that any capital invested in a project or asset should provide a better return than if the same sum was invested in a standard savings account, for example. Indeed, if the money to be used to fund the purchase is borrowed from a bank then certainly the return on the investment must be greater than (or at the least equal to) the repayments required. As the figures I have quoted earlier in the thesis show, this is not the case in farming terms. The numbers do not equate. Extensification does not always pay with land prices at this level, especially coupled with the high and increasing costs of the inputs (such as fertilizer) required to grow crops upon it. As I see it, this exogenous factor operates on two levels: using land for something other than agriculture and farming; and people coming to the agricultural land market with wealth gained from some other part of the economy. There is nothing new about this, except that historically new wealth was not used to buy farms: it was used to buy estates. During the Industrial Revolution (Chapter 2), this was a way to enter the nobility through buying a large piece of land and a stately home. The estate owner would not farm it: they would have an estate manager or farm manager, and the tenant farmer paid rent to the estate owner. Today, if people buy farms, the price of the large farms puts them in the same bracket as traditional estate owners with country houses, but as farm sizes vary, buyers can come into the landowner bracket at all levels. The essential difference between buying an estate and buying a farm is that with an estate one is buying a system: the tenants perform the farming and pay the estate owner rent. People are buying farmhouses and small pieces of land for pony paddocks – small holdings are now sold for their 'equestrian potential'. Estates are still being bought but they will also be farmed by tenant farmers or farm managers. But with non-farmers buying farms, what will happen to the farming of the land? The answer is simple, according to the Investment and Farming Press: "*Farmland is a better investment than gold*" (2010).

A recent article on the website Agrimoney.com (2010) states that "Investors clamour for land as UK slashes spending", suggesting farmland is a "…safe haven against the economic shockwaves likely to follow from steep tax rises and spending cuts unveiled by the UK today". This is borne out by the property consultancy Savills (2010), who reported a 56% jump in registrations from prospective farmland buyers, with particular interest from those with £2m-10m to spend, interest being particularly high in July of 2010 following a so-called 'austerity budget' by the newly-formed coalition

Government. The Savills publication asserted that “Combining land price rises with farming profits offered a total annual return of about 15%, making farms a very attractive investment. A fall in values is highly unlikely given the fundamentals of growing populations, food security, increased wealth, renewable energy and land being a finite resource" (Savills, 2010, p2). An example of those buying land in the UK is fund manager Braemar Securities, whose UK Agricultural Land Fund had purchased a 757 acre farm in the east of England for £4.4m in 2010. The purchase, which comprises mainly grade II and grade III arable land, takes the fund's total land holding to 1,300 acres (Agrimoney.com, 2010). This is not just a UK phenomenon: a recent article by Reuters (2011) details the clamour for land as investment in the US. The article asks “What makes farm property attractive? It has a finite supply and may become even scarcer with global warming, desertification and development. And with a rising population, more tillable land will be needed. Moreover, it could be a way to diversify your portfolio away from financial markets wracked by global debt fears. Gold has been one alternative, but farmland could be a better long-term bet. Unlike precious metals, you can rent it out and use it to grow crops or feed livestock” (Reuters, 2011).

As discussed above, money from outside farming is being injected into the system. The resultant problems regarding entry into farming may well change the system but there are other factors which may be at work which we do not yet know about. Indeed, there have been changes even since I undertook the interview data for this thesis. Food prices have risen dramatically, there has been an international recession, and there has been a much greater rise in the number of farm shops and farmers selling direct to the public through markets and farmers’ markets. Farmers would sell to the retail sector, but this retail sector has become much more powerful and restrictive (Chapter 5 and 6). Farmers have sought other ways to market their produce, especially those who have chosen to diversify into more niche and specialist markets, as in my own experience (Chapter 6, section 6.5). The shift in public interest in the provenance of food, which has perhaps resulted from food scares such as BSE, has resulted in farmers having more marketing options. Farmers’ markets go all the way back to the medieval concept of sourcing food locally. All this is leading to a ‘shake up’ of the system and a different ‘shape’ for the future, which potentially excludes the individuals who want to farm. My autoethnography highlights the fact that I am one of the people who may well be excluded from the farming system during this phase shift. People who want to get into

farming and who have every basis for getting into farming can no longer do so. The system was always difficult to break into historically, but with my connections it should always be easier than without my specialist knowledge. Twenty years ago, my husband and I could have afforded to buy a farm but we cannot at present (a full discussion of this can be found in section 6.5 of Chapter 6 and also in Chapter 5, which outlines my argument for the crisis within farming).

What does the future hold and what form will the farming system ultimately take? The answer is that there is no way of knowing. Undeniably, there will be consolidation and larger units which will produce change. The first big change in the countryside's social relations was mechanisation, and larger units reinforce this in a variety of ways. Much of Chapter 6 is about respondents' lifeworlds and their feelings about farming as a 'career'. What is interesting here is how isolation figures – farming is a very isolated job that does not involve others; farmers increasingly spend all their time alone, especially as other focal points in the social relations of farming such as markets have reduced in numbers and have been lost from counties (this is particularly discussed by respondents in section 6.4 of Chapter 6). Going to the market used to be a 'big day out' to meet friends, talk about prices, have an informal exchange and find out the local news. Also, the drink-drive ban closed many isolated rural pubs, and as farmers often have to drive to the pub because of their isolated farm locations, the loss of this socialising opportunity and the traditions those hostelries had within the community could not fail to have an impact (also discussed in section 6.4). The age profile means that there is an older population which (following retirement and/or death) may not be replaced by their children on smaller farms which are not profitable or viable, or do not provide them with the lifestyles or incomes that they have become accustomed to or could attain outside the farming industry (Chapter 6). Fewer farms and farmers means fewer friends in farming, and the loss of social institutions such as the local Farmers and Tradesmen Associations, the local agricultural shows or dinner dances (Chapter 6). There are often simply not enough people interested to keep them going. Across the country, the Young Farmers Clubs (YFC) (so numerous and popular in the past) are amalgamating as numbers of young people involved in rural livelihoods decrease. Whereas every small market town once had a YFC, today there may only be two or three in each county (Chapter 5 and 6). These issues of isolation could, however, be countered by the socialising opportunities offered by farmers selling their own produce

at farmers' markets and in farm shops. The reason that farmers' markets have become so popular is because they appeal to consumers who want to know the provenance of their food and meet the producers. This also gives the farmers an outlet for their produce where they can command a premium, or at least a better price than selling to a retailer or supermarket.

Conclusion: The Synthesis

I have, from the start, been explicit in my belief that the whole of mixed lowland farming is a complex system. One of the essential tools for understanding any complex system is the acknowledgement that every aspect of that system matters and that everything within that system occurs simultaneously and in unison. Farming is a complex open system. There is a wide range of nested systems that set agriculture as a complex system, worthy of further study. To structure this range of findings into a coherent framework, separation needs to be made into elements of structure, process and emergence.

Structure

There is no hierarchy between physical systems and social systems. The (often assumed) anthropocentric and one-sided relationship between the two, which places policy-makers and farmers in control of the physical farming system, for example, has to be discarded for a multi-faceted model of interactions, in which all agents are involved in a complex pattern of actions and responses. That means that the physical farming system is as much a driver of change as the human agents interacting within it, thus rendering the anthropocentric perspective obsolete – both horizontal and vertical connections exist between agents. Holland (1995) suggests that the vertical connections come from the idea that what constitutes a system at one level may comprise a driver in a larger system at another, hence the concept of *nested systems.*

As stated in Chapter 1, this is not a thesis determining the structure of farming in Britain: rather it is a study of the major change(s) of, and within, the system. The scope of this thesis would not allow for a discussion encompassing all aspects of the complex system that is lowland mixed farming. However, I cannot address crisis and phase shift without at least eluding to structure. I am very aware of the existence and interplay of the numerous interacting systems, and a possible future study may be to examine the points of interaction between the nested systems within the wider farming system structure.

Process

Complex adaptive systems exist because of interactions. These interactions contribute to the unpredictability of a system's development. As a result, unpredictability is a property of process. There are several elements that contribute to this which are discussed here.

Firstly, interactions are of central significance to complex non-linear developments. It is necessary to be aware of the nature of interactions in terms of feedback. Also, because agents are connected to one another, each action leads to an agent response, which in turn starts another stream of actions, with each response constituting a feedback loop. Complexity theory distinguishes between two types of feedback: positive and negative feedback (Parker & Stacey, 1994).

It has been argued in this thesis (Chapter 5) that positive feedback consists of loops that fluctuate progressively; this lies at the heart of complexity theory. Consequently, small events can lead to major consequences and major events can produce major and permanent phase shift (Prigogine & Stengers, 1984). While negative feedback reinforces the status quo, such as the Common Agricultural Policy (Chapter 2), positive feedback drives change in an amplifying, destabilising way (such as decoupling and the other reforms to the Common Agricultural Policy), as well as the isolation of the individual farmer due to the reduced workforce (Chapters 5 and 6). Again, this is independent from the type of agency, as positive feedback loops can be intentional. To add to the complexity, negative and positive feedback loops can occur simultaneously,

successively and on differing timescales (Diehl & Sterman, 1995), all in interrelated patterns. This has certainly been the case with farming. I suggested earlier in this conclusion that while one element of the crisis may have been absorbed by the wider equilibrium of the system, the accumulation of small crisis events in conjunction with the strategies adopted to counteract the events themselves (negative and positive feedback loops) has increased the stress on the complex adaptive system to such an extent that the stable state of the system is challenged and phase shift ensues. While a change from one state to another may be gradual – as we have seen with the reducing numbers of agricultural employees (Chapters 2, 5 and 6) and resulting isolation for the farmer (Chapters 5 and 6) – the concept of punctuated equilibrium can be used to explain the erratic changes observed in both physical systems (Scheffer, Carpenter, Foley, Folke & Walker, 2001) and social systems (Baumgartner & Jones, 1993). Change ensuing from pressure is characterised by periods of acceleration, alternating with periods of stability (such as the stability of the 'golden age' in British agriculture – Chapter 2 – and periods of change such as the instability of the inter-war years during the Great Depression – also in Chapter 2). The reversal into periods of fast change is not caused by a particular event at that point in time (although events can function as the final trigger) but is the result of a build-up of system pressure to the degree that the system's resilience can no longer cope with the pressure. This gives way to a new state at the point of phase shift, and I would contend that this is what we are witnessing in the lowland socio-production system of mixed farming where individual crises have occurred, either sequentially or cumulatively, over a relatively short period of time. While individual instances could have been absorbed by the wider, stable system, their simultaneous occurrence – in space and time – has produced the acute incident, fostering change and phase shift.

Farmers must want to work in the system for the system to operate, and therefore the negative feedback system must operate to maintain this status quo. Luhmann (1995), Archer (1995) and Giddens (1984) have all used feedback mechanisms as a means of explaining change in social systems. Blackman goes on to contend that: *"This is because feedback is an essential concept in attempting to understand how the interplay between the individual and society, or agency and structure, either reproduces the status quo or produces change"* (Blackman, 2000, p55). Complexity theory therefore depicts the world as being a self-organising system, either maintaining an existing state

through the process of negative feedback, or following trajectories from one state to another as a result of positive feedback mechanisms. This notion of belonging is essential to the continuance of the complex adaptive system. The maintenance of the socio-production system comes through the socialisation of the next generation, and their concurrent desire to work within the industry. A major theme of this thesis has been the lack of access that now exists for the future generation. As a result, the desire to be a farmer no longer necessarily results in individuals becoming farmers. This in turn affects the status quo and has repercussions for all the social systems associated with it.

Emergence

The study of emergence is crucial to gain an understanding of the complex system that is lowland mixed farming in Britain. To reiterate a point made earlier in this thesis, "The whole is greater than the sum of its parts. Changes are non-linear – systems change through phase shifts – radical transformations of kind rather than incremental development… complexity science is a revolutionary shift in science as a whole and that one of the implications is that the boundaries between natural and social are broken, not in the positivist direction of methodological and causal subordination of the social to the natural but rather in terms of an opening to mutual interchange… Complexity theory leads us to understand social systems as evolutionary. That means that they have histories and the histories are uni-directional" (Byrne, 2005, p2). Therefore understanding the historical development of British Agriculture (Chapter 2) is fundamental to fully grasping the interactions and relationships present in the contemporary industry. This again makes the use of complexity theory in the thesis essential as a tool for further understanding. For Byrne, "the trajectory of the system is the trace through successive time points of its location… Changes in the character of such a system which are non-linear and transformational will result in the establishment of a new trajectory occupying a different domain in the state space" (Byrne, 2005, p3).

We can say that farming is in a phase of change; how radical that change is will remain to be seen. The effects on lowland mixed agriculture, on the farming family and its wider farming community and the tenant farmer may well be the most telling. This

study certainly identifies mechanisms of disturbance that point to specific change in these areas of the system. There is also the lack of access for the next generation to follow their parents into the farming socio-production system. Numbers of farmers are shrinking and will continue to do so if this trend is born out, and this can only compound issues such as isolation and the greater geographical dispersal of holdings.

The research participants discussed isolation in the practice of modern agriculture which is increasingly dominated by technology, resulting in the loss of large numbers of farm workers, thus diminishing social interaction. They also discussed the feeling of incomprehension from those who were not in the farming system. This was especially bourn out in terms of marriage and the farmer's expectations of the role that a future wife or partner may be required to fulfil. Indeed, in the accounts of the older generations, when the future spouses of their offspring were discussed, much was said about the need to find a 'mate' who is aware of 'what it means' to be a farmer's wife. This led to many preferring marriage within the community as well as a distrust of (or lack of enthusiasm for) marriage to women not from 'farming stock'. Perhaps in past times farming women have been responsible for the home and family, but in today's industry, a woman's role may take on much more of the farm production duties. The socialisation of the next generation of farmers and farmers' wives may still occur in the modern farm home, but the role of women in farming cannot be viewed purely in gendered terms. Women often 'fill in the gaps' left by the exodus of farm workers from the agricultural sector. Women in farming are clearly aware of the social practices that are required to maintain the farm family's cultural and physical attachment to the farm.

However, the agricultural population is shrinking, as this research has already noted. An indication of this is the anecdotal evidence that suggests the number of Young Farmers Clubs (YFC) is diminishing (discussed in detail by respondents in Chapter 6). Once each small market town had its own YFC; today there may just be a handful in each county. The 'country people', farmers' children and the children of farm workers are just not plentiful enough to keep these clubs viable, and over time clubs have amalgamated or closed, and those wishing to still be a part of these social institutions are forced to travel greater distances to attend. The YFC has traditionally been the main focus for farming youth: a socialising and culturally affirming organisation. Indeed, in one respondent's terms it a "marriage bureau" for the farming community. The loss of

such organisations is indicative of the problems facing the wider farming community of the lowland mixed farming system and a further indication of *a way of life under threat*.

In summary, I can identify the existence of crisis in the documentary material. I can see it in my descriptive statistics, but I can also hear it in the *Agricultural Voices*.

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