

The virtual farmer

Past, present, and future of the Dutch peasantry

Jan Douwe van der Ploeg

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Table of Contents

Preface	IX
PART I: INTRODUCTION	1
1 Past, Present, and Future	3
1.1 Types of social cohesion	5
1.2 Time, structure, and the social sciences	10
1.3 Actors, projects, co-production, convergence, and distantiation	27
1.4 Agriculture as empirical object	34
1.5 Storylines	40
Notes	43
PART II: DISTANTIATION: CREATING RESOURCES	49
2 Dancing through Time	51
2.1 Hemmema's memorandum book: back to the 16th century	54
2.2 About farming freedom and agricultural development	61
2.3 The height of the dunging passage and other episodes	68
2.4 <i>Kreas</i> or <i>rûch</i> : the Nijboer of the Lycklemastate	77
2.5 Daniël fan Kuken: <i>rûch buorkje</i>	81
2.6 Daniël's downfall: gender relations in agriculture	85
2.7 Collective memory as part of cultural repertoire	89
2.8 Into the future	95
Notes	97
3 Farming Styles as Socio-Technical Networks	101
3.1 Farming styles in contemporary Frisian dairy farming: an introduction	104
3.2 Towards a specification of farming style as construction of congruence	111
3.3 Exploring farming styles	119
3.4 Farming styles as socio-technical networks	125
3.5 The driving forces behind various socio-technical networks	130
3.6 Differential developments through time	137
Notes	142

PART III: UNFOLDING: THE UTILISATION AND DEVELOPMENT OF RESOURCES	145
4 Capturing the Intangible	147
4.1 The multiple malleability of farming	147
4.2 The uncaptured peasantry	150
4.3 The Cartesian theatre	151
4.4 The 'farming systems' approach	162
4.5 The empirical variation in input-output relations	166
4.6 A methodological intermezzo	171
4.7 The fourth quadrant: strategic and ordering of the labour and production processes	178
4.8 Operating strategically in the first quadrant	180
4.9 Operating strategically in the third quadrant	189
4.10 Conclusions	197
Notes	201
5 The Economy as a Set of Differentiable Relations	206
5.1 Substitution curves, expansion paths, and farming styles	208
5.2 Again, dancing through time or the indefinable nature of farm development	216
5.3 From malleability to disciplining	222
Notes	225
PART IV: DISCIPLINING: THE FUTURE DOMINATING THE PRESENT	227
6 Expert System and Modernisation Project: Controlling the Future	229
6.1 The need for faith: the importance of local cultural repertoires	233
6.2 From faith to trust: the rise of the Ministry of Agriculture as expert system	238
6.3 State and market: driving structural development	243
6.4 Rural exodus as structural outcome of structural development	249
6.5 Black swans, or the micro-macro problem in agricultural economics	253
6.6 The commodity fiction	258
6.7 Interim summary: the pillars of the expert system and the modernisation discourse	265
Notes	269
7 Redundancy as Contemporary Drama and the Production of Myths	274
7.1 Influx	276
7.2 Outflow	278
7.3 On which farms does outflow occur?	283
7.4 Succession: the big enigma	289
7.5 What else happens within the category of 'winners'?	290
7.6 From farms to employment: another paradox	291
7.7 Resistance capacity: a differentiated fact	293
7.8 There is none so blind as those who will not see: the danger of myths	298
Notes	302

8 Structural Involution and the Erosion of Trust	306
8.1 The specificity of scale enlargement as contemporary episode	312
8.2 Why does scale enlargement occur anyway?	317
8.3 The erosion of trust	323
8.4 'Tripartite world'	331
Notes	335
9 The Battle for the Future: Current and Countercurrent	339
9.1 The new current	339
9.2 A quantification of rural development	348
9.3 The why and how of rural development	356
9.4 The impact of rural renewal revisited	363
9.5 The Ministry of Agriculture as non-agency: a case study	366
9.6 The countercurrent	371
9.7 Is juxtaposition possible?	373
9.8 Current and countercurrent: unmanageable tension	376
9.9 Landscape as ordering principle	379
9.10 The immanent decline of Dutch agriculture	383
Notes	384
PART V: ACTOR AND STRUCTURE	393
10 Structure, Time, Knowledge, and Power	395
10.1 What is structure?	397
10.2 The ordering elements of today: distrust and discongruity	401
10.3 On time, power, and social practices	402
Notes	404
References	408

Preface

It has become generally accepted that Dutch agriculture faces many problems. Various contradictory theories and stories are doing the rounds about the nature and possible causes of these problems. Over time, these theories and stories have come to appeal to me less and less. I now see them rather as part of the problem.

In this book, I will present a different account of both the problems and their causes. At present, the central problem is the generally shared *image* of agriculture and the countryside. This prevailing image is represented by the title of this book. The *virtual farmer* stands for the agricultural entrepreneurs – and their partners, their histories, their work, their environment, and so on – as we *think* they are. However, the real farmers – their work, their environment, their points of view – are further and further removed from this image.

This does not have to be problematic, if only the image of the *virtual farmer* was not used increasingly in policy-making, as a basis for agricultural policy, environmental policy, spatial policy, etc. Therefore, new frictions and new problems have emerged. At worst, it sometimes results in the real farmer being manoeuvred into operating in a seemingly clandestine manner. By introducing the *virtual farmer*, we have created an insurmountable problem.

In this book, I will discuss at length the way in which agriculture and the countryside are represented. By implication, the *expert system* in and around agriculture, the producer of the virtual image, and the Ministry of Agriculture, Nature Management and Fisheries, its foremost user, will be involved in the analysis.

At the beginning of the third millennium, we find ourselves at a crossroads. We have left behind us the path followed in the past – a path still covered with numerous misconceptions. Ahead, two roads beckon us to the future. Along the first one, usually identified as rural development, it is possible to define new, yet fragile, development opportunities. The other is the road of accelerated scale enlargement and continuous industrialisation of farming.

As a result, for the first time in history, the survival of Dutch agriculture is at stake. The interaction between theories and policy interpretations centring around the *virtual farmer*, as well as the far-reaching choices ahead, do not at all exclude the demise of Dutch agriculture. At the same time, it puts at risk the preservation of our beautiful rural areas and the production of high-quality and safe food.

This book also includes a search for what in social sciences is called the 'ordering moment'. What are the guiding and driving forces making agriculture and the countryside into what they are? Although I do not want to anticipate the answer at this point, the principles ordering agriculture and the countryside are, at the present, to a large extent those of ignorance and irresponsibility. Standing at the aforementioned crossroads, this does not ease my mind.

Over the past years, I have been closely involved with the developments in agriculture – sometimes with farmers and growers working directly on new solutions, sometimes in Brussels and The Hague with policymakers, at other times as a researcher. With hindsight, I think that *multiple involvement* is one of the most important methodological principles imaginable. If only because multiple involvement not only urges posing the 'why question', but it also leads constantly to the question 'why not?'.

In certain respects, this is a long and complex book. In Section 1.5, the reader will find an overview of the various storylines; a bookmark, as it were. Detailed methodological explanations are indicated clearly in the text. The less-interested reader might want to skip these sections.

I have been working on this book for a long time; the first fragments date from 1994. Work on the book was sometimes like keeping a journal. The waves of optimism and pessimism resulting from my multiple involvement will no doubt reverberate through the following chapters. Over the years, I have been able to tap many sources and use various corrective mechanisms. The first mechanism is the lectures I gave usually once a week, sometimes more often, to local organisations, to groups, and to associations of farmers. Giving lectures and participating in debates constitute powerful mechanisms for testing the development of one's ideas, for gaining insights, and also for being rudely brought back in line. The second corrective mechanism is being part of the Council for the Rural Areas, which has been an ideal seedbed for me. Particularly, since the Council's attention is inevitably broadened towards a general view on agriculture and the countryside. The expertise, serenity and humour I encounter within the Council are both inspiring and correcting. Just like giving lectures, participating in such a council is one of the best instruments a researcher could wish for.

Third, I would like to refer to the work of our research group. Initially, its emphasis was largely on the exploration, description, analysis, and theoretical elaboration of farming styles. Later on, the emphasis shifted to rural development. The group laid brick after brick, enabling us to eventually build walls such as in Amelia in Umbria (Italy).

At the risk of forgetting too many researchers, I would like to mention several who have made important contributions, directly or indirectly: Sicco Antuma, Bettina Bock, Froukje Boonstra, Wijnand Boonstra, Rudolf van Broekhuizen, Ellie Brouwer, René de Bruin, Monica Commandeur, Adrie van den Dries, Jasper Eshuis, Maarten Ettema, Peter Gerritsen, Ab Groen, Erik Hees, Ina Horlings, Greet Kerkhove, Gerard Kolkman, Geesje

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Ans van der Lande, Paul van der Haar, Jaap Bijkerk, and Maarten Ettema have shown total dedication to the technical and editorial conclusion of the book, while Guy Ackermans, Bert Jansen, and Twan Wiermans attended to the pictures. I owe special thanks to the board and staff of the accountancy firm AVM/CCLB in Leeuwarden, Friesland.

International discussions have been of major importance for me in the completion of this book. The agricultural debate in the Netherlands usually takes place within the space of a few suffocating square metres, tightly demarcated by the prevailing conventions. Broadening the debate beyond those boundaries comes as a breath of fresh air – literally and figuratively. Furthermore, the comparative approach is essential in order to recognise the relativeness of the prevailing axioms. Colleagues who have inspired me greatly are: Silvio Antonello (who died too early, alas), Michele de Benedictus, David Booth, Arturo Cristovão, Chris Curtin, Marcel Jollivet, Bertrand Hervieux, Karlheinz Knickel, Philip Lowe, Joe Mannion, Terry Marsden, Pierluigi Milone, Sergei Nickolsky, Jose Portela, Cees de Roest, James Scott, Eduardo Sevilla Guzman, Frank Vanclay, and Flaminia Ventura.

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Jan Douwe van der Ploeg

Wageningen, October 1999

Part I

Introduction

1 Past, Present, and Future

We generally imagine society and the practices and processes localised in it, as ordered by historically rooted patterns and relationships. Yet this idea, found in and promoted particularly by the social sciences, is increasingly open to challenge. Indeed, this idea becomes an obstacle to an adequate understanding of social processes and developments. However improbable it seems at first, contemporary society is increasingly ordered in a roundabout way – that is, via the future.

Human activity is always and everywhere future oriented. *Somos lo que vamos a ser*, we are what we are becoming, according to Ortega y Gasset (1995, p. 277).¹ This does not pre-empt the fact that the relations between past, present, and future are subject to radical changes. The way in which future-oriented actions are constituted and founded has changed drastically.

Within societies that are generally regarded as traditional, the future was understood, and subsequently created, as a repetition of the past. Previously acquired experiences plotted the course of the future. By pursuing that course in the present, the future became a repetition of past relations. The past was reproduced via the present through collective memory, through the fear of deviating from it, as well as through the convenience of the tried and true. Thus emerged a straight and above all narrow road, running from the past, via the present, to the future. A crucial role was played by what sociologists call *Gemeinschaft*. Well-defined norms applied to the levels of community, family, village, and vocational group. One had to act according to norms reflecting what was well-tried, what was historically just. Deviation resulted in sanctions.

A radical change was introduced into this initially monotonous scheme, during the period defined as the age of modernisation.² The past turned from guiding principle to starting point, to be built upon in various ways; no longer according to the strict rules inherent to the *Gemeinschaft*, but according to new degrees of freedom applying to the *Gesellschaft*: people belonged to a class, to a society, they were part of markets, and they shared in the blessings of technical development.

On the one hand, this new constellation introduced an often considerable set of limitations; on the other hand, it accommodated further unfolding and unfurling. Starting out from the foundations created in the past – and embodied in particular practices, resources, knowledges, and opportunities – various roads were developed towards a future that could be understood as a multifaceted process of unfolding the potentialities situated in what had been established so far (Kosik 1976).

Thus, the present became an important link. It had been built on the past in specific and often contrasting ways. Hence, the future appeared as a vast array of possibilities – that is, those possibilities contained in the present to be utilised and realised subsequently.

At the moment, we already have one foot in an ensuing constellation,³ which I will call, for the sake of convenience, the postmodern. In this constellation, the future is no longer the multifaceted utilisation and unfolding of development opportunities situated in the present. Instead, the future becomes a beacon, strongly conditioning contemporary actions. If future-oriented actions were initially based in the routines of the past and later became founded on, and hence defined by, the opportunities located in the present – today, the construction of the future is systematically disconnected from both. History becomes almost irrelevant, and the present is reduced to merely a (more or less favourable) run-up to the future. The burning questions are who, or what, will in which way, construct the guiding images of the future.

All in all, the moment of ordering has shifted dramatically. Initially, this moment was hidden in history (for the future could not be anything but a repetition of the past). Collective memory, with its defined normative frame, constituted the moment of ordering *par excellence*. Later, in the age of modernisation, the moment of ordering shifted to the present: even though the past was still built on, the way in which this happened was highly variable. The present became an essential, albeit highly variable, link between past and future. Taking the former achievements into consideration, one chose and realised multiple roads to the future. Thus the future became freed from its ties with the past.

If every moment represented a particular reality, it also contained various development opportunities, various routes to the future. Of course, of all those possibilities, only one could be realised in any given situation. Agency – that is, the capacity to achieve something – became decisive in this dance from reality to the future.

At present, the ordering moment is, to a large extent, located with those⁴ who are able to specify where we are heading. However astonishing this may initially seem, images of the future almost irresistibly determine what we do today.

Social developments and practices are increasingly ruled and directed by such images of the future. In a way, the present becomes shackled by the limited and compelling images of the future that we create; for these images of the future define what is, in the here and now, sensible and rational and also what is absurd and irrational.

Remarkably, and in sharp contrast to the previous phase, these are no longer multiple and mutually contradistinctive images of the future (every one of which can potentially be realised) but instead they are compelling and exclusive. Only one option is regarded as feasible and legitimate. If a certain reality contained various alternatives in the past, now one single option acts as the selective frame in defining the preferred (or unavoidable) future reality. Institutionalised images of the future have become the pre-eminent moments of ordering. The expert systems that

have emerged in recent decades are the most important carriers of this process.

Megaprojects (see Scott 1997)⁵ now constitute the largely contested, but still highly imperative frames that orient the actions of various actors towards one set of parameters: towards the future constellation that facilitates 'profits' and in which it is better to participate than to stand aside. Expert systems are crucial in constituting these megaprojects.

A similar development can be encountered in the markets. The most important markets no longer deal with commodities that are produced and traded here and now – they are concerned with the future. On option markets (and on stock markets) 'trade' is in expectations: trade is about the opportunity to supply and sell a certain commodity at a future price. The same applies to stock markets: they are inspired and constituted by expectations about future profits. Crucial in all this is that the actual trade taking place at present is dominated by the trade in expectations.

Figure 1.1 summarises this argument. In traditional society (1a) past, present, and future were in alignment with each other. In modern society (1b) the present contains a series of alternatives. Starting from currently available resources various prospects can be realised. Finally, in postmodern society (1c) 'disciplining' originates from the future. Only one future is considered possible, to which present practices are subordinated. Future resources, rather than current ones, become critical.

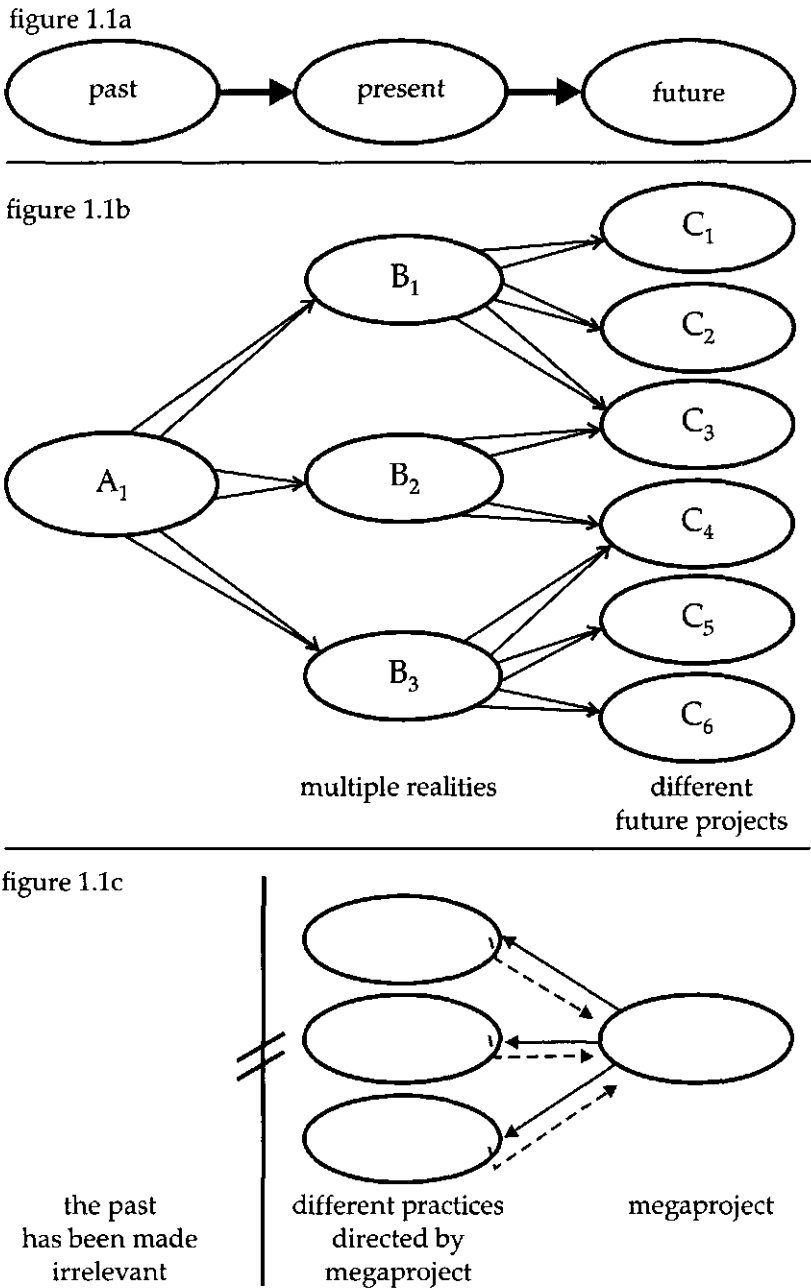
1.1 Types of social cohesion

The crucial cement in traditional societies is constituted by what is tried and true. Everyday life is shaped by faith in what are well-trying routines, and by faith in those organisations and individuals that embody and/or express this faith most adequately. Social practices are ordered through such faith – similarly, the compass is oriented to the past via this faith in what is familiar and well-trying; thus the past is carried towards the future, via the present.

In other words, the habit of drawing on the repertoire of what is tried and true emerges here as one of the most important ordering principles (or, following Law 1994, one of the most important 'modes of ordering'). The normative frame – 'do as we always have done because it is right in itself' – is the foremost medium for maintaining the continuity that connected past, present, and future. It provided social cohesion.

In modernising societies, this normative moment, which focuses on what is tried and true, is replaced by agency: the ability to realise one's own future projects. Here too faith is a vital ingredient, yet this is no longer the same faith that once was the cement of traditional societies. Now it is confidence in one's own knowledge and capacity. Integral to all this is confidence in the realisation of new alternatives that build on the resources developed thus far and in the ability to develop the required connections with others.

Figure 1.1 The relations between past, present and future



Thanks to agency, the various projects of Figure 1.1b can be realised. The question of what is possible is always crucial. Knowledge (whatever the type) of new possibilities that reach beyond both what is well-tried and what is considered right becomes a decisive factor. Knorr-Cetina provides an accurate definition of the difference between these two phases:

'Not only has order become a cognitive (including linguistic) rather than a normative phenomenon, it has also become a man-made rather than a man-coercing matter: it is produced, contested, repaired, organised and displayed in concrete situations whose definition became the subject of continual accomplishment and interruption' (1981, p. 6).

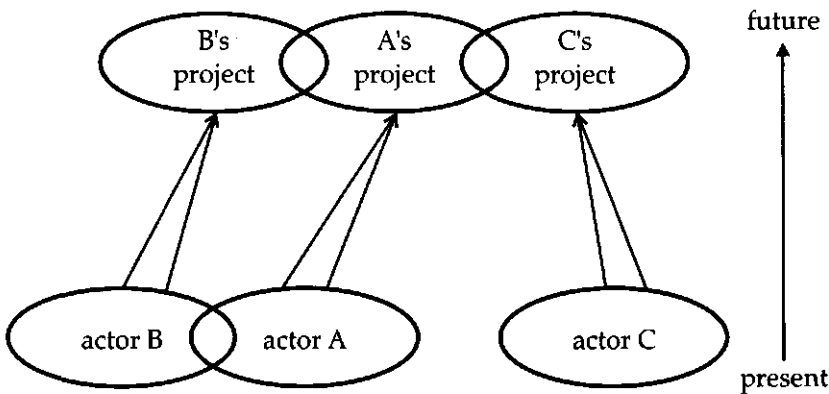
Increasing differentiation is characteristic of 'order as a man-made matter'. Available resources (both material and social) are unfolded and developed in increasingly different ways. Hence, different and mutually contrasting realities (multiple realities) emerge, each providing their own starting points for further evolution. Apart from the social, the material too produces an ordering effect.⁶

In retrospect, the high degree of institutional clustering that seems to rule the contemporary, post-modern world was largely absent in modernising societies. At present a semi-coherent system of artefacts, rules, procedures, agendas and expectations – in short a technological regime (Rip 1995; Rip and Kemp 1998) – directs, informs, and sanctions social actions to an extent that can almost be described as coercive. In contrast, a much more diffuse process of variation and selection was in operation during the modernisation phase. New development opportunities (such as those represented in Figure 1.1b) were not judged *a priori* by the degree to which they were in alignment with dominant development projects. Variation originated from every nook and cranny. The evolving practices themselves formed the basis for the judgement of what was 'better' and what was 'worse'.⁷ Variation increased and selection followed later. The selection was *ex post* and essentially made by the parties that were directly involved.

These ongoing processes of variation and selection merit further discussion. First, the unfolding of development opportunities – that is, the pursuit of particular development projects – should not be understood as a mere individualistic enterprise. Just as the actions (of any individual actor) can only be understood as the concomitance (interlocking)⁸ of and/or distantiation⁹ from different practices, individual projects can only be realised if they are founded in the required degree of coordination – that is, if they become part of a larger system of interlocking projects. Actor-networks are crucial in this¹⁰.

This is illustrated in Figure 1.2. Actor A only has a chance of realising their specific development project if they succeed in realising the essential convergence with B's and C's development projects at the right time. Say, B and C stand for the dairy industry and a neighbouring farmer, respectively. So far, A has had little to do with C (there is currently no interaction). However, since A's 'project' anticipates a rapid expansion (more land, more quota, more room for ammonia emissions, etc.), partly because this is expected by B, the future disappearance of C (and hence the transfer of development opportunities from C to A) can be crucial for the realisation of A's development project.

Figure 1.2 The convergence of projects



The degree to which convergence of development projects is created thus emerges as one of the most important ordering principles.

'Instead of being seen as a monolithic system which regulates individual action, order comes to be seen as an upshot of concrete, communicative interaction [. . .] Social order is not that which holds society together by somehow controlling individual wills, but that which comes about in the mundane but relentless transactions of these wills' (Knorr-Cetina 1981, p.7).

In the postmodern constellation, a new 'cement', a new mechanism for maintaining cohesion can be identified: Trust.¹¹ Trust refers to the necessity to follow more or less implicitly, and to rely on, a system of objectified parameters defining rational versus irrational alternatives for action. In this context Galjart (1998, p. 13) speaks of 'trust in systems'.¹² As social cement, trust contrasts sharply with the normative and cognitive mechanisms discussed above. What may, and should be, proved is defined by new frames. The (decentralised) production of multifarious knowledge becomes replaced by a new approach: how to organise knowledge in a centralised way. This requires a particular carrier.¹³ If collective memory and widely supported normative frames were initially important and later replaced by the capacity to make a difference, as supported by various and varying groups of actors – trust is accompanied by a new carrier, the expert system. That is:

'a system of technical accomplishment [and] professional expertise that organises large areas of the material and social environments in which we live today' (Giddens 1990, p. 27).

Figure 1.1c illustrates how a certain (as yet not existing) image of the future is specified within, and through, the expert system. Only later will the means and rules through which this image will be designed and implemented become evident. This realisation takes place via the simultaneous coordination of various, apparently unconnected, practices. The extent to which such a coordination occurs depends directly upon trust, upon the supposed certainty that adjusting one's own actions to the

specified image of the future achieves better results than diverting from the image.

The outcome of modern courses of action (see Figure 1.1b) is a highly heterogeneous world, a set of contrasting practices, which, due to a particular organisation of interrelationships, collectively compose a system that is able to operate due to the realisation of sufficient degrees of freedom for each of the discernible practices.

In the postmodern constellation (see Figure 1.1c), on the other hand, society tends towards uniformity. Since expert systems radically restructure the relations between 'the universe of the undisputed' and the 'universe of discourse' (Bourdieu 1977, p. 168) and between what is and what is not allowed, a process of ordering emerges that puts great pressure on, or eliminates, the heterogeneous nature of social relations and practices.

Expert systems create a new 'domain of the undisputed', a new '*habitus*' (Bourdieu 1990) of their own: that is, a world as it should be; not because there would be some sort of subjectivity or intersubjectivity, but because this 'world', this future, would be determined objectively by laws that are understood in and by the expert system. I will discuss this at length in the following chapters, particularly 4, 5, and 6.

Incidentally, it should be mentioned that in the creation of a heterogeneous world the phrase 'everything goes' definitely does not apply: the world cannot be moulded and shaped at will. Co-production and co-evolution always play a key role in the development of the various practices, that collectively compose a 'heterogeneous world'. I use these concepts to refer to the interaction between, and the mutual transformation of, the material and the social. Farming can be understood as a special type of co-production, precisely because here the material largely coincides with the living world.

The living world (animals, crops, soil, ecosystems in the wider sense, etc.) is not only exploited by agriculture; it is also continuously unfolded, recombined, enriched and/or depleted by it. In short, the resources that are derived from nature, and which remain part of nature at the same time, are particularised in, and through, farming to contain new, always specific, possibilities but also new, again specific, limitations. In terms of Figure 1.1b: you cannot jump from B1 to C5 just like that. For example a high-yielding Holstein cow cannot suddenly be put on a low-energy diet. In summary, people draw their own boundaries in and through their interaction with nature (that is, through co-production). And where one considers jumping over the boundaries, it emerges sooner or later that the material, and certainly the living world, cannot be understood and treated as if it is as 'malleable as clay'.

Similarly, the social world has its own characteristics. Various examples will be discussed in the course of this book. They are partly related to the particular requirements resulting from co-production: not every form of social organisation matches the particular kind of co-production and co-evolution in agriculture. Disregarding those particular requirements (a

remarkable characteristic of current expert systems) can result in extreme disruptions and irreversibility (Scott 1998; NRLO 1997b).

Finally, when expert systems become dominant, in the sense that they reduce the expanding set of future possibilities to one exclusive alternative, selection changes its nature. Then there is no longer concern about an *ex post facto* selection, but rather about an *ex ante* selection: only those actions that correspond with the preferred future count as valid. All the others become delegitimised from the very start. It goes without saying that this has radical and highly negative effects on the production, and maintenance, of variety.

1.2 Time, structure, and the social sciences

Just as every revolution is decorated with the colours and symbols of the previous revolution (Groen and De Buch 1968), the social sciences try to unravel existing constellations by using concepts that were developed to understand the previous ones. The modernisation period – characterised by its highly differentiated nature, by a process of simultaneous unfolding of various, contrasting projects (see Figure 1.1b) – is usually approached with a concept of structure derived from, and corresponding more closely with, the previous, traditional situation. Central to this concept of structure are causal complexes, which precede certain outcomes (see Figure 1.1a). Because a certain cause cannot produce contrasting effects, the explanation of heterogeneity (see Figure 1.1b) becomes an almost insoluble problem from the outset.

The same is repeated under postmodern relations. Attempts are made to understand practices that are increasingly standardised, if not ‘caged’, by the dominance of the expert systems (see Figure 1.1c) through the application of an adage better suited for the modern era: ‘agency is going beyond structure/structure follows action’. Again, a major problem arises; that is, to understand how convergence, homogenisation, and coercion increase in an apparently free world.

In all societies, regardless of time and space, regularities and recurring patterns emerge. These regularities constitute the blessing and the curse of the social sciences. They constitute the starting point, but often also the Waterloo, of the enterprises of economists, sociologists, and historians.

Such regularities, irrespective of where they occur and of their nature, always lead to a set of interrelated questions, which I will briefly summarise here.

- 1 To what extent are the observed regularities absolute? What is the importance and relevance of the exceptions, the ‘black swans’, which, on careful inspection, can generally be found as well? And subsequently, what influence (if not bias) do the methods have with which we construct these regularities? How do we get to determine regularities at all?
- 2 What do these regularities mean? Do they mark out the undisputed from the discursive, the fixed from what might still be variable? Do

- they refer to a frame in which human action and, more generally, social development necessarily has to take place?
- 3 What do the occurring regularities refer to? Do they offer information about underlying structures (irrespective of their nature) imperatively directing human action (and hence social development)? Do they refer to cause – effect relations with which the observed (or constructed) regularities can be regarded as resulting from underlying causal complexes? Or are they rather the expression (and/or representation) of temporally and spatially bounded conventions, which should be considered as fluid and variable?
 - 4 More precisely, how do the different regularities, the different conventions, relate to each other? And maybe even more importantly, what role does our ability and/or inability to gain control over the occurrence of regularities play in the actual ordering of the world?

Social practices contain certain regularities. They follow certain patterns, a certain logic, resulting in a certain course, a certain pattern, becoming self-evident truisms: 'that's just the way it goes'. Observers of the agricultural sector will come across countless, and often impressive, examples of regularities. These are usually examples that reach far beyond specific locations in time and space.

Whatever the place or time, agriculture is generally organised into small units, which we define nowadays as family farms – that is, units in which labour and capital are combined in one and the same person. Farm men and women are not only owners of most of the means of production, they also do most of the productive work. Management as an isolated factor is absent: mental and manual labour are combined in the same person. All this constitutes a remarkable contrast to the industrial organisation in the urban economy (Braverman 1974) where design and implementation, mental and manual labour are usually separated, as are the ownership of the means of production and the realisation of the actual labour and production processes.

Other regularities are more confined in terms of time and space. There are periods in which farms are systematically and purposefully reduced in size (Staatscommissie 1912, pp. 477, 492), whereas in other periods there seems to be a universal tendency towards farm enlargement. These seem to be almost general processes within the boundaries of the period in question. Someone who looks further into this will recognise the particular and the temporary.

Similarly, regularities are spatially confined. Hayami and Ruttan (1985) show, in a comparative analysis at the global level, how there is ongoing intensification in certain regions, while scale enlargement emerges as the dominant development pattern in others, and stagnation is most striking in others. A similar spatial differentiation can be found even within the European Union, where similar economic relations increasingly apply and where new technologies are basically accessible to every one (Van der Ploeg 1991, p. 65).

Why do regularities exist at all? What are their roots? What exactly do they consist of? And why does one pattern sometimes replace another? These essential questions are asked repeatedly within the social sciences and many answers have been offered. In this book I will try to relate these questions to the way in which past, present, and future are connected.

Regularities are, to summarise a large part of social science theories, the outcome of a certain ordering: the result of an ordering that, it is often assumed, is produced in the last instance by a certain structure. There are, to summarise further, certain, clearly definable and identifiable structures that order human action, i.e. different social practices.

Structures form the guiding principles for action, they lead action in a certain direction. Hence, regularities emerge, which in turn constitute an argument for further (conformation of the already introduced) ordering: indeed, 'that is just the way it goes'. One can try to set up an industrial farm (based on labour – capital relations), one can try to escape the necessity of farm enlargement, but sooner or later such attempts will fail. The course of history – structural development, as one says in agricultural circles – is irreversible.

Alongside the question of where to locate such a structure (within the predominant mode of production, in the system of norms and values inspiring and informing human action, in the system requirements inherent in every society, within the combination of opportunities and limitations contained in every situation, within the relations situated in markets, in the development of technology, or within the combination of technological and economic development?) the question of how to imagine such a structure emerges. In essence, the latter question leads us to the relation between cause and effect, to the interrelations between past, present, and future.

Within the space of this section it is almost impossible to do justice to all that has been said about this issue (for an excellent discussion about the structure concept in agriculture, see Benvenuti 1990). Therefore, I will confine myself to a simple contrast: the image in which structure is represented as a *skeleton*, as the carrying framework, versus the concept of structure as a *process of ordering*, as that which is being built.

A favourite image represents structure as being like a skeleton. Just as a skeleton shapes the human body (at most one can be fatter or thinner), structure shapes human action. In other words, action is conditioned by structure: certain actions are possible, others are ruled out. I will never be a sprinter with my hip dysplasia.

Apart from the analogy with the human body, reference is frequently made to large-scale constructions: a modern high-rise block of flats contains a framework, a skeleton made of reinforced concrete (Giddens 1992, pp. 19, 731). The framework is fixed. Within the possibilities of the framework, only certain rooms and arrangements can be created.

In short, structure is coercive. Certain possibilities are ruled out, while other possibilities present themselves as obvious. Furthermore, structure precedes subsequent actions. Action is determined by structure; and structure precedes action. Hence, structure is in essence external to action.

Structure as process of ordering

As indicated in Figure 1.1b, certain realities contain certain development opportunities, while ruling out others at the same time. This goes back to elements that I will analyse and explain further in Chapter 3. In essence, it means that the mobilised resources are shaped, are differentiated, into particular resources. In plain English, a beef cow is not a dairy cow, and it is impossible to change her into a dairy cow overnight.¹⁴ The same goes, for example, for the craftsmanship of a beef farmer; it differs remarkably from a dairy farmer's. By implication, there is little use in abruptly replacing the herd (selling beef cattle, buying dairy cows); the necessary craftsmanship will still be missing. The same applies to the capacities (the 'abilities') of the actors involved: they know how to realise, utilise and further develop certain matters, but not others. And finally, the networks: there are certain relations that can be built upon, while other relations are missing and cannot be developed just like that. It is questionable, for example, whether a dairy factory is willing to accept a new supplier, especially one with no experience of dairy farming.

Further illustration will not be necessary. A particular constellation has been built up, including networks, resources, and actors (often summarised in this context in terms of socio-technical networks);¹⁵ a particular 'system' that contains its own development opportunities and rules out others. This particular process of ordering directs and shapes future-oriented action to a large extent, but not so much in the classic, determinist sense. What orders (or 'structures') here is the already constructed practice, not something external to that practice.

Similarly, the situation of the beef farmer (I use the example one more time) contains various distinct possibilities. He or she can gradually develop their farm towards high-quality cattle (focus the use of his resources into one direction) and develop the networks necessary to pursue this goal. However, other options will present themselves too: to continue beef production whilst sharply increasing its scale, *et cetera*. Whatever alternative is chosen (can be chosen), the process of ordering will always be continued. Ordering is an ongoing process, and a process that largely directs itself. I have summarised this again in more detail in Figure 1.3.

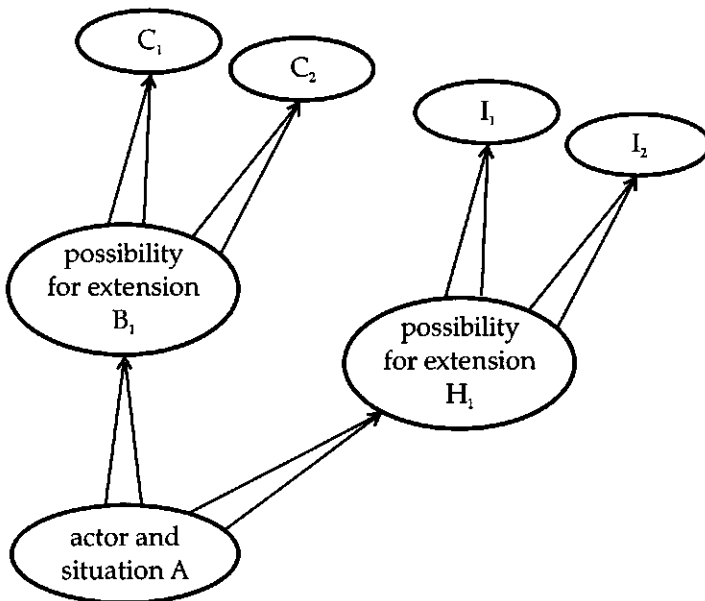
Of course, the unfolding of development opportunities, the realisation of a particular project that builds on what is already realised, does not happen in isolation. Whatever possibility is pursued and realised, interactions with the development projects of others will always be at issue. Frequently this will be translated through abstract, depersonalised categories. For example, what developments are taking place in the markets? Of course, these issues are taken into consideration in the unfolding of one's own project. External developments are followed, interpreted, and translated into one's own actions, into further-reaching processes of unfolding.

Again we have to conclude that this does not involve unidirectional determination. Not everyone has made himself equally dependent upon external developments, upon other projects. Some meat producers, for instance, will have made extensive use of external funding. They have let their own development project converge largely with the particular development projects of banks. Consequently, in case of further expansion they have to take account of the parameters applying to capital markets and of the requirements of the funding organisations. This will not apply to other meat producers who have based the construction of their farm on their own savings and/or family capital, or if it does apply it will be less significant.

Analytically, integration and distantiation thus become important key concepts. In more general terms, the network of relationships connecting different projects becomes decisive in the further construction of practices. What is important to note here, however, is that the nature of these networks can vary considerably.

In a way current practices constitute the result of former processes of unfolding. In turn, these practices (the particular and fine-tuned systems of resources, capabilities, and networks) direct and order the further processes of unfolding, which will undoubtedly leave their mark on subsequent possibilities and impossibilities. That which has been constructed in a certain practice structures the further development of that practice. Hence, regularities emerge: patterns of coherence and continuity. In turn, they refer indeed to something that orders, to something that structures. In other words, there is absolutely no need to deny that 'actors' choices can be constrained' (Harris 1997, p. 11).¹⁶

Figure 1.3 Ongoing process of unfolding



Essentially, that which structures is not external to, but inherent and implicit in, the practices themselves – that is, in the practices that the actors involved realise themselves, in mutual interaction with others and with other things. In essence outside of these social practices (in their broadest sense) there is no other structure that orders these practices as a given ‘skeleton’.¹⁷ The structuring element is contained in the practices themselves: in the unfolding and, therefore, in that which is unfolded. To unfold is to structure, and structuring takes place through processes of unfolding. This is not to deny the influence of distant practices, of practices situated elsewhere, or the influence of ‘interactive systems over which they [i.e. the actors involved] have little control’ (Booth 1994, p. 39).¹⁸ In so far as such ‘interactive systems’ (or ‘networks’ as I have defined them above) and external parameters, such as the interest rate, given in the previous example, exert any influence this will occur through the interaction between the ‘internal’ and the ‘external’ – never unilaterally and deterministically from the ‘external’.¹⁹

Agency – the capability ‘to make a difference’ – and networks are two essential concepts in the development of a non-determinist concept of structure as construction, of structure as situated, and inherent, in social practices – hence, of structure as a heterogeneous and evolving phenomenon.

The concept of agency occupies a prominent position in contemporary sociology. According to Giddens:

‘Agency refers not to the intentions people have in doing things but to their capability of doing things in the first place . . . Agency concerns events of which an individual is the perpetrator, in the sense that the individual could, at any phase in a given sequence of conduct, have acted differently. Whatever happened would not have happened if that individual had not intervened’ (1984, p. 9).

In other words, agency is the capability to make a difference, the art of changing the course of events; the capability, in summary, to turn one’s own situation into something different, into something that would not have existed, or that would have been different, if the actor in question had not intervened.

What does this ‘capability of doing things’ depend upon? The problem with Giddens’ definition is that too much emphasis is placed upon the individual. As I will show in this book, agency expresses itself nearly always as a manifestation of several actors and explicitly not as something of which the ‘individual is the perpetrator’. Even if it involves only one individual, the action expressing his or her agency should absolutely not be considered as an individualistic action. An individual only displays agency in interaction with other people or with other things.

Second, it is not clear from the quoted definition (which applies to Giddens’ oeuvre, *tout court*) what it is an actor draws from to realise agency (hence there is little left but to represent it as a somewhat mythical individual attribute). What resources are mobilised to produce agency?

A more adequate description that addresses this problem, is presented by Long.

'[A]gency attributes to the individual actor the capacity to process social experience and to devise ways of coping with life, even under the most extreme forms of coercion. Within the limits of information, uncertainty and the other constraints (e.g. physical, normative or politico-economic) that exist, social actors are 'knowledgeable' and 'capable' (Long 1992, pp. 22 – 23).

Agency is made concrete in this definition, especially by pointing out what it relies on and builds upon: the capability to process and utilise the experiences gained thus far and also the capability to face existing and/or imminent difficulties (it should be noted explicitly that these difficulties are of a social nature – that is, concern the interrelations among actors and between actors and things). *En passant*, I want to mention that agency is discussed here as something that 'is attributed' to the individual actor, which implies that agency does not necessarily have to be rooted in or stem from the individual – even if it seems that way.

Third, when we speak about agency we should also mention its opposite ('non-agency'). Alongside the capability to make a difference, the opposite, incapability, also frequently occurs.²⁰ Without the latter, we cannot define the former.²¹ Without non-agency as a conceptual and empirically manageable counterpart, agency becomes a non-concept.²² A number of the issues raised here can be solved by involving the future-oriented nature of social action explicitly in the analysis. I will do this by way of Figure 1.4, which builds upon Figure 1.3.

Effective unfolding (from the initial situation A) along the first track (from A to C₁ and subsequently to C₂) is only possible if C₁ and subsequently C₂ can be effectively woven into the required relations. If we consider C₂ as a project in which strategic and future-oriented actions are united, C₂ can only be realised if coordinated and actually interwoven with other relevant projects.

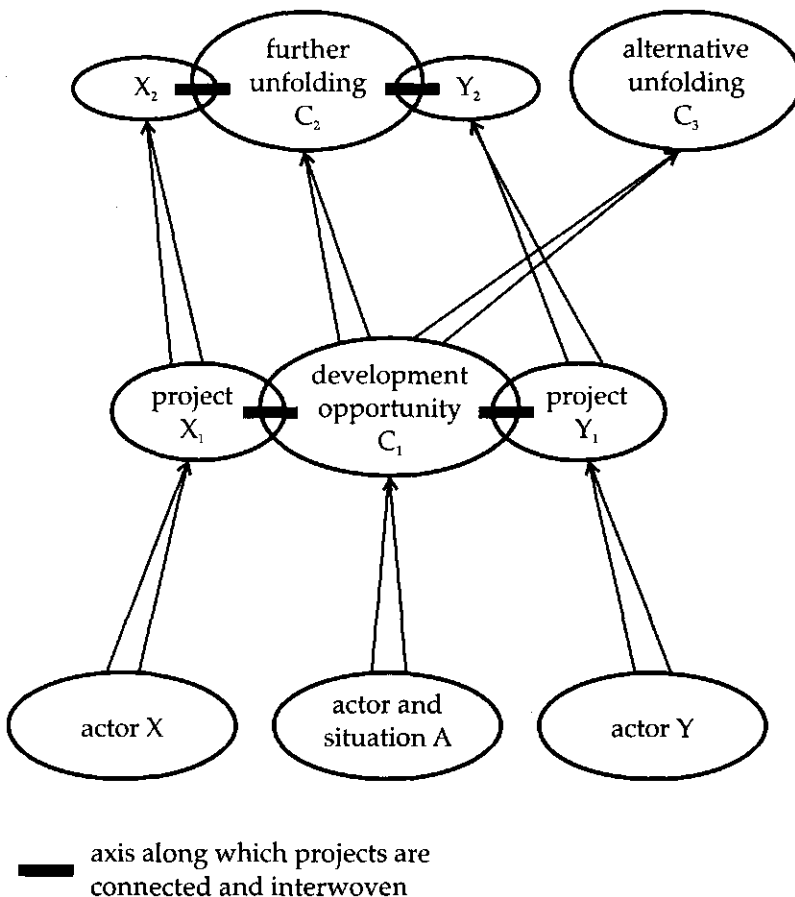
Par definition, un projet . . . est une fiction, puisqu'au début il n'existe pas (Latour 1991b, p.155).

The essence of a project is that it does not yet exist, but that it has still to be realised. Let track 1 be the above-mentioned quality option of the beef farmer (the example returns once more). It will only be possible to realise this project if it interlocks with various other projects (first with X₁ and Y₁, subsequently with X₂ and Y₂). Groups of consumers will have to be interested in high-quality meat; they will also have to be able to recognise this. Butchers will have to be willing to distribute the meat as a distinctive product. Abattoirs are needed that are willing to slaughter an, initially, limited number of animals. And so on.

It might be possible to think of alternatives (for an empirical sketch describing production, processing, distribution, and consumption of beef from nature reserves, see Kuit and Van der Meulen 1997; Ventura and Milone, 2000). However, it remains to be seen whether these alternatives

correspond with the way in which government implements and enforces hygiene regulations – which, in turn, could depend heavily on developments in the agro-industrial complex. More generally, it is highly conceivable that X (for example, the agro-industry) and Y (for example, government) establish their positions (X_1 and Y_1 and later X_2 and Y_2) to such an extent that actor A is left with only one trajectory (for a general view, see Burawoy 1985; and with regard to agriculture, see Benvenuti 1982, 1989). Thus it becomes, for example, impossible to realise C_3 – unless actor A can actually develop mechanisms to distance himself from X_2 and Y_2 .

Figure 1.4 The interaction between projects and the construction of networks



'Realising things' (of any nature) always happens through others, although to a varying degree – through other actors, through institutions, through artefacts, etc. An 'actor-network' is needed: a set of precise (i.e. not accidental) relations with others, through and within which one's own 'project' can be realised. Through an 'actor-network' one's own project can be carried out, because through this network the project is connected to the projects and procedures of others. Such a network explicitly

involves the 'social' (it includes other actors and institutions), the 'material' (it contains particular resources, artefacts, and transactions), and the interaction between the two.

What then is agency? Agency is the capability to anticipate the necessary interaction and synergy of various projects – the capability to develop one's own project in such a way that the chance of actual synergy, of an 'interlocking of projects' (Long and Van der Ploeg 1994, pp. 80 – 81), is as strong as possible. Hence, agency is also (and perhaps especially) the capability to interest and involve others in one's own project, the capability to encourage others to further unfold their projects in coordination with one's own. In other words, agency is the capability to create an actor-network. Only by doing so, is it possible to make the proverbial 'difference'.

Furthermore, agency is the capability to actually realise the initially *imagined* constellation (the set of 'interlocking projects' around C_1). The more and better anticipated, the more carriers of other relevant projects will become interested and involved, and the more and better the road to C_1 becomes effectuated. The more agency there is, the more capability there is to 'make a difference'. The less this applies (to whatever subject), the less agency there will be; hence, incapability emerges.

Initially, the network around C_1 is a virtual network (a 'prospective structure', according to Van Lente and Rip 1998). The network is, as yet, only imagined. However, this does not make it less real, for it is above all real in its consequences.

Agency manifests itself through initially virtual networks; networks that are subsequently realised (or not). Therefore, agency should not be considered an individual quality. Whatever it is that I imagine and consider, does not in itself help me realise anything.

Agency is first of all dependent on the extent to which a virtual network can be imagined and, subsequently, can be constructed and extended. The individual actor emerges only in the second instance, in so far as he or she has the capability to contribute to the constitution, specification, and realisation of the intended set (the network) of 'interlocking projects'. Again, the role of the individual actor can only be understood in relation to the thoughts and actions of other actors – and definitely not in a strictly isolated, sheer individualistic sense.

What turns the commotion and goings-on of the human enterprise into agency? What is the ordering principle? What is the structuring moment? The answer is simple. The fluid and continuously changing concepts²³ with which groups of actors imagine the future – the *virtual* networks of intended future projects, whether or not attuned to each other – are structuring action. 'Commotion and goings-on' become agency in so far as they result in virtual networks that actually mobilise, inspire, and cause realisation. All action is future-oriented action (even though it appears to be different sometimes). Future-oriented action is structured via and by way of virtual networks – networks imply agency and at the same time define it (in a more concrete sense).

I claimed above that no structure exists beyond social practices (I should say socio-technical practices). Structure is immanent in social practices. That which structures is implicit in social practices as the way in which ordering occurs. How this process of ordering occurs is described here in a general sense: via the indicated virtual networks. Hence, structure is localised, agency is specified, which explains why the concept of structure is partly actor dependent and partly not; moreover, structure – that is, that which appears to be structuring – is the outcome of agency. At first this seems incomprehensible (and within the accepted Giddensian theories it cannot be but nonsensical), but it becomes plausible as soon as we integrate the time dimension and the importance of virtual networks into the analysis.

Networks, routinisation, and institutionalisation

'[A] network refers to a set of direct and indirect social relations, centred around given persons, which are instrumental to the achievements of the goals of these persons, and to the communication of their expectations, demands, needs and aspirations' (Anderson and Carlos 1976, p. 28).

In this description, Anderson and Carlos stress, surprisingly, the orientation to the future – that is, the virtual nature of networks.

The concept of social networks was developed initially by anthropologists such as Radcliff-Brown and Mitchell (1969). Their direct intention was a better understanding of society in terms of 'fabric' and 'web of social life'. What keeps society together? What gives cohesion to, and connects, the commotion and goings-on?²⁴

The social relations of which individuals are part can be analysed as a network (Boissevain 1974, p. 25). A social network is more than a communicative structure, for many messages consist *de facto* of transactions – transactions that explicitly concern the material. In short, it concerns *socio-technical networks* (Wiskerke 1997, p. 1). This applies *a fortiori* to the above-mentioned virtual networks.

In premodern constellations one would hardly, or even not at all, be aware of the extent to which the construction of the future occurs via virtual networks. The goals that those involved aim for, and more importantly 'the set of direct and indirect social relations' (the network) supporting the realisation of the goals, are all largely routinised. Today's goals, and the social relations important for their realisation, are the same as yesterday's. It is as if thinking is not needed. One can steer by the compass of the well-tried and proven. The required network does not seem to be virtual. It is the network that has always been there. 'That is just the way things are'. Having unshakeable faith that things would happen just like they did before, one could face the challenge of the future.

The most fascinating – and unusual, but no less adequate for that – critique of traditionalism and its routinisation stems, surprisingly, not from science but from literature. This criticism is from Jean Auel (1980), who sketches the ins and outs of the 'clan of the cave bear'. The members of this clan act on the grounds of routine. The tried and true is the

measure of (future-oriented) actions. Because the members of the clan increasingly, and despite themselves, gain *new* experiences, however, they have to remember more and more. Consequently, their heads become larger, the essential brain size intended for the required memory increases. This results in more difficult child births. The heads of the newborn babies, brimful of and hence swollen by collective memories, become too large. Therefore the clan becomes extinct. 'They didn't know it, but their days on earth were numbered, they were doomed to extinction' (Auel 1980, p. 503).

In the modern period the creation of variation becomes an established, if not self-evident, phenomenon, resulting from the ubiquitous search for innovations and improvements. Of course, certain types of division of labour accompany this: not everybody can carry the risks inherent in innovation (see Hofstee 1985a). Similarly, (experiential) rules apply, structuring the process of innovation. Ironically, the smaller the proportion of what is potentially changeable, the higher the chance of success (Herrera 1984).²⁵ Innovation is explicitly understood as a quest. This is typically expressed by the subjunctive, as explained by Van Kessel in a fascinating essay:

'The subjunctive . . . is oriented towards the universe of possibilities, to everything that could exist in society' (Van Kessel 1990, p. 92; see also Darré 1985).

Talking and thinking about changes does not involve security but rather insecurity. Hope and desire constitute the most important guidelines; hence, the subjunctive mood. This grammar is in sharp contrast with the grammar of the previous, traditional period, characterised by the imperative, and especially with the grammar of the postmodern phase, in which expert systems use the indicative, which refers to the way reality merely is. This involves a highly objectified ('it is the case that . . .') and nomological language ('if this, then that'; see Koningsveld 1987). Also closely related to the subjunctive, which is so typical of innovation in the modern period, is modesty: the success of an intended innovation depends on many elements that collectively compose the socio-technical network. Van den Berg (1989) gave his study about agriculture in the Peruvian highlands the meaningful title: *La tierra no da asi no mas*. The earth does not give without difficulty – you cannot impose just anything upon her, let alone demand and expect just anything of nature and the living world (see also Salas 1996). Looking back, this modesty (recognisable in many places)²⁶ is in striking contrast with the pretensions with which the process of innovation is positioned and legitimised in the postmodern period – but I will leave this aside for the moment.

Looking back, various other features can be recorded. It is remarkable that innovations almost always start at a small scale. This not only reduces the risks involved, but it also enables 'learning by doing' (Dosi 1988). The initial small scale is partly related to the situation of utilising mainly, if not exclusively, one's own resources (one's own land, own labour, own

knowledge, own savings, own networks, etc.). The latter feature, in turn, reinforces the multiformity of (potential) development routes, explored and realised through experimenting and innovating (Osti 1991). After all, the specificity of the already present resources (irrespective of their nature) cannot but lead to multiple modes of unfolding (Jollivet 1988).

In summary, the process of innovation as it occurs in agriculture under 'modern' conditions implies a clear balance. The development of new constellations ('new realities'), such as C_1 in Figure 1.4, assumes the creation of new (or more clearly specified) resources, and also of new combinations of resources and new (or at least partly new) networks. As a project, C_1 is (that is, from the position of the here and now, i.e. seen from A's position) a *virtual* reality. It is not there yet, but it is, presumably, possible to create it.

At the same time, this very *confidence* makes the project into much more than a merely virtual whole. It inspires actions in the here and now (at A in Figure 1.4) but also in the future and probably elsewhere too (see X_1 in Figure 1.4). It can and will also inform and inspire the actions of others, certainly if the project in question radiates sufficient authority and persuasion to create faith, to establish the necessary network (X_1 - C_1 - Y_1) in the future (C_1). Hence, there is an essential balance between, on the one hand, what is new, what is unknown, what is still to be realised and, on the other, the thus far constructed set of resources and what is knowable and controllable.

In other words, innovation is not the abrupt reorganisation of what exists (for an applied analysis, see Van der Ploeg 1993a). Here, innovation represents the art of creating something new by making as much use as possible of the existing (see, for example, Brush *et al.* 1981); however, it needs mentioning that the 'existing' does change, precisely because it is fitted into a new, relevant whole. *Voilà*, the paradox of the innovation process: the less virtual the networks, the higher the chance of creating them and, hence, new 'realities' (such as C_1). The tension between possibility and reality is essential for the innovation process, but a careful 'monitoring' of the tension is equally essential. Just like an elastic band, it cannot be allowed to break.

At this very point, one of the central differences between 'modern' and 'postmodern' constellations emerges (between Figure 1.1b and Figure 1.1c). The definition of macroprojects (or 'megaprojects', following Scott's terms) by, and from the position of, one or more expert systems is crucial (see Figure 1.5). Such macroprojects are pre-eminently virtual. They are in principle disconnected from the identities, resources, projects, and networks that apply here and now (at moment X). Here the balance between what is virtual and what is real, so typical of the modern constellation, is largely if not completely absent. Hence the intended innovation can only take place as a comprehensive reorganisation.

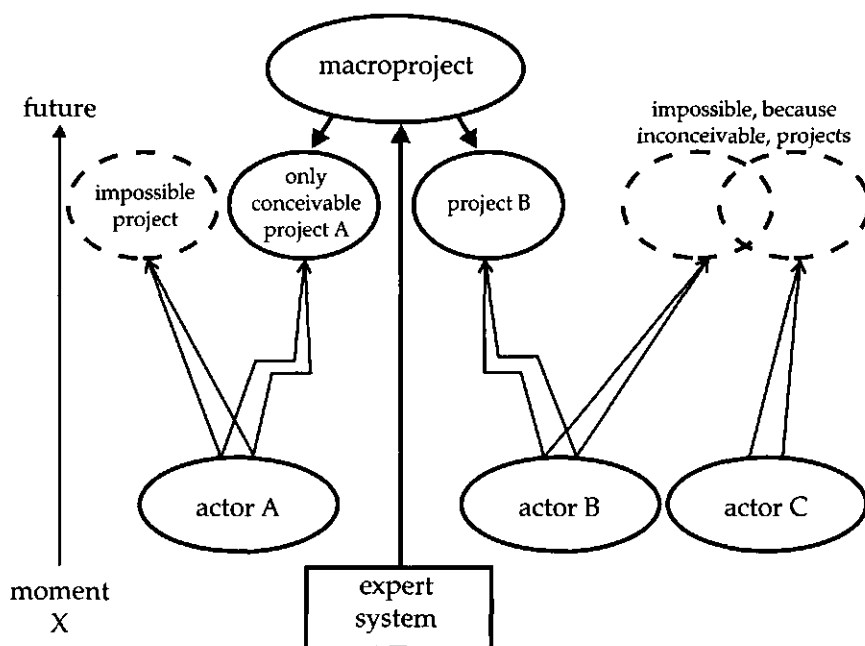
In this book, I will discuss such a macroproject²⁷ at length: the reorganisation of agriculture according to the models developed in the expert system in and around agriculture. I use the metaphor of the *virtual*

farmer for this. The 'virtual farmer' is an image developed in the expert system. It concerns the farmer (or grower) as s/he should be and should function according to the assumptions that are axiomatic within this expert system. The same metaphor also refers to agriculture as a whole – at least, as it should be – and to farms as they should be.

The virtual farmer refers to the 'one order world', to the only conceivable, rational model towards which the actions of a wide range of actors, of government, of banks, of agro-industries, of farm men, of farm women, of advisory services and research centres and so on, need to be directed.

Hence, the virtual farmer also defines a network, a virtual network. However, the latter network does not contain a balance between reality and possibility, it is completely virtual. It does not consist of the unfolding of the potentials contained in the current reality. On the contrary, a rupture emerges: the development opportunities are replaced by the new, virtual macroproject. This macroproject directs and sanctions the actions of various actors in and around the expert system in an almost coercive manner (see Figure 1.5), in such a way that, on the whole, the intended reorganisation materialises. Hence, the macroproject implies *trust*, the essential cement assumed in a constellation such as that sketched in Figure 1.5. A virtual network can only function by the grace of trust – that is, by the grace of faith in the prospect suggested by the expert system. Also, it can only function in so far as various unintended consequences of the macroproject can be controlled and/or externalised.

Figure 1.5 The directive role of macroprojects



The realisation of a macroproject can only happen via and as a comprehensive reorganisation. This implies that variation and selection cannot happen via the multiple unfolding of various realities. Here selection is no longer part of the development process: selection becomes a one-off and occurs *ex ante*.

Alongside macroprojects, other alternatives are implicitly or explicitly interpreted as inferior; and as undesirable, because the realisation of other, competing alternatives cannot but be an intrusion on the intended comprehensive reorganisation, reducing the efficiency of the operation as a whole. Similarly, a partial realisation of other opportunities refers to an insufficient degree of trust; the virtual network would be incomplete. In summary, variation is thus significantly reduced from the beginning.

En passant, this points to the essential differences in scale. The intricate types of development, characteristic of the modern constellation, will be relatively small in scale because of the reasons briefly touched upon above, especially in the initial phase of conceiving, experimenting, and innovating.

In a postmodern constellation, on the other hand, the realisation of macroprojects implies almost by definition a large scale. Not for nothing, system innovation has become a catchword. Various other implications arise from this difference in scale. I refer to two effects here. First, transformation costs will be very much higher, not only because of differences in scale but also because of the generally high degree of disconnection from the existing situation. The macroproject does not build upon the resources, networks, identities, and opportunities inherent in the existing situation (X) as described in Figure 1.5, but represents a rupture.

Second, a 'democratic issue' of a completely new order emerges. Realisation of the macroproject leaves little opportunity for discussion and learning, whereas multiple unfolding provides more room for the insights and choices of the different actors themselves. While existing and virtual networks coincide within traditional constellations (because the future can only be imagined as repetition of the given) and while modern constellations consist of an undeniable tension, of a carefully managed balance between both types of networks, in postmodern constellations one finds the *other* extreme. Just as, in general terms, the future dominates the present, in a more specific sense, virtual networks come to dominate the current networks and practices. In agriculture, this becomes strikingly clear in the fact that those who define and materialise the future (the macroproject) are completely different actors than those who constitute the current relevant networks in and around agriculture. Alongside these complications, there is another, central, paradox. Conceptualising innovation is no longer difficult. The expert systems are well up to this job. On the other hand, realisation of the imagined innovations (the intended macroprojects) becomes one of the main, if not the central, problems. Here capability and incapability emerge again as two, closely related, themes.

Finally, an observation about the often extreme degree of 'institutional clustering' arising in postmodern constellations in and around these

virtual networks. Innovation revolves, in essence, around the recognition, realisation, and utilisation of new possibilities. New possibilities (that currently do not exist but that could exist in future) are the pre-eminent resources in the postmodern constellation (one could say, with some irony, that resources too have become highly virtual). However, by way of large macroprojects, such as those developed by different expert systems, this future has already become highly parcelled out by the state. The future is divided into fields that are considered to be conceivable, realisable, and legitimate and into other fields that are considered to be inconceivable, unrealisable and illegitimate.

Hence, in the postmodern constellation, the virtual network is highly institutionalised. With respect to various future projects (irrespective of their nature) particular government organisations function as gatekeepers. A constantly expanding set of rules and procedures is developed to this end. The realisation of different future projects (surfacing in civil society) is only possible in so far as they correspond with these procedures, in so far as they provide support for the gatekeeper, or, more generally, in so far as they are in line with prevailing macroprojects.

From this point of view, the state is, above all, a complex machine that seeks to prevent its parts from entering (for whatever reason) into hasty arrangements: the meetings, the endless consultations, the mechanism of initialling (all divisions and departments involved have to agree), the mechanism of co-funding, the procedures and calendars all function to eliminate every possible deviation from the prevailing macroproject (and, at the same time, to orient all possible resources and networks towards the macroproject in question).

The effects are threefold. First, the so-called transaction costs (the costs that have to be made to make something happen, to get something done) increase often to extreme levels. Second, the rules, procedures and gatekeeper functions often gain an independence that reaches far beyond the initial macroproject. It is possible for a macroproject to have long lost its meaning and importance, while the rules and procedures retain their own power. This can lead to grotesque events: important innovations remain unnoticed or are hindered. During the past ten years, I have witnessed extreme examples of this. Innovations that emerge outside of this expert system are regarded as suspect – as undesired competition, even if only in a symbolic sense. Hence, numerous potentially valuable innovations remain marginalised, restricted to the proverbial proportions of ‘hidden novelties’ (see Van Lente and Rip 1998).

I came across a different expression of the same tension through the so-called ‘commissions of wise men’ of which I was part several times (probably by mistake). Such commissions are generally launched in the Netherlands when implementation of the prevailing regulations leads to almost insoluble problems and conflicts between those involved. To a researcher, these commissions constitute an exceptional research method as well as an extraordinary learning experience. One of the things that I

have learned from them is that the solution, the way out of thorny problems (irrespective of whether they are concerned with the ammonia question in south-east Friesland, the national ecological network and the Gaasterland uprising,^{*} or unemployment in the north of the country),²⁸ is often very simple in theory (because it assumes at the most a flexible interpretation of rules and above all a clear focus on objectives). The complication lies in sidestepping the prevailing procedures, arrangements, and (bureaucratic) identities in ways that do not set a precedent or mean that the civil servants involved lose face.

This takes me to a third complication. This is the 'democratic deficit' brought about by, and effectuated in, this procedure. The *trias politica* – the separation of powers, at one time the basis of our polity – becomes increasingly lost as a result of the institutional clustering. Increasingly one and the same group of highly specialised and highly gifted civil servants are responsible for (i) developing the rules that regulate the workings within a particular socio-material domain (for example ammonia emission and deposition), (ii) providing for the 'right interpretation' of these rules, and (iii) deciding when the rules are violated, or not. In short, even though the term 'postmodern' constellation seems to suggest a more or less definite, or at least superior, mode of social ordering, as yet things do not function at all smoothly.

The coordination of projects

With a view to the empirical analysis of the differences discussed here between multiple processes of unfolding, on the one hand, and macroprojects, on the other, we need an adjusted vocabulary, a set of interrelated words and concepts, which, on the one hand, does justice to the outcome of events while, on the other hand, being fundamentally non-determinist (Knorr-Cetina 1996).

One of the concepts of great importance here is agenda-setting (Rhodes and Marsh 1992; Baumgartner 1993; Kingdon 1995; Just 1998). That is, defining the situation, specifying problems, indicating directions for solutions, and hence identifying the resources that have to be mobilised in order to implement the intended solutions.

Agenda-setting is not a neutral activity. Crucial issues are who is to join in the discussions, and who will be excluded.²⁹ Joining in the discussions provides the opportunity to influence the agenda: It gives authority and, conversely, only authoritative persons are invited to join in the discussions. As such, an agenda represents authority. An institutionalised agenda influences the thinking and acting of others – even when there are no face-to-face relationships; in that case we can only speak of 'control from a distance'.

^{*} *Translator's note:* The realisation of the national ecological network was initially imagined as a massive expropriation of farm land in order for it to be converted into a nature reserve. In Gaasterland, the entire population (including the non-agricultural population) protested against and effectively blocked this approach.

What is authority? Authority, you could say, represents insight into, and overview of, the relevant whole – that is, knowledgeability and capability. For this reason, and also because of the related capability to subsequently arrange events according to this insight and overview, we can define authority as a type of agency. It is not, however, an arbitrary type of agency but rather one that is generally recognised. Again, this makes clear that agency is not an individual attribute. It emerges in and is brought about by networks.

Control over and mobilisation of resources deserve – as do agenda-setting, authority, and networks – a prominent place in the vocabulary with which structuring or ordering of social practices can be understood in a non-determinist sense. However, it is essential that resources are not taken at face value.

Speaking straightforwardly, a certain area of land, a number of cows, a shed with adjacent buildings, a certain number of labourers (or whatever) do not represent resources, either intrinsically or collectively. Material and/or social elements become resources only in the case of a more or less explicit model, in which they are congruently forged together into a working and sufficiently promising whole, into a solution, a vision, an expectation.

Such a vision or solution ('how to achieve goals', following Anderson and Carlos) also represents authority in the above-mentioned sense. It represents authority if it (i) concerns the relevant whole, (ii) puts something into perspective, and (iii) is recognised as such by a sufficient number of actors.

Defining boundaries is an element that needs separate attention. It is partly implicit in the definition of problems that follows from agenda-setting. Determining the boundaries is also closely linked to the question who does and who does not join in the discussion about the agenda. The same applies to the other elements. Take authority, for instance; authority is not limitless. Authority always applies *vis-à-vis* a more or less defined territory; outside of which apply the remarks: 'What's it to you?', 'What do you know?' Boundaries are crucial. They are also constantly subject to dispute, negotiation, and renegotiation. Boundaries mark inclusion and exclusion. But again, this repeatedly concerns exclusion and/or inclusion *vis-à-vis* something. This applies perhaps pre-eminently to the presented solution, which must be defined as superior in comparison to other trajectories, by way of a clearly defined boundary.

Agenda-setting, authority, resources, solutions, boundaries – these are all concepts that mutually define each another. Without the other terms, each concept on its own becomes an isolated and therefore meaningless notion. Collectively, these concepts refer to an actor-network (or a socio-technical network). Within this network, agendas, authority, solutions, and so on follow naturally from one another. It is the essence of a network to produce a high degree of congruence.

A typical feature of the period of modernisation is the emergence of complex constellations characterised by a multitude of networks that operate alongside one another, but which also partly overlap and partly compete with one another. In other words, there are *multiple structures*, and therefore variation and selection; hence, the ordering of a highly heterogeneous world.

Why? I will confine myself to one or two observations. Compared to the traditional world, *agenda-setting* became increasingly desacralised in the modern world. Priests, elders, and nobles lost their power and control. People themselves were increasingly looking for solutions and answers. New forms of authority were acquired in the process and, again, became institutionalised.

Another example concerns the value of what is tried and true (the Jean Auel formula). Confronted with the decreasing importance of local authority and with the emergence of new, at first seemingly imperative parameters such as markets and technology, many farmers redefined their solutions in their own, often original, ways, hence giving rise to a whole gamut of farming styles. Of necessity, they crossed the boundaries of the tested and true and developed various, contrasting, sometimes complementary, sometimes competitive solutions, each of which represented a search.

The preconditions for such a development are also clear, at least in retrospect. Again, I confine myself to a few considerations. The first concerns the degree of institutional clustering. Or rather, its absence. Far-reaching institutional clustering can, as I argued above, nip many, if not all, innovations in the bud. In this context, it is telling that calls for "protected spaces" are heard (Kemp *et al.* 1997; Kemp *et al.* 1998; Van Lente and Rip 1998) in the very situations that are characterised by a high degree of institutional clustering. A second essential precondition concerns the necessary self-confidence. A third concerns the required design capacity, the art of creating new solutions and new development opportunities (see further Chapters 2, 3, and 4).

1.3 Actors, projects, co-production, convergence, and distantiation

In the beautifully written introduction to *Organising Modernity*, John Law describes projects as 'self-reflexive strategies for patterning the network of the social' (1994, p. 20), a description which captures the meanings of agency, virtual networks and their interrelations. At the same time, Law describes these strategies as modes of ordering, as the mechanisms that shape social life. This underlines that these modes of ordering do indeed work via the future, precisely because they are the expression of the reflexive strategies that constitute networks.

In Chapter 3 of this book, I will discuss in detail the farming styles in Dutch agriculture as modes of ordering, as forms of unfolding that also contain a highly strategic and, therefore, reflexive component. In anticipation of that discussion and partly building upon the previous section, I want to make one issue clear here. No direct one-to-one relation can be assumed between a mode of ordering and the practices that

emerge from it.³⁰ The decisive element is the interaction between various modes of ordering.³¹

As indicated previously (in part as a result of Figure 1.4), the presence, interaction, synergy, and tensions between various, sometimes even conflicting, modes of ordering must always be anticipated in the construction of a network. The outcome of this process is, in principle, indefinable. Strategies and projects will be adjusted – that is, unfolded in a particular way – to enable interlocking of and/or distantiation from other projects, strategies, and modes of ordering. Considered thus, a network ('for patterning the social') is, above all, a particular set of modes of ordering linked together or defined *vis-à-vis* one another.³²

In the process of constituting and developing such networks as a set of interrelated projects, interfaces are crucial. This concept, largely developed by my colleague Long, refers in essence to discontinuities, to issues and social relations that do not necessarily follow on from one another (Long 1989; Long and Long 1992).

The idea grew from another concept: linkages. A different research group (from Leiden University) developed this concept to explain how various issues and relations are constantly forged together by linkages, originating from their (supposedly) underlying structural patterns. The Wageningen reaction to this, most imaginatively expressed by Long, was that it was not so much the unproblematic linkages that should be the focus of attention, but rather the incapability to combine various issues and relations (i.e. the problematic linkages).

Thus, interface analysis was born – that is, the study of both discontinuities and the, above all, unpredictable and often difficult to grasp ways in which translations sometimes emerge at the level of interface – translations that, in turn, produce a highly ordering effect, even though it is not chosen by anybody as such.

'Interface studies are essentially concerned with the analysis of discontinuities in social life. Such discontinuities are characterised by discrepancies in values, interests, knowledge and power. Interfaces typically occur at points where different, and often conflicting, 'life-worlds' or social fields intersect. More concretely, they characterise social situations . . . wherein the interactions between actors become oriented around the problem of devising ways of 'bridging', accommodating to, or struggling against each others' different social and cognitive worlds' (Long 1989, p. 232).

The development of a project implies risks, which are largely related to the question whether the required connections with other projects can be established. Considerable risks exist on and around the interfaces. Heavy investments are often required in the creation of concrete agreements. The withdrawal of one actor can imply a major disappointment. Realisation of possibilities that have thus far not been taken advantage of is risky, for the individual actors involved in the construction of a new network, and for all of those involved as a whole.

Risks are perceived in various ways. If the realisation of a certain project presupposes a considerable input of external capital – that is, the

association with an external financier – this introduces a perspective in which the relation between opportunities and risks are decisively different from when this does not apply. External funding implies a particular way of valuing invested capital – that is, as an increase in the value of invested capital. This entails particular criteria: it forces the actors involved to develop their project in a particular way – that is, to extend certain possibilities, to curtail or exclude other possibilities, to enter into certain coalitions, to rule out others. Such ‘coercion’ will apply less if one can use one’s own resources and if other forms of valuation can be chosen.

Financial capital³³ wields a highly conservative influence: it ‘forces’ the development and utilisation of new possibilities into the mainstream of established projects and their related interests and visions. It corkscrews new plans towards dominant constellations and towards their associated certainties. These constellations seem to offer *trust*, the (supposed) certainty that there is no, or a lesser degree of, risk. Related interests are reproduced via the chain of risk avoidance, the search for certainty and dominant visions. Capital, in the Marxist sense, represents power and dominance, but not for intrinsic reasons. Capital retains its dominance because it is repeatedly used as a guiding compass in the process of project development.

There are, of course, other ways to develop and realise a project:

- 1 by using resources that do not need to be used as capital in the narrow sense of financial capital;
- 2 by using other calculi, with a broader range of values;
- 3 by structuring the development process differently (for example, step by step as opposed to all at once).

Agency is crucial in the development and realisation of projects. In this context, I understand agency to be the capability to create the required interrelations with other projects. In other words, the capability to recognise, to utilise, to bridge, or to reconceptualise discontinuities as essential demarcations. Insight into the interaction between intended plans, the interaction between presupposed positions, actions, reactions, outcomes, benefits, costs, and their allocation is decisive in this.

Therefore, agency is the capability to create *virtual congruence*:³⁴ congruence that does not yet exist (or is not yet necessary), but which is decisive for the future of the projects under discussion. To create future congruence, coordination in the here and now becomes decisive: the required congruence is achieved by way of coordinating various development projects *vis-à-vis* each other. Failure to do so results in incongruence. Fragility is therefore a term that should be part of any analysis of social developments, because the effective construction of congruence and coherence is probably the exception in real life. In view of the many possible discontinuities, risks, and incapacities, failure seems to be more likely than success. This applies more strongly when it concerns innovations and the more so when it concerns deviations from the institutionalised patterns and regularities. The search for and

extension of such 'deviations', however necessary when established patterns go wrong, is and remains particularly fragile.

An example

In the autumn of 1998 the *Friese Ecologische Zuivelfabriek* (FEZ, Frisian Organic Dairy Products) was opened in Drachten. However, the real, the essential, innovation is not the building and inauguration of this factory, but the preceding rearrangement of projects *vis-à-vis* one another. Numerous projects were at issue here: those of the many organic dairy farmers (about 80 in Friesland at the time) who at the time had to have their milk processed beyond the provincial borders; furthermore there was the, shall we say, potential project of an unknown number of dairy farmers considering a changeover to organic production, but confronted by a series of questions. These questions all related to the future actions of others. They raised many uncertainties: will consumer demand grow sufficiently to support the higher supply levels and maintain higher prices? Will the cost increases related to producing organically exceed the benefits? Will the profits of the organic circuit become increasingly extracted by those controlling large-scale processing (that is, the owners of the new organic dairy factory)? Is it possible, if the intended project (the changeover to organic dairy production) appears set to fail, to fall back on the existing patterns (specifically: will it be possible to rejoin Friesland Coberco Dairy Foods, the largest and, by now, sole processor of milk in the north of the country)?

The initiators (who intended to build the FEZ) also had an almost infinite series of questions, which again were related to the future actions of others. Will sufficient dairy farmers want to change over and supply the new plant? If not, there will be underproduction and losses.

If the new project to establish processing and marketing units is successful, will the big brothers (the established dairy companies) subsequently decide to invest in this new area and attempt to outcompete the FEZ? Will consumers accept the scale increase of production, processing, and marketing? And is it possible to realise a reduction in the consumer price through this scale increase (and the subsequent cut in, for example, logistical costs), without having to lower the farm gate price? Alongside consumers, who buy organic products for reasons of principle, will new groups decide to purchase because of the lower price (although still higher than the price of non-organic products)? To what extent will supermarket chains co-operate? Will financiers (banks) want to co-operate in the realisation of the intended project? And to what extent can new government projects, such as green funding, be used in order to win the financiers over and/or to present better conditions?

It is clear that – even though we have only discussed some of the actors involved – their projects, and the many questions and uncertainties surrounding those projects, cover an almost infinite sea of possibilities. If each actor has at their disposal X alternatives of future action and there are N actors in question, X is raised to the n th power. In the case of 8 actors (organic dairy farmers, farmers considering a changeover, the

initiators of the FEZ, the conventional dairy companies, consumers, banks, supermarket chains, government) who each have, say, 5 alternatives for action at their disposal, there are almost 400,000 (390,625 to be exact) possible final constellations, the majority of which will be characterised by a sometimes high degree of incongruity.

Only in a limited number of cases will there be congruence, a 'working whole' (Roep, 2000) functioning properly and, indeed, generating the expected results and distributing them in such a way that there will be continuity.

To be able to operate in this sea of uncertainty (that is, to be able to actually realise innovations), it is essential for all relevant actors to choose or develop their alternatives for action in such a way (to have their projects evolve in such a way) that real interweaving and mutual reinforcement emerges. Projects should be integrated into the working whole; a working whole that does not yet exist, but which (still) needs to be realised. In other words, it concerns an (increasingly concrete) expectation that will structure the doings of the actors involved (as expressed by the slightly abject, but still frequently used phrase that 'they have to be of one mind').

In the creation of this expectation (this interpretation of a new working whole), an essential role is played by agenda-setting, integration, boundary definition (who will be involved?, in which ways?, how to keep negative and disintegrating forces at a distance?), and scale (what level of co-operation and how many participants are needed to define the 'working whole'?). The more convincing answers, solutions, and prospects are generated with respect to integration, definition, and scale, the more convincing the presented course through the sea of uncertainty will become (precisely because the uncertainties and their associated risks become eliminated step by step).

In fact, the thus presented degree of complexity returns at least twice. For even though it is possible to conciliate a working whole, it will actually have to be constructed subsequently. The seemingly real possibility will have to be realised. This is only possible if the participants effectively devote themselves to its realisation. If they do not – if in the interim they withdraw or they adjust their projects in a non-congruent way – it can still go completely wrong. Thus, the trouble experienced by other participants will appear in vain: it will reveal itself as a cost with no return. Hence, fragility needs to be considered.

Furthermore, a solution (whichever one) will have to contain a sufficient degree of acceptability: there will have to be an acceptable balance between advantages and disadvantages, between benefits and costs. If it appears that free riders can rake in an unequal share of the benefits without sharing the costs of the whole, this may provoke extensive desertion. The same will occur if some partners have to carry a more than equal share of the costs.

The uncertainties in question are largely related to the expectations of the actors involved with regard to the future actions of other, similarly involved, actors. What will the others do? And to what extent will I be

able to influence their projects? Or rather, to what extent can the developments of my project and that of the others be integrated so as to create co-evolution? How can fragility be reduced? How can the required acceptability be achieved?

These are weighty questions, especially if one realises that neither hierarchy nor the autonomous development of market relations³⁵ provide an obvious answer and/or a smoothly functioning mechanism for the construction of such an answer.

Why and how was co-evolution constructed in this particular case? I will only mention a few elements here (and discuss this issue more generally in Chapter 9). A first important element was the increasing pressure from supermarket chains on the large dairy companies to offer a range of organic products alongside their conventional ranges. Given the hesitation of these dairy companies to independently start a separate line for processing of organic milk, a coalition between the initiators of the FEZ and the large dairies became increasingly obvious. The latter eventually participated in 33 per cent of the financing of the FEZ; more importantly, they also declared that their suppliers were allowed to change over to the FEZ without having to pay withdrawal fines; furthermore, the suppliers would have the right to rejoin the companies in question within three years if FEZ's results were disappointing.

This clearly indicates a package deal: participation in the FEZ and hence being able to satisfy the desires of the supermarket chains became possible by offering good conditions to the potential suppliers. Thus, various projects became interwoven; they were combined into the indispensable connections upon which the new working whole had to be based. As a result of this package deal, which was definitely not undisputed, a number of other positive effects occurred relating to distribution and its costs. If lorries of the large companies stop at the FEZ, supermarkets could be supplied with a wide range (including organic products) from one lorry-load.

In early 1999 I had a long conversation with Henk Brouwer, initiator and current director of the FEZ. Looking back he says;

'Yes, you do indeed set out with grave uncertainties, and you want to move towards more certainty. But of course you never achieve this . . . If I look back, it was mainly faith that grew in the start-up phase. Faith on both sides and also faith in one's own abilities, to the extent that you dare to take risks. You need faith, commitment of all those who will become involved in such a chain, of farmers, financiers, retailers, the whole lot. This faith will in turn give you the feedback that you're on the right track.'

Here I want to bring forward a number of elements that played an important role in the creation of this faith (and therefore in the construction of the FEZ as a new socio-technical network). I do this especially because these elements are in sharp contrast with the way in which expert systems usually operate and also because those same elements sometimes represent a somersault through past, present, and future.

A first element concerns the *goals*. While expert systems (at least the agricultural knowledge network that I will discuss in detail in Chapter 6) usually arrive at a clear indication of objectives, to subsequently implement these via standard planning techniques (which create *en passant* the required prescriptiveness and verifiability; cf. Christis 1985), a completely *different* approach applied to the creation of the FEZ:

'You have to know which way you want to go, you'll have to be very clear about it, but otherwise your more concrete goal is something that emerges slowly as something that you work towards. Most important is to define the margins, to drive pickets into the ground. Those margins or boundaries are V-shaped as it were, they take you closer to where you want to be . . . Yes, of course it's true that you adjust your objectives along the way. I wanted much more at first, and other things too.'

In other words, the goal around which the necessary set of partners (the *virtual network*) groups itself, is not well-defined. In fact, it is precisely the other way round: an at first loosely organised network is gradually working towards a set of shared objectives. Partners will drop out, new partners will join. Meanwhile, the possible goals become more and more sharply defined, hence creating faith on both sides.

Network and strategy consolidate each other to the same extent. Neither one is a function of the other. Henk Brouwer is very outspoken about this:

'In the beginning you're swimming against the tide. I have had some problems addressed – for example, where roughly the break-even point would be. It gives you some idea, and then you can again determine where the margins are, where the pickets have to go; and thus the end goal gradually takes more shape [agenda-setting and particularly agenda-building appear as key factors here]. No, the planning approach with one well-defined goal from the start, from which you have to reason backwards – it doesn't work like that. Yes, that's the way the large organisations deal with things, but not surprisingly that's how they kill everything off. The Investment and Development Company for the Northern Netherlands [Noordelijke Ontwikkelings Maatschappij] wanted me to do that, but it was impossible of course. That's how they set up a dictatorship, they dictate things, they issue a diktat, but things work the other way round.'

A second important element was, so I understand from Henk Brouwer's story, the introduction of clear *rules of the game* on the basis of which the required network (however virtual at first!) could be demarcated and consolidated:

'Farmers, processors, and the trade, and the others too, they all had to benefit from it.'

Hence, the foundation was laid for the actual interlocking of various projects, which occurred much later.

But more rules were developed:

'Sooner or later you'll have to make it clear that it will continue, with or without the other.'

Here emerges what I pointed at previously: authority. And related to this: the moment at which involvement (of the other partners) becomes a choice, whether or not to actively contribute and devote themselves to the cause.³⁶

Furthermore, there is a third element, the combination of *autonomy* and *fallback position*. The most important resources were to a large extent controlled by the initiators. Here I refer not so much to financial resources (which partly evolved from the sale of a considerable share of the quotas of their former dairy farms), but above all to immaterial resources, such as the capability to (in all likelihood) actually manage the required socio-technical network (to actually supply retailers with a high-quality and organic product, to actually have retailers commit themselves, to actually have a number of producers supply organic milk, etc.).

Agency, not in an abstract but rather in a concrete sense, reveals itself here as resource *par excellence*. In obtaining this agency, the aforementioned start-up phase (in which a network emerged, expectations were adjusted vis-à-vis one another, faith emerged) was a *sine qua non*. Without wanting to go into detail, the availability of a fallback position ('if it had gone wrong, it wouldn't have been the end of the world') was important in the creation of this indispensable precondition.

An organic dairy factory has now been established in Drachten, despite being initially regarded by various expert systems (the 'Eindhoven' office of the Rabobank,³⁷ the large dairy companies,³⁸ and the Ministry of Agriculture)³⁹ as unthinkable and/or unfeasible. The creation of this factory is exceptional in that it illustrates the realisation of agency in a context characterised by and also controlled by expert systems that increasingly rule out such agency.

I will return to this in more general terms in Chapter 9 of this book: current and countercurrent are the keywords there. It goes without saying that all this is closely related to the question about the interrelations between various ordering principles, and to questions about who and what will create the future, which conditions will have to be met, and what its legitimacy will be.

1.4 Agriculture as empirical object

In this book, I want to investigate the implications of the reversals as represented in Figure 1.1. I will do this on the basis of recent developments in Dutch agriculture. Where possible, I will turn to Frisian agriculture – not to confine myself unnecessarily but to introduce some form of continuity and consistency between the various storylines and themes.

Agriculture as a particular empirical phenomenon presents complications, but also a certain advantage. The advantage can be described easily. The search for and creation of congruence and consistency within projects (between the natural and the social) as well as between projects, the subsequent complexity of the coordination issue, and the sometimes

inclusive, at other times radical, nature of the variation and selection processes make their presence felt more in agriculture than in other areas. Why? In agriculture, there is always and everywhere an enormous number of actors. There are now about 110,000 farms in the Netherlands, involving more than 300,000 workers. (Incidentally, the number of farms is part of the problem, as I will explain at the end of Chapter 7). Furthermore, there is an immense agribusiness: a set of enterprises supplying commodities and services to the primary sector. A further 250,000 workers are involved in this.

In contrast to various other sectors, this complex and variegated whole, this multitude of projects, cannot and does not allow itself to be managed like a command economy. Coordination is essential, particularly in and around agriculture. In addition, present, past, and future fall continuously on top of each other, sometimes in the most bizarre ways. This makes contemporary agriculture such a fertile, yet difficult, empirical territory for the issues under scrutiny here.

Two issues should be clarified from the outset. They concern the relation between the words and the things, and between things.

There once was a time when it was felt that the Netherlands were 20 years behind the rest of the world – Germany acted as the most direct point of reference. Similarly, agriculture and the countryside were seen as being 20 years behind the rest of society, i.e. the city.⁴⁰ All in all, this does not do agriculture and the countryside much good. It is hard to imagine them without the stigmas of slowness and tradition, of reluctance and resistance to adopt that which has been widely accepted elsewhere for some time. Incidents, discussions, images, and events that seem to support such an interpretation are not difficult to find.

What needs to be stated clearly and resolutely is that the agricultural sector is often more modern, progressive, dynamic, and innovative than the rest of society. Not forty years behind but in some ways ten, sometimes thirty years ahead. However, this applies (let me dampen the fun at once) not only in a positive sense but also in a negative one.

In the conventional view of agriculture, the countryside is seen as intrinsically traditional and conservative. While the rest of society had thrown off the shackles of the past, the modernisation project only began to become defined in agriculture in the late 1950s. Backwardness rules, certainly if we realise that at the end of the 20th century things have still not been put right.

In this conventional image, the relation between the words and the things is completely amiss, persistently amiss. For, even though these are established self-evident habits, or an institutionalised view, it has to be stated that the relationship between the notions employed and the practices grasped and interpreted with these notions suffers on all sides.

Of course, there is tradition in the rich and complex agricultural history of the Netherlands. However, there is no absolute traditionalism, in the sense of conservatism and stagnation. This has been demonstrated in the diligent work of agricultural sociologists and historians. The seeds of progress slumbered in the bowels of tradition.

Certainly in the 19th and 20th centuries, a comprehensive process of modernisation took place, spurred on and driven by the peasants of the time. I will discuss this more in detail in Chapter 2 of this book. Tradition and progress, conservatism and progressiveness do not constitute opposites. As I will stress, each needs the other. The balance between the two is essential (Terron 1984).

The great modernisation project became defined at the end of the 1950s. I will discuss this at length in this book. However, the principal issue is that, again, the word was wrong from the beginning. It is not true that agriculture only started to modernise from that moment onward. It had been modernising for a long time. Looking back, one cannot but say that this so-called modernisation project was definitely not what was expected and suggested at the time (nor later): to finish once and for all with tradition, to finish once and for all with the rural as consistently backward.

The agricultural modernisation project of 1950 – 1990 was one of the first great megaprojects realised in the Netherlands.⁴¹ It was not an adjustment of a past that was moving too slowly, it was a universal operation in which the future was made to dominate the past and the present. All in all, the so-called modernisation project in agriculture was (and is) an ‘undercover megaproject’. It was not the beginning of modernisation in agriculture, it was about the forced implementation of another modernisation path than the path or trajectory followed up to then. However, the particularities of this modernisation path remained undiscussed, for it seemed to be about modernisation *tout court*.

The gradually manifesting chaos of the undercover megaproject should be thought through and included in the planning and assessment of the megaprojects that are now (forty years later) being defined in society at large. There is a case for the thesis that expert systems and macroprojects are almost inevitable in contemporary society – at least with regard to certain issues.⁴² What is fascinating about agricultural modernisation as a macroproject, however, is that it was unnecessary, certainly from a comparative perspective. We would have had a different kind of agriculture – probably of a better kind, maybe of a worse kind. However, it is impossible to maintain that agriculture and the countryside would have vanished without the great modernisation project. This knowledge prompts a critical examination of the ways in which expert systems operate and intervene in the organisation of time, space, and social practices.

So much for the relationship between the words and the things, the social constellations and terms with which we interpret and understand them. As I stated previously, the social sciences try to understand every constellation using the vocabulary and the regularities of the previous constellation. This applies *a fortiori* to agriculture. As if by natural law, the things and the essentials of the periods in question are invariably interpreted and understood wrongly.

The next issue is the relationships between things. What is fascinating, but also confusing, about the world of agriculture is that there are no separations between periods and phases. Even though there are noticeable shifts in emphasis, overlap and mutual influence predominate rather than clear boundaries. In the traditional phase or constellation (see Figure 1.1a) agriculture was already modernising rapidly. And during the decades in which the process of modernising had become dominant (as represented in Figure 1.1b) a megaproject, confusingly named 'modernisation project' was developed and implemented. This was in fact an expression of the 'postmodern' operation of expert systems *avant la lettre* (see Figure 1.1c). More accurately, the moment when the past finally seemed to lose its straitjacket, two new, unequal but interconnected, developments emerged.

On the one hand, modernity, which had already been hidden in the bowels of traditionalism, made its entry. Building upon experiences, practices, and resources, which had all been handed down through history, multiple developments were initiated resulting in a variegated morphology, in a wide range of farming styles, each one equipped with a particular future project, an attempt to develop its own practice (that is, its own farm and set of relations into which it is woven) corresponding most closely to its own wishes, insights, interests, capabilities, and limitations. Even though the term would be used only much later in the social sciences, one could say that agency increasingly flourished from this moment onwards. More or less at the same time, a countermovement was defined, for an expert system was created through which farm development was represented as a uniform process.

It follows clearly from the previous explanation that the phases I described above cannot be regarded as consecutive, let alone as well-defined periods. They are ordering principles, ways of relating past, present, and future in and through social practices. Analytically, one can attempt to define certain basic patterns *vis-à-vis* each other; empirically, however, one will always encounter different and mutually conflicting principles, sometimes dominated by the one, sometimes by the other.

Recent agrarian history is usually narrated in terms of necessity and inevitability. The development of agriculture is, to coin a phrase, structurally determined. Agricultural development has taken place in a particular way; it could not have happened differently. The development that took place over the past decades informs us about underlying forces. These forces will also, and probably more than ever before, determine the panorama of the agriculture of the future.

The structuring moment is located in various 'bodies': in the coercive forces recognisable in the market sphere; in the ongoing technological development; in the complete modernisation of our societies, which leaves neither the agricultural sector nor the countryside unaffected; and/or in the sphere of politics. The latter body is usually understood in terms of reflex, in terms of an intermediary between the underlying economic, technological, and cultural changes.

In this narrative style, the future of agriculture emerges as a story that 'can be told in advance', as a story that is, as it were, the inevitable outcome of a script contained within the major structuring forces – forces that applied to the past and that will also determine the future.

Later on in this book, I will discuss this (ever evolving) script at length. English colleagues sometimes characterise this by the fine expression 'the race to the bottom'. Agricultural development acts in this script as a process that occurs inevitably via a combination of scale enlargement and rural exodus: less and less farmers, while the surviving farms become larger and larger. Similarly, a continuous industrialisation of the interaction with the living world (of 'co-production') is therefore inevitable. One glimpse of the 'bottom' is provided by the frequently produced scenario studies, which speak of a Europe in which 75 – 80 per cent of rural areas have become superfluous to food production. Similar figures apply to the farming population (WRR 1992). In other scenario studies, with regard to the Dutch dairy industry, farms are mentioned that carry 1,000 cows (LEI/SC 1996). This would imply only one and a half farms surviving in every rural municipality in the Netherlands.

The 'virtual farmer' acts as the pivot of this script, or rather of all these foresight studies. He (she is hardly mentioned) orients the organisation and development of his farm to the laws of market and technology. These 'laws', which are constantly made explicit by the expert system, allow no other course of action than the race to the bottom.

In this book, I attempt to develop a different narrative, a different view. I will demonstrate that there is no structural development, no inevitable race to the bottom. Nor is there a 'virtual farmer', as posited by the knowledge system – and where the sorcerer's apprentice does succeed there is the devil and all to pay.

In other words, this book is an attempt to narrate the story of farmers, agriculture and the countryside in a different way than is by now customary. This conventional story is largely spanned by a number of axioms, by, in other words, a number of institutionalised cognitive models. They concern, *inter alia*, the farmer as agricultural entrepreneur and the behaviour that he (or she) should therefore display. They also concern the processes that are supposed to characterise the sector as a whole: structural development, rural exodus, and the dynamising role of the agricultural expert system. Furthermore, there are axioms concerning the real nature of farming. Above all there are a number of deeply rooted and widely shared ideas about the future of agriculture. Collectively, these axioms span a world-view (one could almost say a 'paradigm') that I will characterise here by the metaphor of the 'virtual farmer'.⁴³ This world-view is deceptively consistent. The concepts within it keep presupposing and (re-)confirming each other. To support the logic, the inherent truth, of one axiom it suffices to refer simply to one, or a few, of

the other axioms. However, on the whole this is not even necessary. Axioms are self-evident because:

- 1 they are shared by nearly everyone;⁴⁴ that is,
- 2 they are hardly ever disputed; and
- 3 neither are they interrupted by a 'stubborn empirical reality', precisely because the same axioms constitute the frame for the perception and the ordering of this reality; hence
- 4 they span a 'universe of the undisputed': a universe of things that are the way they are because they can only be the way they are.

All this is emphasised by those who do dispute this universe: sooner or later they are exposed as *charlatans*.⁴⁵

However high the theoretical and communicative consistencies, the problem is that this set of axioms no longer corresponds to reality. This need not be a problem if it were not that, first, policy-making, implementation, and evaluation are consistently informed from the point of view of the virtual farmer, and, second, the same image is a heavy burden on the urgent search for new alternatives for an agriculture that is partly deadlocked within these axioms.

The axioms, which I will further define and unravel in this book, share above all the common feature that they specify the agriculture of the future. They tell a story about the direction in which agriculture should move. That story is not told, however, in terms of opportunities inherent in the current reality (see Figure 1.1b). It concerns one necessary and inevitable future (Figure 1.1c). This may seem unlikely – the point is, however, that this one future is supported by a series of iron laws contained in the past and the present. The axioms that I will analyse in this book refer to two aspects: they define history thus far as the inevitable unfolding of structural patterns, after which the future is represented as the perfecting of such a process of unfolding.

The cognitive monopoly of the expert system is crucial here. There is only one actor, only one institution, capable of knowing the patterns and hence the future: the expert system in and around agriculture. An expert system that is increasingly forged into a unity, also in organisational terms.

Somos lo que vamos a ser, we are on our way to the future. Future-oriented acting makes us what we are, especially because so many different options, roads, interests, and identities are at issue in working towards the future. In the agricultural sector (but probably also elsewhere), however, the future has increasingly been parcelled out, completed, and allocated beforehand by the expert systems, which specialise in this activity. And the more the expert systems appropriate the future, the firmer their hold on the 'existence' of those involved, in this case, *inter alia*, Dutch farmers. All their actions are increasingly conditioned and ordered by the future, which is monopolised by expert systems. Hence, the former are governed by the latter via the future.

This book is a critique of the expert system, of the semi-coherent whole constituted by the Ministry of Agriculture, Nature Management and

Fisheries (LNV, *ministerie van Landbouw, Natuurbeheer en Visserij*), Wageningen University, *Dienst Landbouwkundig Onderzoek* (DLO, Agricultural Research Institute) and other research institutes, parts of the Ministry of Housing, Spatial Planning, and the Environment (VROM, *ministerie van Volkshuisvesting, Ruimtelijke Ordening en Milieubeheer*), *Dienst Landbouwvoorlichting* (DLV, Agricultural Advisory Service, now privatised as *DLV Adviesgroep NV*), parts of the provincial authorities – in short, by the complex set that interacts with the agricultural sector on the basis of real or assumed knowledge.

I am part of the expert system, in a somewhat contradictory way. Pleasure, curiosity, and passion connect me to this larger whole. Yet at the same time I often experience disbelief, rage, and disturbance at its shortcomings. In any event, I feel no false obligation to be loyally silent. It is rather my right and my duty (in that respect, I take my job in an old-fashioned way) to criticise when necessary, especially when others are hardly, or not at all, able to do so.

However, let there be no misunderstanding. For – even if I am aware of the conventional classification systems on the shop floor, which divide the components of the expert systems into categories such as ‘twits’, ‘eccentrics’, ‘dimwits’, ‘barons’, and ‘simpletons’ (a complex world!) – I argue strongly that we generally deal with very capable and driven people. The failure of the expert system, which I discuss in this book, does not concern the qualities of the people involved. What is fundamentally wrong is the way in which we organise and apply knowledge. That is all this book is about. Nothing else.

1.5 Storylines

The theme has been clearly defined by now. Five distinctively different storylines can be identified within the described framework. The storylines interweave and interconnect in places. In other places I attempt to develop first this, then another, storyline independently.

The first storyline concerns agriculture as a complex practice – as a carefully coordinated unit comprising (i) the mobilisation of resources, (ii) the conversion of resources into end products, and (iii) the sale of these end products.

The mobilisation of resources is discussed in Chapter 2 in particular. There I point out how, via a lengthy and complex emancipation process, the mobilisation of resources (land, capital, labour, knowledge, water, tools, etc.) is actively withdrawn from the influence of markets. This distantiating from markets at the input side of the farm provided the basis for the success of Dutch agriculture. Creating a certain distance between farm and markets is one of the hidden ingredients explaining the success of Dutch agriculture. It is also one of the ingredients that is systematically ignored in the currently predominant description of the virtual farmer. Farmers act as *Homo economicus* within the image produced by the contemporary agricultural knowledge network, as entrepreneurs

integrating their farm fully into markets and therefore following and implementing the logic of the market: as puppets on a string.

Dutch farmers are, I will argue in this book, not so much the entrepreneurs they should be according to the agricultural expert system, but peasants: producers who, for the sake of their own survival, actively withdraw the processes of farm management and farm development from the logic of markets that seem to ignore their survival.

'We have never been modern', according to Latour in a well-known essay (1993). In its footsteps one could claim: 'Dutch farmers have never been entrepreneurs' (which in fact has already been raised by Constandse in 1964). They are peasants, and precisely because they are peasants they have proved to be so successful through the ages. The fact that this is also extremely topical and relevant nowadays is discussed in Chapter 5.

The transformation or conversion of resources into end products is discussed at length in Chapter 4. This transformation (for example from grass and cows into milk and meat) is conceptualised in the agricultural expert system as regulated by production functions: a fixed relationship between inputs (grass and cows) and outputs (milk and meat). It is assumed that new, more productive and/or more sustainable production functions can only be created after technological breakthroughs.

In contrast to this thesis, I want to develop another image. Indeed, there are regularities and patterns of coherence. Unmistakably, the relation between inputs and outputs (the I/O relation) displays a certain range and contains a certain, as yet uncrossable, frontier function (the most efficient I/O relation) in certain, temporally and spatially restricted situations. But what is important here is that these patterns or regularities are a product, a result of the labour process in agriculture. Furthermore, I regard the labour process as locus of co-production, of the continuous encounter between, and mutual transformation of, the social and the natural. Precisely because the results of this co-production are rooted in, and arise from, the labour process, it will always involve extremely variable I/O relations. New production functions are constantly created in and through the process of farm labour: new patterns of coherence that correspond closely with farmers' own interests, perspectives, insights, and knowledge.

In previous studies of farming styles, researchers concentrated initially on the above-mentioned dimensions: the conversion and mobilisation of resources. This initially limited approach was later broadened, thanks to the work of Kerkhove (1994), Ventura (1994), De Rooij *et al.* (1995), Wiskerke (1997), Van der Meulen (1999a 1999b), and Roep (2000). The studies identified the sale of end products and, hence, the specific circuits connecting production and consumption as ordering principles, as essential types of interlocking, and therefore as crucial parts of socio-technical networks. I will return to these new insights in Chapter 9, where new development opportunities for Dutch agriculture will be discussed.

What is important in this first storyline is that the interconnected domains of mobilisation, conversion, and sale contain considerable variability – each separately, but above all collectively. They are malleable, flexible,

changeable. The resulting variability cannot be understood as a 'fixed' range: it is constantly enlarged in the practice of farming – that is, by farmers' innovative capacity.

Similarly, the potential variability is constantly restricted, if not reduced. If two keywords describe agricultural history and its development of production capacity, they are variation and selection. On the one hand, there is a constant search for new patterns, and for new combinations, to further increase the already available variation. On the other hand, some patterns, and some combinations, demonstrate that they are more successful than others, while others prove unsuitable in the light of changing social and ecological conditions. Thus selection appears, while the provisional end result of the selection is the starting point for the search for and creation of new variation.

Farming is like 'a dance through time': time and again variation and selection result in new socio-technical networks, new types and connections. While these new expressions emerge, others degrade and disappear – sometimes stealthily, almost unnoticed, at other times abruptly.

This brings us to the second storyline. It concerns the heterogeneity of farming as the (temporally and spatially confined) expression of this 'dance through time'. In Chapter 3 of this book, I will discuss in detail the farming styles that can be distinguished in contemporary Frisian dairy farming. I will try in particular to describe these styles as projects, as 'self-reflective strategies for patterning the network of the social' and, hence, as part of a more comprehensive socio-technical network.

The remainder of the book builds upon this, particularly Chapters 6 and 7, which discuss selection, and Chapter 9 in which variation is discussed. More precisely, in Chapters 6 and 7, I analyse the interaction between the development opportunities inherent in various farming styles and the dominant agro-political project – that is, the process of modernising agriculture – while the interaction with a new agro-political project, in which rural development has a central role, is analysed in Chapter 9. Chapter 8 forms a link: there the central theme is the extensive erosion of trust, the essential ingredient in the functioning of expert systems.

The third storyline can be summarised as a systematic critique of various forms of determinism: of technological determinism (in Chapter 4, *inter alia*, where the doctrine of production functions is discussed); of economic determinism (in Chapter 5); but especially of what is called structural determinism, which has overrun the social sciences (including rural sociology). Chapters 6 and 7, which discuss modernisation as 'the unfolding of structural patterns and relations', can be understood as a critique of structural determinism. There the agricultural knowledge system, the expert system that represents, propagates, and realises this structuralist notion like no other, is discussed at length.

The fourth storyline is the obvious counterpart of the third: it entails a search for a more adequate concept of structure. I have already commented on it in this introductory chapter. In this book, I will test the concepts and notions raised in this chapter, to arrive at a conclusion in the final chapter (Chapter 10). I will also summarise the critique of the contemporary expert system in Chapter 10. Chapter 9 forms an important prelude to this, which brings us to the fifth and final storyline. Chapter 9 concerns new development opportunities that reach beyond the current misery. In the discussion of these opportunities, I use 'rural development' as the connecting concept. Chapter 9, the 'battle for the future', is also concerned with the social and political struggle that was waged in the 1990s over the realisation of new development opportunities.

Notes

1 Incidentally, the full text runs as follows: '*vivir es constantemente decidir lo que vamos a ser*'. The author states further: '*nuestra vida es ante todo toparse con el futuro . . . la vida es una actividad que se ejecuta hacia adelante, y el presente o el pasado se descubre después, en relación con ese futuro. La vida es futuriación, es lo que aun no es*' ('life is above all dealing with the future . . . life is a progressive activity, and the present or the past is discovered with hindsight, in relation to the future. Life consists of making futures; it is what it is becoming'; Ortega y Gasset 1995, p. 228). For a further comment, see Remmers 1998, chap. 7, esp. pp. 313–317.

2 I am acutely aware that it is easier to speak about the great period of modernisation than it is to define the period. Two issues are clear. First, the era of modernisation was constructed only gradually in civil society as a whole. The rise of capitalism – initially in the Italian city states, later in the Netherlands – and the subsequent civil revolution in France, the Enlightenment, and the industrialisation that started in England all represent many stages in this protracted process. Second, it is clear that the same process of modernisation occurred in agriculture much later than in the urban sphere of influence, although it is not clear exactly where and when to situate the turning point. The work of Hofstee is a case in point. In his 'early' work Hofstee (1949, 1985a) located modernisation (the turning point from a traditional to a modern-dynamic cultural pattern) in the first half of the 19th century. Furthermore, he sometimes refers to the early Middle Ages and to the periphery of the then feudal systems as the cradle of modernisation. In his 'later' work (see, for example, Hofstee 1953) the post-war period of the 20th century acts as the turning point. The identification of the turning point is, as is well known, highly controversial. Historians such as Van Zanden (1985) and particularly Bieleman (1987) have indicated that in the olden days agriculture already showed remarkably 'modern' features. Be that as it may, it is striking in this controversy that no one disputes the difference between 'traditional' and 'modern'. The big question is where, and particularly when, to situate the beginning of certain phases.

3 Again, it is not my intention to look for clear boundaries in time, hence the use of the vague description in the main text. Incidentally, it is remarkable that this 'next phase' started earlier in agriculture, so it seems, than in the rest of society. See in addition Chapter 6, where the functioning of the expert system in agriculture is described.

4 As I will demonstrate below, we should perhaps say: in that which specifies our future. The contemporary expert systems are more than just a collection of scientists, specialists, and experts. They are also the paramount prisoners of the axioms that regulate knowledge production.

5 James Scott relates the phenomenon of mega- or macroprojects largely to the functioning of the contemporary state. Thus, he interprets megaprojects as 'state simplifications'. These simplifications (as such inherent in the functioning of bureaucracies) 'do not successfully represent the actual activity of the society they depict, nor are they intended to; they represent only that slice of it that interests the official observer . . . [They are simplifications] that, when allied with state power, will enable much of the reality they depict to be remade'

(1998, p. 3). Scott points out that the development of megaprojects ('the tragic episodes of state-initiated social engineering') arises from a combination of four elements: the 'administrative ordering of nature and society', a 'high-modernist ideology', an authoritative state ('willing and able to use the full weight of its coercive power to bring the high-modernist designs into being'), and finally 'a prostrate civil society that lacks the capacity to resist these plans' (1998, pp. 4–5). Indeed, those seem to be the required and necessary conditions with respect to the cases Scott analyses. However, if we introduce the modernisation of agriculture into the analysis, these conditions appear insufficient. Agricultural modernisation as a megaproject takes place (just like various other contemporary macropjects) under *democratic* conditions, which refers indirectly to the considerable influence obtained by and assigned to the expert systems.

6 This has been described at length in general terms by Callon 1986; Bijker and Law 1992; Latour 1994; Lowe *et al.* 1995.

7 The communication between farmers from various regions is a shining example of this. The 'other' was not taken note of in order to imitate but rather to understand better and, if possible, to strengthen what was one's own. If parts were adopted from elsewhere, its structure would typically be 'one's own' – that is, that which was constructed and expanded thus far, the frame from which to assess what could possibly be adopted and how it could be fitted in. (For a further analysis, see Van der Ploeg 1987, esp. pp. 35–42.) It is remarkable that the 'grammar' of comparison and adoption has radically changed since then (Cristovão *et al.* 1994). At present, there is a clear hierarchy of 'most developed' agricultural systems and of more or less 'underdeveloped' agricultural systems. The technologies of the former now hold as the normative frame around which the agricultural practices of the latter have to be reorganised. 'Areas lagging behind in development', the term frequently used within the EU, is a striking expression of this.

8 See Long and Van der Ploeg 1994, pp. 80–81.

9 This term is used to indicate the opposite of 'interlocking'. Distantiation represents creating a distance, creating room for manoeuvre or autonomy.

10 Robinson Crusoe's project, to mention probably the worlds' most famous castaway, could only succeed with the presence of the stranded ship – resources! – and with the arrival of Friday.

11 Trust emerges as one of the important mediums to cement postmodern societies together, and as a vehicle to implement developments. Trust is (in contrast to faith and confidence) highly depersonalised. It is institutionalised faith in a system and its artefacts and procedures. Trust implies that carrying out certain actions will lead to a future situation specified beforehand. If the latter situation is the objective and if the actions to be carried out are the means, trust integrates the two. If I want to cross a busy and dangerous road, pressing the button at the pedestrian crossing and waiting for the lights to change to green are the means by which to safely reach the other side (the objective; Giddens 1990). As a pedestrian, I do not have to know the different drivers (or look deep into their eyes). I trust not so much the drivers as subjects but the 'system'. I assume that the other participants (the drivers) do the same. The knowledge that everyone acts on the basis of the system generates trust, just as the functioning of the system presupposes trust. The same example makes clear that a simultaneous co-ordination of various actions is necessary to realise trust. Drivers will have to stop when the lights change to red. If they want to meet their objective (let us at least hope that this consists partly of avoiding accidents), acting on the system of traffic rules (stop at red, go at green) is a necessary means for them. Trust connects everything. Without trust the system (the set of traffic lights and rules) will not work at all.

12 This trust in systems includes primarily 'the faith that a role is interpreted according to the norms, *more or less independent of the person performing the role*' (Galjart 1998, p. 13, my emphasis). Galjart contrasts this trust in systems with what he calls 'particularistic trust': 'the expectation that *someone else* will cause us harm in a transaction or a relationship' (*ibid.*, p. 12). In his discussion, Galjart considers the crucial importance of trust for development.

13 If collective memory is the subject in traditional societies, just like agency in the era of modernisation, the expert system is the most important subject under postmodern relations.

14 But it is possible in the long term, see Groen *et al.* 1993.

15 For a theoretical explanation, see Wiskerke 1997; for further specification in agriculture, see Chapter 3 of this book.

16 It is no coincidence that I refer here to Harris. From his pen comes one of the most eloquent critiques of the approach that we have tried to develop in Wageningen. In the proceedings of the fiftieth anniversary congress of Wageningen sociology (where Harris unfolded his critique), Long and Van der Ploeg discuss the critique at length.

17 What remains intact is that one can of course use a conceptual framework in which 'external structure' acts as a causal complex. Thus emerge the so-called structuralist theories. The bankruptcy of such approaches has been amply exposed, by Long (1985) in particular.

18 The same applies to Booth as to Harris. From his pen comes an inspiring critique, a heartfelt search for the possible weak points in the Wageningen approach. Just as in Harris' case, Booth's observations revolve particularly around the question whether an actor-oriented approach excludes the concept of coercion (whatever its nature or form). See Booth 1994.

19 Of course, the relations at issue here (the relations among various projects) can differ considerably. Some will be extremely hierarchical and coercive. This does not imply, however, that one therefore needs to fall back on structuralist approaches; I attempt to show this in Chapter 6 by means of the so-called structural development of and in Dutch agriculture (as a result of which more than half of the farmers had to abandon their farms).

20 Following the work of Giddens, it is tempting to locate such incapability in 'structure' (in its Giddensian sense). For structure is not only enabling but also constraining. It excludes certain types of action, certain manifestations of agency, while others become possible. Theoretically, this solution is hardly satisfactory – empirically, it is unmanageable, as will be shown in note 21.

21 If one looks at contemporary Dutch agriculture, the complications can be seen a mile off; because there is no other possible interpretation than that agency is ubiquitous. In any case, the presence of farms, of whatever farm, is inconceivable without the notion of agency. If, in the previous period, there had not been a determined effort to continue the farm and if one had not succeeded at this, there would be no individual farms nor a collection of farms as a whole. Every farm is evidence of the 'capability of doing things'. In agriculture (and I assume the same applies elsewhere) there are no actors walking around in a permanent comatose state. This notion of structure could be introduced as the counterpart of agency. Apart from the extremely difficult question of what should be interpreted as structure (elsewhere in this book, I will discuss this at length by means of the concept of 'structural development'), a not very satisfactory dichotomy would emerge here. Structural relations (as 'both enabling and constraining') imply that a number of farms are doomed to vanish, while others can continue (for the time being). The notion of non-agency would apply to the first group, and agency would apply to the second group. Such a dichotomy is completely unsatisfactory. First, because it ignores, on the one hand, the fact that a number of farms are purposefully abandoned (not only intentionally, but also through the corresponding actions), and, on the other, the situation that a great many farms are continued purely as a matter of routine (see, *inter alia*, De Bruin 1991, who discusses the problematic aspects of farm succession). Second, it is unsatisfactory because it is hard to understand why and how 'structurally impossible farms' (let me put it in that way for the time being, I refer especially to small or even very small farms) are sometimes continued or even guided along the cliffs of a very difficult farm transfer. If 'structure' is 'constraining' in some cases, it must be in every case; because if it does not do so in some cases (because dominated by agency), the notion of actor-structure as duality becomes very problematic. Third, I want to point to the fact that there is an impressive degree of differentiation among the 'remaining' farms; in other words, agency can result in innumerable 'things', or else various types and degrees of agency should be introduced. In short, I think that agency as an undifferentiated concept, as the opposite of structure, is very unsatisfactory.

22 In other words, Law's principle of symmetry (1994) can and must be applied here as well.

23 This does not imply that these notions, or images of the future, are *always* fluid, are *always variable and changeable* in empirical reality. The crux of the large macroprojects and of

contemporary expert systems emerges here: they *make* the images of the future rigid and unchangeable.

24 Because on the whole, cohesion, fabric, and web are very remarkable. More obvious perhaps are disintegration, the inability to coordinate, ignorance, and so on. Rather than simply taking cohesion for granted, it should be explained.

25 Van der Ploeg (1993) explains in more detail how difficult, if not improbable it is to innovate under contemporary conditions.

26 For example *Adellijk bloed* by Popta (1962). There is also an incipient critique in there about the expert system that was beginning to emerge in the world of livestock breeding.

27 This is the comprehensive 'modernisation project' that was conceived and also materialised in Dutch agriculture from the 1960s onwards. For more detailed descriptions, see Frouws and Van der Ploeg 1973; Van der Ploeg 1995a, 1996. I will discuss this modernisation project in more detail in Chapter 6 of this book. It may seem confusing at first that I present and analyse this 'modernisation project' as a shining example of a 'postmodern' approach. Just as in the social sciences (see earlier in this chapter), however, it applies here that one's own projects are decorated with the colours and terms of the past. Agriculture had of course been modern for a long time before mid-20th century. See the convincing work of historians such as Bieleman 1987. Hofstee's work (1985a) is significant in this: he shows how a 'modern cultural pattern' emerged in the clay region of Groningen in early 19th century. However, as if this had never happened, the induced changes in the latter half of the 20th century are just as easily called 'modernisation'. If one takes a magnifying glass and watches various processes, it would show that the term repeatedly re-emerges during and after this period. Time and again, the 'need for modernisation' is mentioned: at every land consolidation, at every adjustment in arable agriculture, at every introduction of new technology, every time one has to face adverse market conditions. The power of the word is probably in the suggestion that undesired situations can be overcome once and for all in a single operation.

28 See, *inter alia*, Van Egmond *et al.* 1996; Nijhof *et al.* 1996; Langman *et al.* 1998.

29 The greatest upheaval emerges, I know this from my own administrative experience, if one allows participants other than the usual ones to join the conversation about the definition of the 'agenda'. Conversely, many examples in and around agriculture and the countryside indicate how certain voices are regrettably turned into a predominant, if not the only possible, routine.

30 In other words, one should avoid equating the eventual ordering, or its effects, with the initial mode of ordering/strategy as such. In those cases where Law speaks of 'imputation', such a danger becomes far from imaginary. What occurs as 'practice', as state of affairs, as material effect, at moment T and in place P will never be the unilinear effects of one mode of ordering, of one strategy, but rather of the encounter, the interaction, the mutual influencing, conditioning, and often the mutual transformation of several modes of ordering, i.e. several strategies – of several interlocking projects. However, Law does indeed hint at this, for example when he discusses 'interordering effects' (1994, p. 22). The empirical setting within which Law conducted research (one large laboratory) was probably less encouraging to further explicate the issue touched on here.

31 In the fourth chapter of his study, Law presents four modes of ordering: enterprise, administration, vision, and vocation. He stresses that they cannot be defined in terms of persons, or in terms of personal attributes. They are strategies. It is the same point with which we have often struggled in the farming styles group. For the sake of recognition, we have modes of ordering reduced to and attributed to nouns instead of verbs. In English texts, however, this is not the case. There, for example, 'the strategy of farming economically' is used consistently, rather than 'economical farmers'. In Law's analysis, those four modes of ordering are present in constantly changing combinations in the laboratory. The great difference is, of course, that agriculture is concerned with sole proprietor businesses. Therefore, there will rather be only one style, only one strategy, on family farms. (However, partnerships and corporations are interesting phenomena; in the case of several siblings, you will certainly find that one pursues one strategy, the other pursues another. Furthermore, there is of course the tension between men and women: various principles that are balanced

against one another. See De Rooij *et al.* 1995). Law stresses that enterprise and administration are *antithetical* modes of ordering. This emerges notably from various farming style analyses too. The 'economical' versus the 'ambitious' (to elaborate on one's own resources versus to mobilise as many external resources as possible; see Van der Ploeg *et al.* 1992). The same applies to the styles of cowmen v. machinememen; as well as to skill-oriented v. mechanical technologies (Bray 1986) and to intensity v. scale (Van der Ploeg 1987). Thus a mutual, although ever changing, influencing of modes of ordering occurs within the laboratory. Furthermore, Law shows that interlocking with projects (or modes of ordering) of clients, financiers, ministries, universities, etc. is also going on. All in all, 'interactive systems' (Booth 1994), i.e. 'interlocking projects' (Long and Van der Ploeg 1994), become decisive.

32 In short, the 'network' cannot be understood simply as an aggregate of modes of ordering. All the more because the 'patterning of the social' (certainly in the current postmodern constellation) increasingly defines which modes of ordering, which strategies, do or do not fit. Here too the turning point, to which I referred previously, appears again.

33 All in all, financial capital represents nothing more than a particular project: to increase the initial amount of capital through participation in other projects.

34 A definition in terms of 'feasibility' is also important: What can I exercise influence over? What is beyond my power? 'Feedback' is already integral to all this: as part of the decision of what is relevant to me (and definitely in the further specification of what I could influence) I will have to take account of the world as it presents itself to me and/or of the world as it is presented to me. *Yo soy yo y mi circunstancia*, as Ortega y Gasset states in this context: 'I am myself and my situation'.

35 These are the terms suggested by neo-institutional analysis as solutions to problems such as those described here (see, *inter alia*, Saccomandi 1991, 1998).

36 In fact, this continued to the extent that the building of the factory had almost been finished before the third partner, Friesland Coberco Dairy Foods, decided to participate. I think it goes without saying, therefore, that considerable risks have been taken along the entire trajectory. On the other hand, as Henk Brouwer argues, you 'need to be able to fall back on a number of side streets. If you can't turn left, you'll have to be prepared how to turn right if necessary.'

37 Even though leading thinkers of the Rabobank in Utrecht (its headquarters), such as Wijffels and Krouwel, supported the initiative wholeheartedly; the Eindhoven office (where credit applications are eventually assessed on the basis of formal criteria) reached a negative decision. It was reasoned that dairies were being closed all over Europe, and it was therefore ludicrous to think that a small dairy such as the FEZ would stand a chance of survival. Eventually, the Rabobank did become involved in the FEZ indirectly through Rabobank International.

38 Friesland Coberco Dairy Foods had attempted years before to set up a range of organic products. However, it had turned out to be a total flop. A new initiative by a 'small outsider' was initially regarded as rather painful: 'If we can't do it, nobody can'.

39 The Industry and Commerce Board was notable by its absence in this innovation. It is also typical that serious practical research on organic dairy farming by the expert system only started during 1998–1999. For that is the moment when institutionalised practical research (*in casu* Aver Heino) makes a changeover. It means that the first results will only be available in five years time, i.e. in 2003 or 2004.

40 The alleged backwardness became even the conceptual starting point of operationalising the countryside and, therefore, of differentiating it from the city (see Van der Ploeg 1997).

41 Of course, other large megaprojects did exist. In the Netherlands, they included the organisation of water management, coastal defence, and energy supply. It is well known that each of these represents so much as a state within the state.

42 After all, you cannot experiment simultaneously with Schiphol Airport in the North Sea, Schiphol in Flevoland (or in the Markerwaard), and the expansion of the existing Schiphol.

43 If there is anything in this world that can hardly be virtual, it is a farmer. Farmers stand in the mud, between their cows. Or they watch the latest version of a milk robot at the Agricultural Show. However, they watch all this knowing that milk will soon have to flow

into the jars. In our 'virtualised world', farmers are probably the last junction of its stubborn opposite: it starts off on matter, on mud and cows, and it ends in matter, in milk or in seed potatoes. Hence, it is out of the question that there is or could be any detachment and evaporation of things into words and symbols and nothing else.

44 The 'old boys network', which clearly exists in the agricultural knowledge network or 'expert system', centres largely on aspects of one and the same set of axioms.

45 Recent agrarian history has a painful flip side, related to the 'conversion' of critics and innovators into 'charlatans'. Older colleagues have told me many stories about this. I leave the retelling of those stories to the first agrarian historian who dares to research a really controversial issue.

Part II

Distantiation: Creating Resources

2 Dancing through Time

The previous chapter pointed to the highly variable nature of the relationships between the farm, on the one hand, and markets and the prevailing technological repertoire on the other. In this chapter,¹ I want to discuss the historical backgrounds to these highly variable relationships. I want to stress that the current room for manoeuvre, which provides the countryside and agriculture with their attractive and colourful morphology, is partly the outcome of a lengthy and complex emancipation process, in and by which farmers transformed themselves into what they are today: independent producers² able to operate within degrees of freedom created over the course of agrarian history.

History – agrarian history too – is often thought of as a unilinear process, evolving inevitably from a ‘natural economy’ to a ‘fully commoditised economy’ (Gibbon and Neocosmos 1985; Bernstein 1986). The natural economy would be dominated by production directed at self-sufficiency. Production for a market would be a secondary phenomenon. In a fully commoditised economy, on the other hand, production is entirely oriented to markets. Furthermore, and crucially, organisation and development of production would be governed completely by the prevailing market relations. Farmers become ever so many expressions of the *Homo economicus* or, more profanely, agricultural entrepreneurs. The development of agriculture would be completed through a generalisation of agricultural entrepreneurship. Unfortunately this is not so easily achieved. Every ten years or so, farmers are presented with the message that they should be more and better entrepreneurs.

In this chapter, I will first and foremost explain the thesis that recent agrarian history (from the mid-sixteenth century until today) should not be understood as a process of continuous commoditisation, as an inevitable progression from a natural to a fully commoditised economy. It seems rather that the initial situation of extreme dependency on commodity circuits is overcome by a sometimes gradual, sometimes rapidly advancing process of decommoditisation.

Throughout the course of agrarian history – the most important point of reference in this chapter is Friesland – farmers actively distance farming from the influence of the prevailing market relations, which are often experienced as suffocating. If a *tendance lourde*, a long-term movement, can be identified in Frisian agrarian history over the past 500 years, it is definitely a movement towards decommoditisation rather than towards a completion of the market economy. Thus this story has a topical value.

For market-oriented production, deregulation, and liberalisation are the keywords used to reorganise the relation between agriculture and markets at the turn of the millennium.

The pursuit of more room for manoeuvre *vis-à-vis* markets is not neutral. In this chapter, I will emphasise the extent to which this pursuit became interwoven with the struggle for 'farming freedom' and with the successful development of Frisian agriculture since the mid-19th century. Decommodification, prosperity, and 'farming freedom' went hand in hand. This development is crowned with the completion of the contemporary freehold family farm (NRLO 1997b).

The outcome of the fascinating history of Frisian agriculture can be traced not only in the objective degrees of freedom created in the relationship between agriculture and markets. Collective memory, resulting from the complex and often contradictory history, is also of considerable importance. This collective memory, repeatedly kept alive (if not brought back to life again), is heard clearly in the cultural repertoire, in the ideas of *sunige boeren** (economical farmers), *fokkers* (breeders), and *koweminsken* (cowmen), that we will encounter in the following chapters.

Apart from the relationship between farm and markets, technology also is discussed in this chapter. Initially, Frisian farmers were condemned to make use of an extremely harsh, if not hostile, ecosystem: blue or dun cows, marshy land, and the ever present danger of cattle diseases and inundations. The first Roman chronicler was not entirely wrong when he characterised the Frisians as *mangiatori di sabbia*, as mud eaters. However, farming gradually overcame the limitations of the prevailing ecosystem. Frisian farmers developed new techniques, new methods of conversion, which resulted in the gradual genetic improvement of livestock and in the gradual but unmistakable improvement of pastures and meadows. Increasingly, a wide repertoire of techniques emerged – techniques with which agriculture gained independence from the initially oppressing ecosystem. The creation of the beautiful Dutch-Friesian breed is but one of the outcomes of this.

There is yet another reason to discuss history here. It is related to the way that the success story of Dutch agriculture is usually told today. In this story, the high productivity, dynamics, and prosperity of Dutch agriculture are presented as the outcome of its structure: the size and production potential of farms and the institutional infrastructure (advisory, research, education, banking, agro-industry, etc.) are all regarded as crucial to this success story. Repetition of these factors – that is, a (more or less substantial) reorganisation of the relations in lesser developed and/or backward agricultural regions along the lines of the Dutch model – thus appears as logical lever (as 'trigger') for agricultural development.

* *Translator's note:* the author used Frisian folk concepts in the original text, derived from Frisian vernacular. In the remainder of the text these will be printed in italics.

There is no need to recall here how disastrous this still commonplace approach is. What I am concerned with here is that the 'structure' of Dutch agriculture no more explains its productivity, dynamics, and prosperity than restructuring along the lines of this model would result in development elsewhere. The fact that structure goes hand in hand with prosperity, productivity, etc. is critically dependent upon the way in which this 'structure' was ordered (and hence upon all the other interrelations arising from the process of ordering).

For example, let us examine the advisory service. In the Netherlands, we have at our disposal a much-praised and currently highly centralised and partly privatised advisory apparatus in agriculture. One of the success factors that this advisory apparatus boasts is a relatively high level of faith from farmers. This faith has been built up over the years, partly due to the highly decentralised organisation at the time and to its non-private character. Anyone seeking to replicate the Dutch model— whether in backward agricultural regions in Portugal or developing countries such as Peru — might start a highly centralised and probably partly privatised advisory service to act as a 'trigger' for development. Whether such a service would build up the necessary trust between farmers and advisors, whether, in other words, it would foster development, is open to question.

An understanding of contemporary Dutch agriculture requires knowledge of its history, of the way in which it became unfolded. However, the power and weakness, capability and incapability of agriculture are contained in *other* relations and resources than the ones currently presented as such. We use the notion of 'structure' nowadays to refer to a world that is ordered logically at face value, in which well-defined, causal complexes go hand in hand with similarly well-defined effects. This image, however, is highly *virtual*. It inspires our actions, yet it also results in numerous unintended consequences emerging from those actions. Even though one can imagine the world as one pleases, this does not guarantee the most adequate guidance for action.

The hidden (because ignored and hence effectively rendered irrelevant) strength of Dutch agriculture lies in the relatively high degree of control that direct producers have over the resources necessary for agricultural practice. Farming requires resources: land, water, labour, capital, knowledge, the capacity to apply adequate technology, cows, sowing seed, manure, machines, and so on. Essential here is the question of the extent to which these resources are available (a question that concerns not only the quantity but especially the quality of resources) and the question of who manages the resources.

Typically in Dutch agrarian history, the farming community has increasingly acquired control over most of these resources. At the same time, it has also typically unfolded the capacity to develop these resources in a relatively autonomous way. This hidden feature applies not only to agriculture as a whole but also, and especially, to individual farms. Whoever ignores all this will not come to a real understanding of Dutch agriculture.

2.1 Hemmema's memorandum book: back to the 16th century

An appropriate starting point for an overview of the changing relations between markets and agriculture is the account book or memorandum book of Rienck Hemmema (for the verbatim text of the memorandum book, see Gerbenzon 1958; for comments and analyses, see Slicher van Bath 1958; Fryske Akademy 1990; Hazelhoff 1991; Van der Ploeg 1995b).

Rienck Hemmema's farm was located south of the Frisian city of Franeker. The farm was not rented but largely owned by Hemmema; it comprised 25.5 hectares, of which 8.5 hectares were arable land and 17 hectares grassland. Hemmema carefully kept an account book for this farm in the period 1569–1573. Slicher van Bath described it as 'an almost unique source of the history of agriculture in the sixteenth century', to which he adds that 'the value of this document is increased even more by its elaborateness and meticulousness' (1958, p. 72). Hemmema's account book enables an in-depth examination and detailed analysis of the set of economic relationships in which the farm was interwoven.

A high level of self-sufficiency (of self-support, according to Spahr van der Hoek 1952) is one of the striking elements: 'In the account book, one encounters little about the food that was purchased'. 'Understandably', according to Slicher van Bath, 'because the farm produced the necessary foods largely themselves' (1958, p. 118). Self-support extended into many aspects. Thus, an important part of the herd was slaughtered in the autumn months: two to three cows and some calves. 'The meat was largely for home consumption' (*ibid.*, p. 102). Self-support took place not only within the boundaries of the farm but also occurred via various social relations. Thus, hides went to the shoemaker, and 'the fat, the tallow, went to the candle maker to produce candles'. Mostly, this concerned socially regulated exchange, transactions that did not involve money but happened through reciprocal service or through payment in goods. Thus windrowers were always paid in beer.

These practices were not uncommon. Van den Akker mentions that until the end of the 19th century 'farmers did not have an account with a feed merchant, nor with a butcher – a baker received little more. Butter went to the shop, for which they received goods in return. If we imagine that farmers often supplied craftworkers, such as carpenters, blacksmiths, and cartwrights, with a whole or half a pig, to settle completely or partially their *neijierrekken* [New Year's account], we can hardly escape the conclusion that autarky was applied to the old farm in such a refined way that today's elder statesmen could definitely have drawn a lesson from this' (1967, p. 14). And Spahr van der Hoek states more generally: 'Money was far from common in ancient times; if one wanted to obtain something from a merchant, it was best to bring exchangeables along' (1952, vol. 1, p. 370).

The importance of the described self-sufficiency or autarky is often misunderstood, since it is interpreted as indicative of the total or near total absence of market integration. It is assumed that the more important or inclusive self-sufficiency, the less weight market and price relations

would carry. The idea of irrational economic behaviour easily appears compelling. Such opinions, implicitly rely on the idea that history generally, and agrarian history in particular, embodies a unilinear trend from a presumed natural economy towards a completely monetarised, universal market economy. This notion is apparently so strong that innumerable indications, which referred if not to the contrary then at least to a considerably more complicated situation, were ignored altogether. To the farmer-writer Van den Akker, the matter was considerably more complicated. If, on the one hand, he describes the pursuit of autarky, he also makes clear that farmers lost no time in making money out of something as, and when, the opportunity arose.

For, at an even earlier time, Marc Bloch (1939) had already pointed to the importance of the *culture d'or*: the crop with which the necessary money was earned on farms that were otherwise very much directed at self-sufficiency. And Spahr van der Hoek concludes that at Hemmema's time 'self-sufficiency in the absolute sense has proved to be an untenable presupposition' (1952, vol. 1, p. 370). Self-support and market orientation are not mutually exclusive. One might well be a precondition for the other. In this context Hemmema's account book provides a wealth of relevant data.

First intermezzo

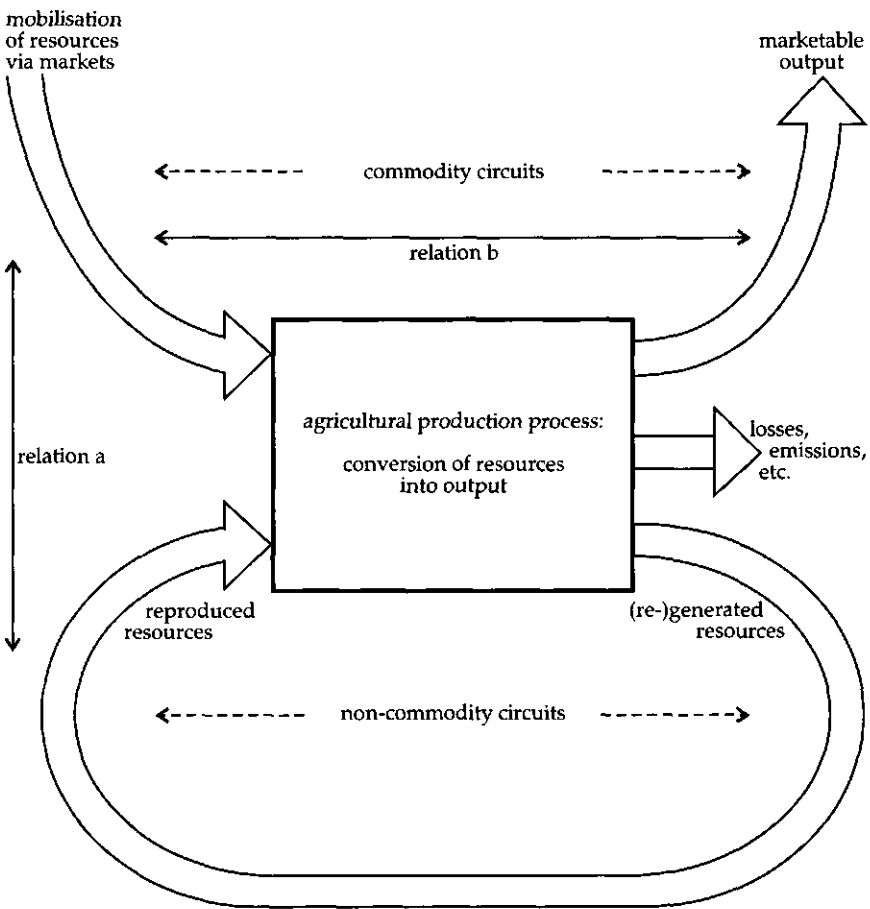
Generally, a farm can be represented as a mechanism for converting resources (such as land, water, plants, manure, animals, labour, knowledge, etc.) into useful end products (such as milk, meat, butter, hides, grain, etc.). This conversion (the real production process) is based upon the mobilisation of resources (Georgescu-Roegen 1972). Figure 2.1 shows how the necessary resources can be mobilised via markets; in this case the 'resource flow' represented by the arrow at the top left-hand corner dominates. It is also possible that farm management is based particularly on resources generated within the farm, in which case the level of self-sufficiency or self-support is high. It will be clear that these notions do not relate exclusively to the farm economy (let alone to food consumption). They refer to the unity of farm and family. Of course, the same applies to the contrasting notion of market dependency.

Fertile soil, good livestock, seeds, labour and knowledge, feed, and the required amount of money – all of this can be generated within the farm itself; it can also be mobilised via the respective markets. High market dependency occurs when the mobilisation of resources via markets prevails strongly over self-sufficiency (Van der Ploeg 1990; Saccomandi 1991). Choices also exist over how to use outputs. If 'well-ripened' manure is one of the end products, it can be utilised on one's own farm to increase soil fertility, but it is also possible to sell it. If this issue seems to be only of theoretical importance today, it played a crucial role in Frisian agrarian history. The same applies to cows, calves, hay, to farm labour, and so on.

The degree of market dependency (or degree of commoditisation) can be approached and operationalised in two ways. First, resources mobilised

via the market can be related to resources reproduced within the farm: this is relation *a* in Figure 2.1 (for empirical applications, see Bolhuis and Van der Ploeg 1985). However, it is also possible to approach the degree of market dependency as the relation between purchased resources and sold produce: this is relation *b* in Figure 2.1. The more this relation tends towards 1:1, the more oppressive the relationship between markets and farm will become. Thus emerges, to use a beautiful, old, Frisian term, *jildkrapte* (shortage of money; Brolsma 1948, p. 6). And vice versa, farmers will again get a bit more *de macht yn'e hannen* (if I may use a clumsy translation, farmers will again gain a bit more agency – literally have strength in their arms; *ibid.*, p. 10).

Figure 2.1 Resource flows on the farm



In a situation of high market dependency, many resources will enter the farm as commodities, as merchandise. Production and subsequent marketing have to be organised in such a way that the monetary output compensates at least for the actual monetary costs. Market relations penetrate, as it were, into farm management: they become part of its organising principle.

Along with various resource flows, different circuits become important. The 'lowest circuit' in Figure 2.1. (generating and reusing resources produced on the farm) is rarely controlled by those actors that control the commodity circuit (the set of markets in which the farm participates). In consequence, other norms will be applied to these circuits and other interests will dominate (Long *et al.* 1986). Thus, with increasing market dependency not only does the origin of the utilised resources change, so do the circuits themselves. Hence the 'rules of the game' can change decisively. All this can have far-reaching consequences for farming itself.

Back to Hemmema: the nature and extent of market dependency

The operation and survival of Hemmema's farm is, according to the account book, highly market dependent. Even though numerous elements and mechanisms fit in with self-support, as explained previously, market dependency is an important and structural fact too. Hence the question of interrelations becomes essential.

On the supply side, Hemmema's farm is woven into an extensive range of market relations. Sometimes he buys manure (50 cartloads in 1571, later 4 barge loads, and later again 113 cartloads), at other times cows, grain (including rye from the Baltic region), pulses and hay. He hires a lot of labour (via numerous mechanisms) and rents land, while land is also leased or sublet. Furthermore, Hemmema has a number of loans and takes out new ones. In short, for a wide range of production factors and inputs (including a great many factors and inputs that could in principle have very well been generated on his own farm) Hemmema's farm is dependent on markets.

This can be illustrated more precisely through the example of cattle purchases. It is quite conceivable, in principle, to enlarge one's own herd by home-reared calves and heifers, freeing up animals for sale (or for slaughter and home consumption). Monetary costs can thus be minimised as they can be restricted to the incidental purchase of a good bull. On the other hand, it is also possible that almost all starting material is bought in, for example as in-calf heifers, milkers, and/or fattening cows. In those cases, beef and dairy cows are not generated within the farm, but obtained through markets. Again, on most farms a combination of both schemes will be followed, in which sometimes the market dependent way of reproduction dominates, at other times the autonomous, historically guaranteed type. Available historical farm accounts show that an enormous empirical range existed in this respect, just as it does nowadays.

In some years, Hemmema spent more than 1,000 stivers on cattle purchases. To give an impression of this amount, it was more than was paid in wages to permanent staff, and easily one eighth or more of total expenditure. In 1573, hay purchases are registered for 637 stivers, an amount that is not very different from the then average annual expenditure for human food and drink. New loans cover a total amount of nearly 400 stivers.

And so one can continue. It will be clear, however, that the phenomenon of self-sufficiency should not be made absolute in terms of lacking market integration. On the contrary, management and development of Hemmema's farm are pre-eminently market dependent. Both farm management and farm development occurred by entering into systematic relations with a whole range of markets.

Combining these different elements (on the basis of Figure 2.1), the only conclusion possible is that market dependency prevailed over autonomy and independence on Hemmema's farm. The degree and nature of market dependency become clearer if we relate monetary expenditure to monetary revenue. Of course, this can be carried out in different ways, but the resulting balance appears extremely fragile whichever way you look at it. As Slicher van Bath observes:

Only the exceptionally good year of 1571 has resulted in a considerable profit, in 1570 there is a balance between receipts and expenditure, the other years generate a negative margin . . . During the five years that cover the account book, Hemmema suffered a total loss of 3,893 stivers' (1958, p. 129).

The exact circumstances are debatable. It is clear, however, that *the blame is not on the lack of knowledge of agriculture, nor at the hands of the revenue, but at the side of expenditure (ibid., p. 130).*

If Hemmema's farm management would have been based less on market dependent reproduction – in other words, more on a relatively autonomous, historically guaranteed reproduction – the outcomes of the account book would have been less precarious.

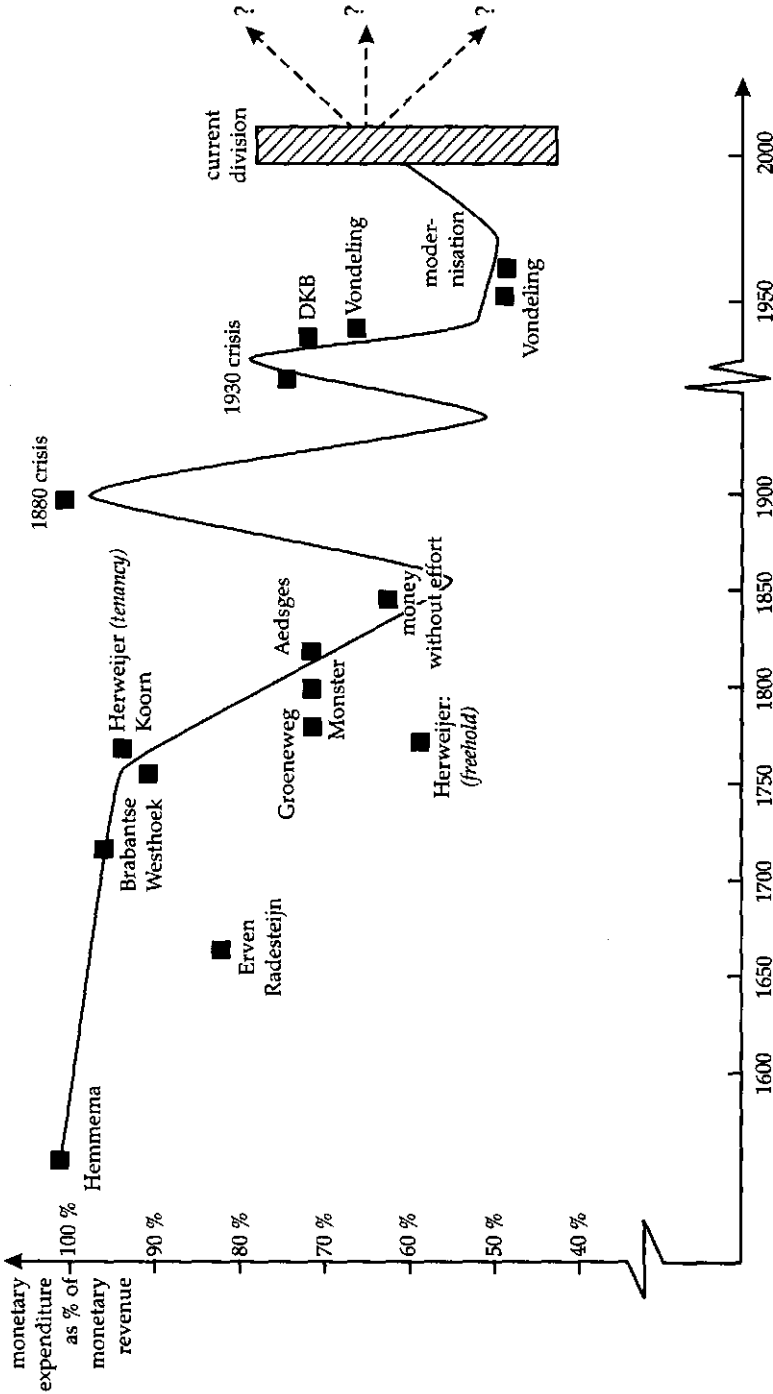
The 'suyvere deel'

Relating monetary expenditure directly to revenue (relationship *b* in Figure 2.1) is not a purely academic, ivory tower exercise. This is precisely what farmers did (and still do)³ themselves. In his *shult-register* (debt register), Jacob Koorn, a West-Frisian farmer, labelled this difference as the *suyvere deel* (literally the 'clean part'; see Meihuizen and Kuperus 1968). It is the proportion of monetary revenue that remains after deduction of the monetary expenditure (cf. Chayanovian types of analysis). Now, this *suyvere deel*, which in Hemmema's case was on whole extremely low if not negative, appears to be very low in other cases too. In Koorn's case (which was more disadvantageous than Hemmema's, because the latter was owner while Koorn had to cope with high rents, the monetary expenditure amounted to over 87 per cent of revenue. Also data of a later date and from elsewhere refer to an extremely fragile *suyvere deel*.

Figure 2.2 summarises the available data from the late sixteenth century to the present day. On the basis of an analysis of various account books and later bookkeeping data,⁴ monetary expenditure is represented as a percentage of monetary revenue. The higher this percentage, the lower the *suyvere deel*. The figure visibly raises several issues. Possibly, Hemmema's case is extreme, but, according to the other cases, the margin between monetary revenue and expenditure was on average very small.

This is connected with, *inter alia*, the high dependency of the farm vis-à-vis those controlling the markets.

Figure 2.2 The historical development of the *suvere deel*



In the case of the heirs of Jacob Herweijer (also included into Figure 2.2) this can be specified accurately. If we assume owner-occupier status, monetary expenditure amounts to only 52 per cent of monetary revenue. However, in the case of a tenancy, this percentage would rise to 87 per cent due to the additional rents. In other words, the more the cost structure reflects a high degree of market dependency, the lower the *suyvere deel*.

The gradual increase of the *suyvere deel* as shown in Figure 2.2 (and therefore growing autonomy vis-à-vis supply-side markets) is probably related in part to the secular trends revealed by historians. Thus Faber (1972, p. 132) indicates that between 1650 and 1735 there was a continuous fall in prices received by farmers for their products, after which a turning point was reached; subsequently, a period of gradual, but steady price increases set in, which are probably also expressed in the trend identifiable in Figure 2.2: the most favourable relation between revenue and expenditure (about 67 per cent) is found in the period between 1789 and 1823.

Taking an overview of the whole period Figure 2.2 suggests a clear *tendence lourde*: through different epochs the *suyvere deel* is increased.⁵ I will develop the thesis that this increase has been achieved by the active and purposeful actions of farmers. Three observations should be made about this. First, bookkeeping activities of people such as Hemmema, Koorn, and so many others should be understood in context. Their account books, *shult-registers*, etc. were instruments to monitor as closely as possible the market relations that they entered into. That is why (monetary) expenditure and revenue were registered. As Spahr van der Hoek notes, 'the farm journals that survived consist by and large solely of a list of expenditure and receipts' (1952, vol. 1, p. 313). One could closely follow, examine and analyse (using the concept of the *suyvere deel*) the relations between farm and market, especially as those relations contain such an extremely high degree of dependency.

This specific type of accounting stands out particularly when compared with contemporary bookkeeping techniques (with which people such as Koorn were acquainted). Nowadays both circuits are lumped together. Thus one's own production factors and inputs (see Figure 2.1) are calculated at current prices, just as the component that is going to be regenerated within the farm (available livestock, produced and stored feed, savings, etc.) is calculated at prevailing market prices (see, *inter alia*, LEI 1984, which also provides a theoretical explanation about this approach). By means of these techniques (which are taken from industry and trade) it is possible to examine the extent to which the total set of available resources (including, amongst others, labour) produces net profit. In the quoted farmers' account books, it is, on the contrary, the dependency relations vis-à-vis markets that are monitored. This is a crucial difference.⁶

Second, it must be made clear why farmers such as Hemmema, Koorn, and so many of their followers could remain farming. The circuit

constituted by one's own production factors and inputs (reproduced again and again) forms the reservoir to draw on when facing extremely difficult circumstances (it goes without saying that this works better the more advantageous the interrelations between both circuits in Figure 2.1 are towards the autonomous circuit). The 'non-commodity circuit' is of strategic importance particularly with regard to markets. It is the engine⁷ with which one can sail against the wind if necessary and substitute being adrift for following one's own course.

Thirdly, it is to be noted that self-support and market orientation, autonomy and dependency do not constitute exclusive categories. They always go together, they presuppose each other. The one is possible because of the other and vice versa. Self-support of family and self-sufficiency of farm go hand in hand with producing for markets and purchasing from other markets. However, judging from the data presented here, the balance between dependency and autonomy was extremely unfavourable in the sixteenth and seventeenth centuries. Costs were, and I refer to Slicher van Bath one more time, exceptionally high, precisely because the market-dependent circuit dominated over the autonomous circuit. If Hemmema had been able to rely more on rearing his own youngstock (and thus had to spend less on cattle purchases), had saved more (and thus had to raise fewer loans), and had been able to get more hay from his own land, he would have been better off. The *suyvere deel* was too low, precisely because of the high market dependency, as a result of which Hemmema had to be sparing of various matters and farm development became a delicate issue. But he was fortunate, for if he had also been dependent on land markets, one could indeed with Slicher van Bath wonder what course should have been followed.

Frisian agrarian history 'after Hemmema' can largely be interpreted as the purposeful search for opportunities to make the initially unfavourable balance between autonomy and dependency more favourable. This has been partially successful: the *suyvere deel* actually increased, as shown in Figure 2.2. How this process of decommodification actually occurred will be discussed in the following sections.

2.2 About farming freedom and agricultural development

Farmers considered a high degree of dependency to be problematic for various reasons. First, market dependency on the supply side made the farm extremely vulnerable to fluctuations in prices, a phenomenon still known today and usually called 'market-induced risk'. It goes without saying that the smaller the margin between monetary costs and monetary benefits, the more threatening the risk.

Poverty was a second aspect closely associated with a high degree of market dependency. Thus Dewez (1958, p. 57) writes in his commentaries on accounts from the period 1730–1740 that 'the net income on which a farm family had to live in those days was very small. If one encountered additional difficulties, poverty would be a very frequent visitor, and it is understandable that many farmers lost courage in those circumstances'.

The danger of poverty reached beyond the actual moment: gradually eating into one's own farm was one of the, sometimes grim, consequences of an unfavourable balance between dependency and autonomy.

The forced changeover to *rûch arbeidzje* (farming roughly) was a third effect of extremely high degrees of market dependency, which was experienced as extremely unfavourable. If monetary expenditure and monetary revenue threatened to meet, farmers sometimes looked to curtailing their expenditure. Less manure would be spread on the land, the number of 'daily rents' (daily wages) spent on various tasks was reduced dramatically, maintenance was postponed, and so on. At the same time, attempts were made to speed up monetary revenue: for example by serving heifers at an earlier age, by letting less land lie fallow, etc. All this led of course to a certain extensification of production, and also to the exhaustion of land, animals, and people, which increasingly clashed with the norms of 'good farming'.

What applied in the short term was felt even more strongly in the longer term. If a high degree of market dependency encouraged extensification, it usually implied that various improvements that seemed possible and essential would necessarily remain undone in the long term, precisely because one did not have the private means to realise them. For the small, sometimes even negative, margin between monetary output and costs rules out the generation of savings almost entirely. Similarly, seeking to accelerate monetary revenue rules out the gradual improvement of the quality of land and animals almost entirely.

In Spahr van der Hoek (1952, vol. 1, p. 419), we find one of many indications that the latter was very much a real problem. It concerns using *jarre* (liquid manure) as fertiliser in the 19th century. Spahr van der Hoek quotes a report of the Sneek branch of the *Friese Maatschappij van Landbouw* (Frisian Agricultural Society), stating that 'owner-occupiers sometimes defend to extremes the spreading of liquid manure', whereas tenant farmers, on the other hand, opposed the spreading of liquid manure because they 'did not see any favourable outcomes in it'. Of course, this is not the place to discuss who was right. The issue here is that owner-occupiers considered a method to improve soil fertility differently than those who were, through lease, entirely or largely dependent on the land market. This particular type of market dependency (with its short-term perspective) implies that 'the activities, obstacles, and required monetary sacrifices (related to the spreading of liquid manure)' were judged as being too high, too risky, and/or too expensive.

The same applies to capital as a production factor. Necessary improvements could have been realised earlier if financed by one's own savings rather than having to support them by borrowed capital. Even if, according to the formal models of neoclassical agricultural economists, this is supposed to make no difference, it was noted until the mid-20th century that 'measures to improve the farm become introduced much earlier if one has the disposal over private means, than if one has to borrow money' (Dijkstra and Van Riemsdijk 1952, p. 37).⁸ The smaller the margin between monetary revenue and expenditure (including interest on

borrowed capital), the smaller the opportunity to create 'private means': thus, a high degree of market dependency becomes a hindrance to improvements. However, if one would still carry out improvements (partly by using borrowed money), the already narrow margin becomes even slimmer. Especially if these are improvements that only yield monetary benefits in the longer term. In short, an unstable balance between dependency and autonomy ruled out continuous improvements (however desired it would possibly be from other points of view) on pain of a further deterioration of the balance.

A final aspect of a high degree of market dependency is how it coincided with various forms of political, cultural, social, and economic dependency in Friesland at the time. What appears as a series of apparently neutral debit entries in the account books, memorandum books, and *shult-registers* actually embodied a complex set of dependency patterns.⁹ Landowners, money lenders, merchants, transporters, regents, and landed aristocrats constituted collectively an arena of which farmers were also a part – by no means did they occupy the easiest position.

In his magisterial essay about farming freedom, Slicher van Bath (1978) distinguished between two components that define collectively the idea of farming freedom. They are the 'freedom *from* something' and the 'freedom *to* something'. 'Weighed down by the burden of certain expenses and obligations [...] the serfs were limited in their actions' (1978, p. 72). In this respect Slicher van Bath refers, *inter alia*, to farmers who were subjected to landlords through tenancy relations. Stewards and judges are mentioned too. In other words, the expenses and obligations imposed on farmers not only limited the *suyvere deel* (precisely because they implied a high and usually increasing level of monetary costs), but also contained a fatal restriction of the freedom *from*. The lesser the freedom *from*, the more restricted the freedom *to*. Because 'the right to have movables and immovables freely at one's disposal' was absent or at least highly restricted – for example, by the many expenses and obligations and the associated dependency relations (see Spahr van der Hoek 1952, vol. 1, p. 378) – the opportunity (or freedom) to organise production and the development of the farm in such a way as to agree with one's own interests, insights and perspectives, was missing.

Farming freedom is not a static phenomenon. Slicher van Bath observes that 'the freedom that farmers have is determined by various factors, which are in turn the effect of historical circumstances. Therefore, medieval liberties are nowhere stationary, they are subjected everywhere to historical evolution and digression' (1978, p. 80). He stresses with regard to Friesland that 'farming freedom in the Frisian regions was not static, it underwent a development that reached its peak during the thirteenth century, after which it declined' (*ibid.*, p. 75). The concrete expression of this decline can be read in Rienck Hemmema's memorandum book: the new dependency relations between farm and markets, and hence between farmers and new elites, was such that the

room for manoeuvre of farmers, their freedom *to*, was reduced to a minimum.

In subsequent centuries, freedom *from* and freedom *to* were regained to a certain extent. Sometimes this happened purposefully and rather abruptly, as in the struggle for *volheid van magt* (self-determination, literally 'plentitude of power'; Spahr van der Hoek 1952, vol. 1, 38–72). At other times the same process occurred more imperceptibly and gradually. I will illustrate certain episodes below. In any event, the market dependency that was so very tight in Hemmema's age was replaced over the course of the subsequent centuries (see Figure 2.2) by a more stable balance, by a balance that contained more freedom *from* and that, therefore, contained also more freedom *to* pursue one's own development trajectory.

Second intermezzo

In theory, the high degree of market dependency can be reduced by a range of strategies.

- 1 A steady price increase can augment monetary revenue and therefore the *suyvere deel* to such an extent that one's own capacity to accumulate and, hence, the capacity to reinforce one's own 'engine' is increased. However, one does not result automatically from the other. Farmers' purposeful actions remain an essential link, because a steady price increase can also create an attitude of 'getting rich without effort' (Van der Poel 1983).¹⁰ This still applies today, however: it remains crucial for farmers to consider alternatives. The period of approximately 1986 until 1989 has been extremely favourable to dairy farmers: the milk price was relatively high. This caused some to invest heavily in further growth (including the purchase of quotas), while others seized the opportunity of the favourable economic climate to accelerate redemption in order to gain more 'engine capacity'. In other words, price levels are important but they do not tell the whole story. Farmers' responses remain the essential link.
- 2 Costs of attracting production factors and inputs from markets can be reduced over longer periods. Whether this will occur depends upon, *inter alia*, the power relations between the actors involved: between farmers, on the one hand, and urban and rural elites on the other.

Since the late 19th century, both strategies have been pursued purposefully through the creation of co-operatives (Wiersma 1959) and often fierce struggles against land owners. Thus, the secular trend described by Faber (1972) was actively translated into an improved *suyvere deel*.

- 3 A third strategy revolves around increasing the technical efficiency of the labour and production processes. The higher the production level achieved from a given amount of production factors and inputs, the higher the technical efficiency (Timmer 1970; Yotopoulos 1974). Quantity and quality of farm labour are crucial links in this, because a

higher technical efficiency (also known in agrarian history as 'yield ratio', Slicher van Bath 1960) makes it possible, in principle, to increase both market production (and thus the *suyvere deel*) and the amount of reusable production factors and inputs, in order to reduce market dependency in both the short and the long term (by substituting purchased production factors and inputs for home-produced factors and inputs).

- 4 Fourth, the structure of the farm can be changed considerably. In this context, a useful concept from classic agronomy is 'tiered agriculture'. It is the ordering of a farm as a series of interconnected subsystems or tiers. Output from the one subsystem provides input for the next, where the supplied input is transformed into input for the subsequent phase. Tier piles onto tier. Grass and hay are produced for the cows (forgive me the banal nature of the example), cows produce milk, the milk subsequently disappears into the cellar to produce cheese (and whey to feed to the pigs to produce meat, which is transformed into ham and sausages).

Bieleman (1987) has sketched such developments for Drenthe. If farming there was initially oriented solely towards producing and selling rye, later farmers developed new tiers: the mixed farm emerges, which should be imagined not so much in terms of coordination but as the integrated ordering of farm tiers *vis-à-vis* one another. Analytically, this implies that an ever smaller part of the total annual produce is marketed. An increasing proportion of production is used as the basis (as input) for higher tiers. In other words, resources used in subsequent phases are hardly ever obtained from markets, they are the product of the autonomous circuit, they are supplied by the lower tiers of the farm itself. A Frisian example of tiered agriculture is constituted by the *gardeniers* (small farmers who make multiple use of their plots).¹¹

- 5 Finally, it is possible to tackle market dependency directly. In principle, two possibilities present themselves for this. The amounts of expenses and obligations at issue are negotiable and renegotiable. Leases, relationships with merchants, with money lenders, with farmer-colleagues with whom cattle is grazed, all these concrete types of dependency can be considered, reviewed, and (re)negotiated. Frisian agrarian history is full of such examples. Similarly, other mechanisms can be thought of. Farms that are highly dependent on the labour market could in principle reduce their size so the available family labour becomes adequate. Such a suggestion seems too unreal nowadays. However, very real and far-reaching processes can be identified in Frisian agrarian history that can only be understood from this perspective (Welderen 1912b; Van der Ploeg 1987). History should never be approached from the point of view of contemporary logic. However inconceivable it may seem now, Frisian farmers have used a rich repertoire of methods throughout history to reduce the very tight market dependency and to increase the *suyvere deel*.

The third and fifth possibility have been widely used, in and throughout Frisian agrarian history, as strategies for farmers to break away from the tight grip of market dependency. In the Frisian Woodlands, a modest role was played by the fourth possibility (Welderden 1912b); although it was also brought forward as a potential solution for the typical *greidebedrijven* (livestock farms, literally 'grassland farms'; Rauwerda and Van den Akker 1917), but not taken up.

All in all, Figure 2.2 presents the results of the attempts to change the balance between commodity and non-commodity circuits to embody both more freedom *from* as well as more freedom *to*. Thus Figure 2.2 can also be interpreted differently – that is, as indicative of the partial completion of the family farm in agriculture.¹² After all, the use of one's own resources – labour, capital, land, and non-factor inputs – is typical of family farms (or more analytically, of simple commodity production). The availability of one's own resources can by no means be understood merely as a remnant of former times, as the inheritance of a past natural economy. It has been actively created 'since Hemmema'. The family farm, as we know it today, is the outcome of a complex historical process, of an emancipation process in which farmers actively set course towards more freedom *from* and more freedom *to* – that is, towards the 'relative' completion of the family farm. Therefore, the family farm is *not* the remaining part of one of the initial conditions of this historical process. It is an actively created outcome.

About hay trading and sniggering, or the purposeful and strategic actions of the actors involved

I was born and raised in the Frisian Woodlands, and later I spent a long time in the Frisian clay area. I have heard hundreds of stories, and experienced dozens of incidents. I suppose I have forgotten most of them, but what I do remember is enough not to romanticise the past, let alone to glorify it. On the contrary. However, to brush it all aside as over and done with is also incorrect; the fragments that have survived are simply too fascinating.

One of the stories I remember well concerned hay. Selling hay was highly taboo, as was purchasing it. A farmer who sold hay would be blamed: he had not properly balanced his farm. He had made some miscalculations during *hjerstmis* (autumn)* and disposed of too many cattle, or he had made another miscalculation. Similarly, the man who had to buy hay had bitten off more than he could chew – that is, he kept more cows than he could feed from his land, or he must have been lying down on the job in the *ungetiid* (hay harvesting period; literally 'bad time', i.e. the busiest time of the year), as a result of which he ended up with too little hay. Whichever way one looked at it, it was no good at all.

* *Translator's note:* In autumn farmers had to decide on the number of cattle to be kept during the winter.

Of course, issues such as these were hardly mentioned explicitly or discussed as such. Particular incidents were needed to reactivate such notions in people's comments. I remember one such incident in detail. It concerned a father-in-law, an old farmer, who supported his son-in-law, who farmed elsewhere, with a few cartloads of hay. Of course, he could not do this in the daytime. What would people think? So it was arranged in the pitch-black night and, of course, noticed nevertheless, after which the *gegniis* (the sniggering) and the comments were not long in coming. Comments from which the above-mentioned norms could be extracted. Trading hay, or tabooing such a trade, seems an appropriate clue to raising a fundamental issue. First, we are dealing with a historically variable issue (Faber 1974). Initially, hay was a commodity par excellence. This was as clear as daylight in Hemmema's case (Fryske Akademy 1990). Then there is a period when buying and selling hay become taboo. What was mentioned before abstractly as the fifth strategy – reducing certain types of market dependency directly – thus emerges in a concrete way. The ban on hay sales was laid down even in leases. Older farm men and farm women often remember the norms of the day. Nowadays the trade in roughage and green fodder (and hay) is conducted in the open again, often involving immense volumes. There is no sign of any taboo. Hence, the cycle seems to have gone full circle.

There have been periods when hundreds of barges full of hay departed from the harbour of the south Frisian town of Lemmer every year, to be sold in Holland. The same applied to manure, the better youngstock and the best cows and bulls. The idea of integrated farm management, in which tier was built onto tier, had not yet developed into a guiding principle: anything with which to make money was sold. The idea that the available manure, hay, and so on should be used above all to the lasting improvement of one's own farm (in intensification and the increase of technical efficiency) had to ripen still.¹³ Farmers' positions *vis-à-vis* markets are variable: they can take different positions. And as far as this is concerned, history shows that there have been dramatic and intriguing changes.

This leads us to a second issue: taking a particular position *vis-à-vis* markets assumes actors that are purposeful and goal-oriented. To change from a lively trade in hay to a taboo on it presupposes an active (re)interpretation of the working conditions; it presupposes consultation, negotiation, and renegotiation; it implies setting out a new course of action and new evaluations: does the choice made appear to be the right one? Of course, this process takes place under ever-changing circumstances. That is why the outcome of the considerations, of deciding on the most desired position *vis-à-vis* markets, is always different.

It is not surprising that this position is continually (re)defined. The relations created between farm and markets are closely interwoven with the particular way of farming and the way in which it is possible to farm. Dewez (1958, p. 57) quotes the steward Dingemans, who refers to very careful farmers (*seer goede Baenders*) but also to others who

are days away from home and never tend to their affairs, and who are repeatedly in town and in the inns to waste the money they have left. His wife likes to run the home generously. In summer, they sell their hay and straw cheap just to have money, and then in winter they will have to buy it dear.

In other words, selling hay is not a neutral action with no implications for the management of the rest of the farm. The relationships with the markets are closely connected to farm management, farm development, and, more generally, the lives and the perspectives of those who work on the farm.

2.3 The height of the dunging passage and other episodes

During the 19th century, Frisian farmers succeeded in further reducing market dependency – by tabooing the hay trade, amongst other things. Hence they increased (directly or indirectly) the *suyvere deel* substantially. Without any pretence at being complete, a further set of episodes will be described, indicating how the high degree of market dependency was de facto reduced. These episodes are also an indication of that which has already been briefly mentioned: the purposeful actions of farmers, the process of actively choosing and changing positions *vis-à-vis* markets.

Marx argued at the time that history never repeats itself. What occurs as a real tragedy the first time will reveal itself the second time only as parody, or worse, as farce. Presumably, this applies to numerous situations; however, the exact reverse happens in Friesland. There the farce happens first, and the meaningful event comes later. The behaviour of Frisian farmers during periods of high butter prices is an outstanding example of this.

In late 18th century and early 19th century, butter prices reached ‘a peak unheard of in those days’. However, this resulted in a remarkable paradox: ‘on the whole there was prosperity in agriculture’, livestock, however, was subject to a reduction in ‘numbers and virtue’ (Broekema 1913, pp. 346 and 347 respectively). The average height of cattle (measured at the withers) decreased significantly; ‘nobility’ (Popta 1962) seemed to be lost; good heifers became increasingly rare, and one had to have an accidental ‘turncoat’ for the milk to flow – they were very worrying signs, both separately and collectively. Thanks to the high butter prices, farmers made money without any effort, but the basis of this prosperity withered under their fingers as it were: cattle lost its virtue.

There was a lot of speculation about the reasons for this at the time (and later on as well). Reference was often made to the cattle plague, the *quade sieckte* (evil disease), which had struck several times in the 18th century. The cattle herd was reduced to a fraction of its initial size every time, which, *inter alia*, prompted massive imports of cattle. Hence, the decline of Frisian cattle in the early 19th century was usually related to either the cattle plague or the import of inferior stock, or both. However, such a connection cannot be maintained.

Essentially, the systematic improvement of cattle – which is one of the concrete paths along which an increase in technical efficiency can take place – had not yet become an integral part of the farm labour process at the time of this first period of high butter prices. The floods, wars, pillaging, and the many cattle diseases had made it reasonable and logical to prefer quantity over quality. Farmers preferred to keep *more* cattle rather than *better* cattle. A smaller herd of higher quality cattle was too risky under the circumstances. Although in principle the basic material was present, there was, considering the results, ‘not in the least reason to assume that farmers concentrated on the improvement of cattle breeds’ (Spahr van der Hoek 1952, vol. 1, p. 257). These conditions applied until the 18th and early 19th centuries.

In this respect, the response to the cattle plague is illustrative. During the 18th century, this ‘punishment of God’ was finally conquered, especially through selection on the farms. Of every eleven infected cows, two appeared to survive and be largely immune to the disease. Thus it appeared possible to improve the cattle (and, as it seemed, permanently). Of course, the improved cattle commanded high prices after a wave of cattle plague. Demand from surrounding areas was enormous at times. Thus, a significant part of the improved cattle was sold rather than kept to form the basis of a fully improved herd. Again the result was many deaths at the subsequent outbreak of cattle plague. Spahr van der Hoek draws a bitter but correct conclusion: ‘The desire to *rapidly* increase the existing prosperity was regretted’ (1952, vol. 1, p. 54; my emphasis).

We encounter this basic pattern again when butter and cheese prices increased significantly from 1783 onwards. Farmers reacted to this increase in a way that was very much determined by the then prevailing short-term perspective and by the strong orientation towards the market. Direct gain came first. This turned out to be catastrophic in the long term. High butter prices ‘tempt farmers to make money at the expense of care for the exact breeding of high-quality heifers. In order to have a lot of milk, too many cattle were kept on farms, resulting in insufficient feeding’ (Spahr van der Hoek 1952, vol. 1, p. 260). The underlying logic was also applied to other farm practices:

- 1 The grazing season was extended as much as possible, the time cattle spent indoors was shortened, in order to save as much hay as possible and to avoid expensive supplementary feeding. Hay was still an important export commodity. ‘The desire to speculate tempted farmers to be economical with this valuable commodity’ (Spahr van der Hoek 1952, vol. 1, p. 206).
- 2 If the above-mentioned practice had been about for quite some time, the stocking density was further increased in the late 18th century (as a result of the high butter price). However, there was little intensification of fodder production to match this.
- 3 Paulus Scheltema (referred to by his contemporaries as Paulus the Liar) was a farmer in Dongjum. He described how, in about 1744, calves were fed a surplus of buttermilk (thus consuming the raw component of cheese-making), while the yearlings were pastured with

the dairy cows (and thus were eating the same grass with which other animals produced milk). Figure 2.3 clearly shows this. However, as the farming proverb says: *hwat mear tsiis, hwat minder keallen* (more cheese, less calves). After 1783, Scheltema began to make cheese. He increased the number of cows from 12–13 to 16–17. Calves were no longer fed buttermilk but were fed whey instead. The yearlings were moved to ‘a far corner’ (of poor quality; see Figure 2.4), and ‘in spring I took my calves into the fields earlier than usual’. Calves were removed from the cows immediately after birth and placed in a dark corner of the shed – mother’s milk had become expensive!

- 4 The poor care provided for the calves was not caused by ignorance, it was a diversion from past norms. Typically, in the Frisian Woodlands, an area in which reactions to price changes were less marked, care for young calves was described as follows: ‘When the calf is born, it is tied up in some straw in the middle passage behind the cows. It is fed some of the second colostrum and for about one week, thrice daily, mother’s milk. In late summer, at about August, it receives potatoes boiled with butter milk, particularly linseed cake water, and some hay’ (Allershof 1891, p. 118).
- 5 The miserable feeding and poor care of the calves was further exacerbated by the problem of rents: ‘One is forced to graze the calves on low, cold, and poor land, whereas you pay too high a rent for the best land’ (Spahr van der Hoek 1952, vol. 1, p. 437; again, see Figure 2.4).

Figure 2.3 Calves among the cows: less cheese, better calves



Figure 2.4 The calves were moved to marshy land: degradation of cattle



- 6 If deteriorated care and feeding resulted in a downward development in the quality of cattle, no doubt early first calving also contributed significantly to this: 'One-year-old calves are already put to the bull, and a one-year-old bull at that' (Spahr van der Hoek 1952, vol. 1, p. 437, and also p. 251, n. 1). Alta (quoted in Spahr van der Hoek 1952, vol. 1, p. 251) had calculated the costs 'of making a good cow at two years old'. This amount (41 Carolean guilders) would have been much more if the calving date had been moved back, resulting in better and more robust cattle in the long term, but it would have been at the expense of the directly realisable monetary revenue.
- 7 A last element of the 'hunt for milk' – ensuing the 'desire for a rapid increase in prosperity', elsewhere called the desire to speculate – was the practice of continuing to milk the cows instead of drying them off (Spahr van der Hoek 1952, vol. 1, p. 438). The quality of calves and hence of subsequent generations was also affected by this course of action.

To cut a long story short, the reproduction of cattle suffered badly – it was neglected for the sake of instant gain. The result was a sharp decline in the quality of livestock. When falling butter prices startled the Frisian farming community out of the dream of making money without effort, their future appeared to be looking worse than ever.

A second wave of steady increases in butter prices set in around 1855. Apparently, farmers had learned from the previous farce. Partly as a result of the previous struggle for the *volheid van magt*, in which farmers freed themselves from landlords, the idea emerged that progress could be made with one's own means and one's own labour. Organised breeding, which began to take definite shape from 1860 onwards, is a clear expression of this (Strikwerda 1979); as is the reduction and subsequent

elimination of the once massive exports of hay, manure, and of the best stock. The best stock, hay, and manure lost their importance as merchandise: they became increasingly perceived as resources to be used to farm well and which would in the long term, through systematic improvement, constitute the basis for progress. Thus the norm that 'a good farmer does not sell hay' emerged. Later, the experiential knowledge that 'another farmer never sells their best calves' slowly became a reality.

Without entering into a lengthy discussion about these issues here, I would like to refer to the emergence of cattle improvement, to the common project through which the herd is gradually altered towards the ideal cow (see Figure 2.5). Cattle improvement, which became the basis for the foundation of the *Fries Rundvee Stamboek* (Friesian Herd Book; Strikwerda 1979), revolves around two other projects: reducing over-dependency on the market and the process of gradually gaining self-confidence, the idea that one can produce progress oneself in the long term.

Figure 2.5 'There you stand, full of promise'

III. IT FE



Fol fan bilofte
en adel stiest derby,
hoe binne lân en folk
net seinige mei dy.

So much promise and pride
With you, the land and its people
Are truly blessed

1. de Kou
2. it Hynsder
3. it Skiep
4. de Baerch

The rise of breeding (eventually making Friesian cattle world-famous and hence a widely respected commodity) has also been related to the then sharp increase in butter prices. However, it is incorrect to make such a direct connection. First, the farce that preceded all this was necessary. Critical lessons were learned on the basis of that experience. Only after the short-term perspective was exchanged for a long-term perspective,

and only after a certain distance was created *vis-à-vis* the markets, did a new increase in butter prices, in combination with the now accomplished cattle improvement, result in a long-term prospect for Frisian livestock farmers. In a way, cattle improvement can be understood as an extra tier added to the Frisian dairy industry.¹⁴

The expression used here, *distantiation* from the market in order to better produce for the market, may sound paradoxical at first. However, the thesis that farms contain two economic circuits (see Figure 2.1) helps us to understand the particular rationale of these structural changes. The relation between the two circuits changed between the first and second periods of increases in butter prices. Manure, hay, dairy cows, and particularly calves were moved out of the circuit dominated by monetary values. They were no longer perceived as merchandise by the farmers, but were seen increasingly as part of, and relocated in, the second circuit – of one's own production factors and inputs, to which the logic of the market no longer applies directly.

A different logic applies to this second circuit (dominated not by *exchange* value but by *use* value), revolving around the question of how to farm in order to be able to supply sufficient products with high value-added to the relevant market in the long term. In a way the focus becomes more inward. This is not a rejection of the market, but reflects a more sophisticated understanding of how to engage with it. The creation of a tiered agriculture is intrinsically connected to this. Manure is no longer merchandise but a resource to fertilise the land to increase grass production. Hay is no longer sold: it is fed to one's own cattle. The main function of home-reared cattle (the surplus of which is gladly sold) is to supply good milk for butter production. Furthermore, home-reared cattle has an even more important function: it shows prospect for the future (see Figure 2.5). A solid foundation is laid for further farm expansion by improving resources now, in this case by engaging in cattle improvement: better cattle and eventually the opportunity to sell good stock. Freedom *from* is used effectively as freedom *to* further improve the farm. Tier is added to tier: the farm becomes constituted by a well-structured set of cycles, well tuned *vis-à-vis* each other, only related to markets at the final stage of production (via the top tier). No direct market logic applies to the lower tiers: farming is practised to achieve optimal attunement. This also implies that the importance of the market changes dramatically. If it was initially the *ordering principle* par excellence, penetrating and determining every aspect of farm management, now it becomes more of an *outlet*: indispensable with a view to sales, and essential because an attractive market encourages farm management and development, but no longer the all-determining compass.

Revisiting Figure 2.1, it can be said that self-sufficiency became increasingly more important: a relatively autonomous, historically guaranteed form of reproduction took gradually over from market dependent reproduction (Bolhuis and Van der Ploeg 1985; Van der Ploeg 1990). Frisian farmers dissociated themselves from the market as ordering principle between the first and second periods of high butter prices,

precisely to better anticipate the most interesting market (the one for butter). Even if better care for, and feeding of, dairy cows and followers are more expensive, even if the taboo on the selling of hay, manure, and the most promising youngstock implies giving up immediate gain, Frisian dairy farmers still reject these activities. *Kreas buorkje* (farming gently – that is, in a responsible and aesthetic way) now becomes the norm for ordering the farm and also for defining and establishing the more distant relationship *vis-à-vis* the market.

A fascinating illustration of this change can be found in the initial increase, and later reduction, of the height of floor of cattle stalls. During the 18th century the height of the floor was raised up to 70 cm from the bottom of the dunging passage when new sheds were built and old ones converted.¹⁵ An almost impossible situation was created in practical terms:

The enormous height of the stalls was very inconvenient. Not only for caretakers when feeding and watering, but also for the animals themselves when one of them slid a hind leg into the passage. Apart from the pain and scrapes . . . it was a right disaster. Because the hoisting and pulling to get the cow out of the low passage and onto the high stall hurt her even more than the actual sliding. Not to mention the not infrequently fatal accidents' (Spahr van der Hoek 1952, vol. 1, p. 446).

Many theories have been formulated about the reasons behind this peculiar custom. Spahr van der Hoek's conclusion, however, is the most sound one: 'It must be accepted that the very high stalls served to display the cattle' (*ibid.*, vol. 1, p. 449). Displaying characterises the extent to which cows were still regarded as merchandise: with a view to the *keaplju* (merchants) visiting the sheds in spring, the *fe* would stand *to pronk* (cattle would be displayed at its best). Everything was geared towards this. The welfare and health of the cattle and the efficiency and convenience of the labour process became subordinate to displaying cows as merchandise. Later on this changed again. There was more distantiation from markets and the height of the stalls was reduced to more practicable proportions. *Kreas buorkje* already sets the tone by then. Stalling the cows as high as possible, in order to present them as bigger and therefore as better, has then become a second farce – which has definitely passed by then.

Farmers distantiate themselves from markets not only subjectively, they try to reduce the real dependency *vis-à-vis* supply-side markets too. This develops into two different aspects. On the one hand, there is the struggle to change, through collaborative effort, the conditions for entering into such a dependency; on the other hand, the material dependency is reduced where possible. The mechanisms used for this purpose would cause bafflement nowadays but were understood 'entirely according to logic' at the time. One of the many examples concerns reducing the size of one's own farm.

A report by the *Staatscommissie voor den Landbouw* (Government Commission on Agriculture; 1912, pp. 477, 492) mentions 'a tendency to

reduce the hectareage of farms'. This observation concerns Frisian dairy farms and particularly those in the peat districts. It is noted that 'the explanation of this tendency' should be sought especially in 'that many aspire to obtain a farm in which one is as little as possible dependent on external labour'. Forage production per hectare of grassland could be increased considerably by 'carefully cleaning ditches and trenches' (*ibid.*, p. 467), by 'producing forage more intensively' (*ibid.*, p. 468), and by the 'supply of artificial fertiliser and mud from mounds' (*ibid.*, p. 477). Theoretically, this opened up two possibilities: expanding the cattle herd (which would have prompted to more labour market dependency, for both hay making and milking) or disposing of land that had become superfluous. The latter is chosen, to 'take away a part of the farm every now and again' (*ibid.*, p. 477). Thus the estates were deliberately reduced in size, in order to reduce *de facto* dependency. This remarkable process occurred not only in Friesland, but in many parts of the Netherlands (Van Zanden 1985, pp. 333–337).¹⁶

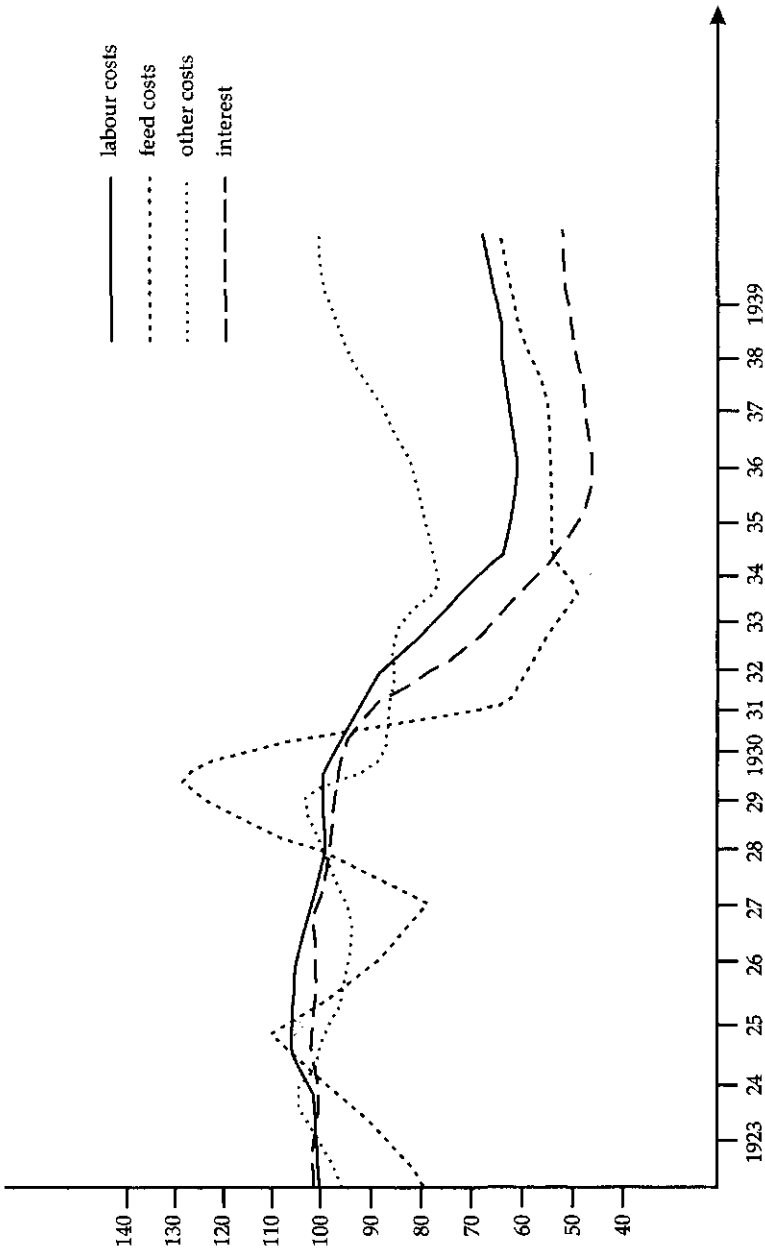
A final episode concerns the small farms in the Frisian Woodlands. The dependency issue was of course particularly difficult on small farms. Hence, solutions were often found here before anywhere else. The following episode is also interesting because it shows that farmers were supported by others in improving the delicate balance between autonomy and dependency.

In the 1930s, the Office for Small Farms operated in the Netherlands. It was a special division within the Directorate for Advisory and Research of the Ministry of Agriculture and Fisheries with the intention of helping small farms by designing and realising particular measures and innovations. One of the many research projects conducted at the time recognised that small farms in the Frisian Woodlands contended with constantly having to lease small pieces of land in order to have sufficient roughage at their disposal. Furthermore, 'if one compares rents paid by large and small farmers, the latter spend considerably more (often 20–30 per cent) on similar land' (Witteveen, n.d., p. 1). At the same time, the problem arose that 'too many concentrates' had to be fed supplementarily in the shed. Thus, small farmers were steering between Scylla and Charybdis (two dependency relationships). In order to intensify production as much as possible (to generate sufficient income from the small farm) they had to consult either Scylla (the concentrates salesperson) or Charybdis (the landlord who demanded too high prices). Within the constraints in this particular situation, a new solution was found and tested.

Central to this was the development of several innovations all of which aimed to create higher levels of self sufficiency within their farms. For 'everyone who knows the severe difficulties of leasing separate plots of land will also feel the great importance of higher levels of self-sufficiency to small farms in particular' (Witteveen, n.d., p. 7). By substituting the then customary zero-grazing system for a renewed grazing system, by substituting common silage pits for 'Finnish silage pits' (offering less losses and better quality), and by introducing potatoes, mangold, etc. into

the crop rotation in order to replace concentrates, self-sufficiency was improved dramatically and additional leases and concentrate purchases became superfluous.

Figure 2.6 Decommoditisation in the 1930s



Thus, 1.5 kg 'flour' (concentrates) and 25 kg Frisian silage could be substituted by '25 kg Finnish silage and 8 kg potatoes'. Witteveen remarked explicitly: 'both were produced on one's own farm'. Thus the

balance between autonomy and dependency was changed and consequently, the *suyvere deel* increased. This, in turn, made it possible to farm in a more *kreas* (gentle) way.

The 1930s also mark a second important episode in the development of farm self-sufficiency. These were years of major crisis. Prices fell abruptly – as a result, the *suyvere deel* tended towards zero or even less. The reaction of Frisian farmers (which we can tell from the then widely available farm accounts, later analysed by Vondeling 1948)¹⁷ was typical. They adapted farm management strategies that reduced monetary costs and consequently, the *suyvere deel* increased again (see Figure 2.6). The cropping plan, for instance, was adapted in order to contract fewer or no wage labourers. Furthermore, wage labour was largely substituted for family labour. Vondeling also shows that less feedstuffs were bought, without a dramatic fall in milk yield. According to Vondeling, this reflected, above all, the more efficient use of the internal circuit, of pastures and meadows (1948, p. 103).

2.4 *Kreas* or *rûch*: the *Nijboer* of the Lycklemastate

Until the 1950s, intensive farming was an unambiguous concept – both among farmers and within agricultural science. According to the English agricultural scientist Graham Brade-Birks (1950, p. xvi): ‘*Good farming means farming so carried out as to produce the maximum economic output from the land*’. He also describes ‘good farming’ as *intensive farming*, referring to ‘those practices designed to produce a very high output’.

This is in contrast to extensive farming: ‘*The practice using the minimum amounts of labour, cultivation and manure*’. Brade-Birks refers to extensive farming simply as ‘*a low standard of farming*’. A similar pattern can be found in expositions by Dutch agricultural scientists at the time. Intensive farming is based on the intensive use of capital, labour, and inputs per unit of land and per livestock unit. In addition, a high technical efficiency was achieved by working carefully. The outcome is high productive results per labour object: per animal and/or per unit of land.

This basic pattern was also recognised in the Frisian countryside. The ‘freedom to’ secured by then was used for ongoing intensification, revolving around the quantity and quality of labour. Freedom from suffocating market relations and patterns of dependency was one of the essential conditions here.

I want to stress this specific interpretation of the, then prevailing, concept of intensification, especially because a new meaning of this term gradually emerged from the 1960s onwards. Intensity is then increasingly understood as a function of technologies designed especially for this purpose. Intensity is based less on the input of high-quality labour, but becomes increasingly the result of the application of these new technologies on the farm. The cubicle shed, a sharply increased stocking rate, grassland improvement, highly increased use of concentrates and artificial fertiliser, automation of cattle feeding, reorganisation of manure storage and distribution, the reorganisation of breeding, substitution of

hay by silage, and so on constitute some of the remarkable and well-known aspects of the emerging new technological model. This results partly in a dramatic increase in milk yield per cow and per hectare, while – and this emphasises the break with the past and with the techniques applied till then – the labour input was sharply reduced at the same time (Van der Ploeg 1987; De Bruin 1997a; Roep 2000).

The then director of the Agricultural Economics Research Institute (LEI, *Landbouw Economisch Instituut*), De Veer, observed that,

generally, the yield increase per hectare of crops or per cow could be achieved without having to use more labour per hectare or per cow. It is in fact a feature of modern agricultural development that increases in yield levels are no longer connected to labour-intensive production methods but are based on the application of results of scientific research and the use of yield increasing methods and means, which demand hardly any labour or which are sometimes even labour saving (1986, p. 23).

This change has serious implications for the concepts of intensity and intensification. In the historical period under discussion here, these terms did not yet refer to the use of technological models designed to this end, but intensification is seen above all as the result of simultaneously increasing the quantity and the quality of farm labour.

This basic pattern is clearly present in the thinking of Frisian farmers. Thus Rauwerda and the farmer-writer Van den Akker noted that farms are supposedly becoming more intensive if the hectareage stays the same while the amount of labour and capital, which the owner appropriately puts into it, increases (1917, p. 6). They add that 'the intensive farm type is of vital importance to society as a whole' (*ibid.*, p. 7). For them, intensive farming represents a clear, undisputed norm. Further, they refer indirectly to the necessity of a certain degree of autonomy, a certain degree of freedom *from*, for the 'intensive farm type involves higher risk' (*ibid.*, p. 9).

In the late 19th century, the then *Friesche Maatschappij van Landbouw en Veeteelt* (Frisian Agricultural Society) organised an enquiry into the causes of unemployment in Friesland. The final report describes numerous alternatives to intensifying farming by using more labour and hence reducing unemployment. It is a delight to go through the report. Eventually, revealing conclusions are drawn. On the one hand, 'there is an abundance of labour, productive labour, providing benefits under all circumstances, not in the least to the owner' (1892, p. 81). On the other hand, it is clearly recognised that at the time labour was 'not fully employed, which is regrettable and can be attributed to various causes' (*ibid.*).

Referring to the period when farmers made 'money without effort', the report concluded that 'Friesland suffers (still) from the effects of the "golden" age . . . This age has not remained without influence on farmers'. The then Frisian Agricultural Society decided that, in terms that sound surprisingly like the ones Miedema would use almost a century later, '[farmers'] resistance to bad times has weakened, so that, when harvest

failures and lower prices followed, many had to refrain even from productive expenditure in tillage in order to economise'.

The lack of sufficient net worth (that is, one's own capital) and family labour ruled out autonomously organised improvements. Entering (again) into dependency relations (borrowing money) was rejected. The necessity to continue and increase the freedom *from* had become part of a collective memory. The tenure mechanism, weakened by then, is also interpreted along those lines: 'Even though current rents are not excessively high, still many cannot afford them, because the productive capacity of the land has declined as a result of neglected tillage and fertilisation due to lack of farm capital' (*ibid.*).

The struggle for more intensive farming can not only be traced in official documents, it also permeates the many expressions of Frisian culture. Traces of this struggle, cutting right across the farming community, can be found in numerous documents of the day: in the *De Nijboer fen Lyklema* state by Brouwer, in *Groun en minsken* by Brolsma, and in the *Frysk boerenkwartetspul* (Frisian Farm Happy Families).

The then very popular play *De Nijboer fen Lyklema* state [The Newly Arrived Farmer on Lyklema's Estate] can be read as a bitter clash between two normative models of how to best farm.¹⁸ At the same time, it points to a conflict between and about people, for each model contains a particular code about the way in which people should treat each other.

The opposites are embodied by Lyklema, farmer of the eponymous estate, and Hedzer, a newcomer (*Nijboer*), paired off by Lyklema to his daughter.

The position of the old farmer Lyklema is described in clear terms, by having him say the following:

De Lyklema's hawwe fen steach op steach ljeafde hawn for fê en bedriuw, hja hawwe jimmer yn 't spier west om alles syn gerak te jaen en dêrtrocht hawwe hja in goede namme krigen yn Fryslân . . . ik bin . . . net fen plan om de boel . . . forrinnewearje to litten, dêr is alles to goed for! (For generations, the Lyklema's have expressed love for their cattle and their farm, they have always been busy paying attention to what it needed and that's why they have earned a good reputation in Friesland . . . I don't intend to screw everything up now, it means too much to me!; Brouwer 1943, p. 39).

Alles syn gerak te jaen ('Care for everything according to its needs'). It is an idiomatic expression, referring to farming as intensively as possible: give sufficient time and attention to fields and cattle in order that they flourish. It is a line of argument that fits in with the autonomous circuit of use values (of *net worth* and *family labour*) held within every farm – that is, the circuit to which the market logic does not apply directly, but in which farmers can set their own course. The extent to which this is connected to a caring way of treating other people, as well as cattle and land, emerges from further arguments in the book.

Old Lyklema's views clash bitterly with Hedzer's. If Lyklema represents the norm, Hedzer serves as its *counterpoint* (Wertheim 1972). The latter remarks about the former:

Hy is fiersten to mâl mei it spul! It scil my iiskâld litte, ho myn fê der útsjocht. Jimme heit leit it der ek wolris hwat al to tsjok op ([Lyklema] seems obsessed with his farm! I couldn't care less about the state of the cattle. Your father wants it all to be too beautiful, he lays it on too thick; *ibid.*, p. 30).

The way the labourers are treated is a thorn in Hedzer's flesh, who – judging by the full story – is mainly interested in fast gains. If he tends towards the cold logic of the market (get rid of the old labourers), he states that Lyklema acts differently in every way on this:

Dy omgong mei de arbeiders ek, dêr binne de arbeider en 't wiif by de boer op bisite, ho is 't gods mûglik . . . (The way the labourers are treated! Now the labourer and his wife are visiting the farmer, for Heaven's sake . . .; *ibid.*, p. 31).

The tension between the two comes to an open conflict when the young Hedzer starts to treat cattle in a way that is immoral in the eyes of others. A practice that reduces him to a 'beast'. As the old Lyklema says:¹⁹

Kouweûren mei brânnettels wriuwe? Det stomme bist!! (Applying nettles onto the udders? The beast!!; *ibid.*, p. 36).

Hedzer represents in this, otherwise rather simplistic, play an extensive style of farming: *rûch buorkje* (farming roughly), which replaces the long-term care for cattle, land, and people with the pursuit of short-term gain. Here Hedzer opposes the old farmer Lyklema, who represents intensive farming and the implied social relations of production. Why then do they relate to each other at all? The explanation is obvious. The old farmer expected to pair off his daughter with Hedzer. His self-reproach, is striking:

As de earste de bêste keapman haw ik hjar forkoft oan dy keardel . . . (Like any old merchant I sold her to this guy . . .)²⁰

Production and reproduction processes in agriculture cannot be understood solely in terms of a more or less wide range of technical activities: relations with *others* are established in and through labour. Similarly, relations with and amongst resources (land, cattle tools, fertilisers, feeding, etc.) are essentially social relations: they have been purposefully constructed in reaction to certain opportunities and constraints, with an eye to achieving certain objectives. This also implies that it is impossible to reduce these relations to solely monetary aspects. According to Polanyi (1957, p. 131): 'The commodity fiction disregard[s] the fact that leaving the fate of soil and people to the market would be tantamount to annihilating them'. Indeed, one should not operate like the *earste de beste keapman* (like any old merchant) – that is, in summary, the essence of Frisian agrarian history. Compassion for fellow people, land, animals and the future, rules out perceiving and treating everything as merchandise (as commodities). Similarly, it is ruled out by self-respect,

self-interest (as understood within a particular cultural repertoire), and the will to realise sustainable progress by using one's own resources.

2.5 Daniël fan Kuken: *rûch buorkje*

The tension between *kreas* and *rûch arbeidzje* – that is, between farming gently and farming roughly – is located at the centre of numerous historical expressions of local culture. This is not unique to Friesland, nor to the described period. I want to discuss one of these manifestations in more detail: the novel *Groun en minsken* [Land and People] by Brolsma (1940; 1979). This Frisian novel, widely read at the time, is important in various ways. The writer was a remarkable man, who knew the cultural repertoire of the Frisian countryside inside out.²¹ *Groun en minsken* revolves not only around the tension between *kreas* and *rûch arbeidzje*. The story has much wider implications. A crucial connection is made in the novel between *rûch arbeidzje* (of which the main character, Daniël fan Kuken, is an exponent) and the desire for (the compulsion to, one would almost say after reading the book) farm enlargement.

Such an enlargement of the farm does not imply – this is made clear in various places – a simple multiplication of the farm in all its facets. The target of the intended farm enlargement is structural change within the farm: it implies enlargement of its scale. The amount of work per labour object (per unit of land, per cow) should be reduced by enlarging the farm. Thus, farm enlargement and *rûch arbeidzje* coincide systematically: the one presupposes the other and *vice versa*.

Brolsma makes it clear in his novel that this is not solely a technological correlation: the creation of large-scale, relatively extensive farming, in which the labour process is highly standardised, is characterised by a string of consequences. A series of conflicts arise because it expresses an explicit break with dominant norms in the surrounding farming community (where it is obligatory to farm *kreas*). Above all the implications for gender relations are interesting. *Groun en minsken* seems to anticipate the social drama that is to unfold a few decades later: the modernisation project put into effect from the mid-1950s onwards. An increasing degree of commoditisation (see also Figure 2.2) with novel patterns of dependency and profound changes in work and in gender relations, are some of the implications of the accelerated process of scale enlargement in Dutch agriculture. If initially the pendulum swung towards *kreas buorkje*, towards intensive, relatively small-scale farming, largely based upon the quantity and quality of farm labour, the ensuing modernisation period represents an opposite movement: towards large-scale farming, to some extent representing *rûch buorkje*.²²

However, at least one essential difference is involved in all this. In the modernisation period – roughly the period from the mid-1950s until the mid-1990s – the intensity of farming becomes less and less dependent on the quantity and quality of farm labour. Intensity and labour are increasingly disconnected because of the then dominant technological

development (for an additional analysis, see Bray 1986; Van der Ploeg 1987). The intensity of farming becomes chiefly a function of the applied technologies and of the productivity inherent in purchasable resources and inputs. All this does not alter the fact that the modernisation project is initially experienced as social drama, as a *break* from everything that had been built up and from everything that was considered right.

The main character in *Groun en minsken*, Daniël fan Kuken, farms in such a way that the surrounding community holds him in low esteem.

Syn striefruchten binne mei fan de lichtste, en syn ierdappellân, it stik dat oan de dyk leit, dêr giet sa simmerdeis wolris in wizende earm hinne, en dan wurdt der frege: 'Hwa syn lân is dat, dêr sit gâns smoargens yn?' (His cereal crops aren't very full and his potato land, particularly the plot along the dike, is often pointed at on summer days; people ask: 'Who does that land belong to, it is such a mess?' [full of weeds and full of badly growing plants]; Brolsma 1979, p. 184).

He has too much land, so much so that he cannot farm it as intensively as is customary in the area. Daniël farms in an extensive way:

... hy had dochts tofolle om it skiklich syn gerak to jaen. (... he has too much land, he can't give the soil what it deserves; ibid., p. 214.)

Hence the criticism, sometimes sneering, sometimes scathing, aimed at Daniël by the social environment. For:

... as de groun sprekt oer minskene wurk, dan is Daniël foroardiele. (... if the soil tells you about people's labour, Daniël is condemned; ibid., p. 220.)

Daniël practices a different style of land use than has been the norm in the area. He embodies new values, deviating from prevalent norms. The state of his crops (extensive soil use) and the large amount of land he appropriates (scale enlargement) are the concrete and criticised manifestations of this. A 'dirty potato plot' and an 'empty cereal crop' refer in Daniël's case not to setbacks caused by the vagaries of nature. They are an explicit expression of Daniël's extensive style of farming. Hence there is no compassion for Daniël, whereas an unfortunate neighbour is usually given as much support as possible (for a couple of moving examples, see Mak 2000).

Der is mei sa'n ien net to forkearren, sizze de Hegeweisters ... Hy sizze hja, docht net mei fordrach. Hoe sille hja nou bigien wêze op de frucht, dy't sa'n man bout? ('You can't deal with somebody like that', is the opinion of the people of Hegewei. He doesn't work in the proper way, so they say. Why should they take pity on the harvest of a man who works like that?; Brolsma 1979, p. 307.)

Daniël's aberrant value orientation – the deviation that is so apparent from his extensive style of farming – emerges at various times in the story. Typically, Daniël's father is an immigrant: he is a newcomer to the area, he does not share the prevailing norms. It was already said of Lammert, Daniël's father, that:

. . . dizze fan Kuken net fan doel is om op syn lytse buorkerijke te tidigjen. (. . . this Van Kuken has no intention to farm this small farm forever; *ibid.*, p. 10).

The son takes after the father. Daniël is obsessed with:

. . . de ûnforwoestbare twang om it eigen bisit út to wreidzjen. (. . . the indestructible compulsion to enlarge his own possessions; (*ibid.*, p. 68).

To earn money, as much money as possible. Daniël throws himself into various sideline activities – lorry driver, *makadamrider* (transporting material for road maintenance, an activity performed in the autumn), horse-coper. Daniël even tried the potato trade. However, Daniël was not interested in money for the sake of money:

Sinten, seit heit, sinten torane jin yn'e hannen, mar lân dêr hoecht men net op to passen, dat bliuwt. (Money [says father Daniël to his son], money slips through your fingers; but land, you don't have to keep an eye on land, land stays; *ibid.*, p. 235.)

In Daniël's set of values, land performs a new function. It has not so much a use value, a means to farm well ('you don't have to keep an eye on land!'), but above all represents *exchange value*, or capital. Thus it becomes attractive to acquire as much land as possible. Several times, Daniël comes into conflict with the other farmers in the area over his hunt for more land. It starts at his father's death – that is, when Daniël becomes a farmer.

Daniël's father (Lammert) was a kind of contract worker before the term existed (*fourmanderij*): he regularly prepared land for sowing by other farmers. Many bills had apparently not yet been paid. It is as if farmers in the area share their poverty. Now Daniël dramatically puts an end to this. He demands immediate payment of the overdue amounts, he even brings the bailiff into the community. This makes his mother believe Daniël is possessed by an evil spirit:²³

Hja leaut oan in kweageast, oan Satanswurk dat de jonge oermastere had. (She thinks he has become possessed by an evil spirit; Satan has taken control over her boy; *ibid.*, p. 84.)

But Daniël persists: 'why should I continue to work other people's land?', he asks himself. 'I would rather acquire possession of it, even if I have to do *Satanswurk*' (the devil's work – in this case, serving a writ on his neighbours). Characteristically, the neighbourhood goes all out to have the vicar intervene:

Yn dizze dingen wurdt der ûntsettend folle fan in doarpsdûmny forwachte . . . hwant it gie ommers lang net goed hjirre . . . hy sette it op haren en snaren mei lytse lju om him hinne. (A lot is expected of the vicar, particularly in issues such as these . . . for everything went wrong here . . . he [Daniël] created tension between himself and ordinary folk; *ibid.*, p. 99.)

The vicar is the one person here who is able to sanction the interrelationships (*hja easken it fan dûmny dat er it jaen soe*, the local community demanded the vicar to reprimand Daniël); but Daniël ignored

his reproaches. This establishes the conflict between Daniël and his social environment: Daniël's 'unflagging urge to increase his possessions' had him clash bitterly with the other farmers.²⁴

Daniël acquires a lot of land. Still he does not become a *greatboer* (a large farmer). For a *greatboer* (such as his neighbour Sinia) is not just a farmer with a lot of land, but also someone who is able to cultivate his land well (*it lân syn gerak jean*). In the case of farm enlargement this is only possible by employing more labourers. And that is exactly what Daniël cannot and does not want to do because he considers it an unnecessary expenditure:

In ûnforstoanige wrotter, dy't alles op haren en snaren set om alle fremde help bûten to kearen, dy't wol rekkenje kin oer in deihier, mar net oer it gewin fan in pounsmiet lân, ien, dy't by need de dong forhannelje soe en de groun ûntkeare, hwat him takomt om it gewin op'e foarhân. (He slaves foolishly and stakes everything to keep external labour out; he can count a day's wages but not the proceeds of a pondemaat* of land;²⁵ he is someone who, if the worst comes to the worst, will sell manure²⁶ and will neglect his land for the sake of some easy gain; *ibid.*, pp. 271–272.)

The extensive (or *rûche*) way of cultivation is not the result of Daniël fan Kuken's laziness. On the contrary, the relatively large scale of his farm prompts him to work very long hours. Even though he puts in relatively little labour per hectare and in particular less painstaking labour, the total area is so large in relation to the available amount of labour that it becomes necessary not only to extend the working day but also to work Sundays:

Hy makket de dagen jimmer langer as oare, ek warbere ierdewrotters; hy skammet him soms net om Sneins mei ark de lannen yn to reizgjen, hwat men de gleonste nijljochters net ienris nei jaen kin. (He works longer days than other farmers, even though they slave in the soil too; he is not even ashamed to take machines into the fields on Sundays, and that is something you cannot even blame the most fervent innovators of doing; *ibid.*, p. 307.)

Since the 1980s, cutting grass, making silage, etc. on Sundays has become common practice. Here, I will discuss in detail the extension of the working day, because it is an outcome of the combination of scale enlargement and extensification. Other farmers, who work intensively on a relatively small scale, work shorter days than Daniël fan Kuken:

It is wier, hy kin in part mear wurk dwaen as in oar, mar hy wol jit folle mear as dêr't ek hy ta yn staet is. (It's true, he's able to do more work than others [i.e. he works longer days than others], but he wants so much more than he's capable of [i.e. he wants to cultivate too much land]; *ibid.*, p. 187.)

Hence, *het geduldich en ûneinich tafoarsjoch* (proper looking after and, especially, proper care during work) become sidelined. This is different for the other, intensive farmers: they take more care (they work with *fodrach* [i.e. they are reflexive], they provide the land with *syn gerak* [i.e.

* Translator's note: *pondemaat* is an old Frisian unit of measurement, equal to 36.75 ares or 0.91 acres.

with what it needs]), but the scale of farming is so limited (relatively) that they do not have to work Daniël's long days. When they walk home, they call out to Daniël, who is still sweating:

Navend fan Kuken, it moat swier helle wurde net? (Eyening Van Kuken, it doesn't come easy, does it?; *ibid.*, p. 308.)

2.6 Daniël's downfall: gender relations in agriculture

In *Groun en minsken*, Daniël still fails as the particular carrier of that which will dominate agriculture at a much later date historically: the tendency towards scale enlargement. Daniël's downfall as a farmer has particular causes, which form the main themes of the novel. An investigation into these particular causes – at the level of the novel in question, of course –²⁷ seems to be important, precisely because Daniël's downfall can provide an insight into the conditions that support the later generalisation of large-scale agriculture.

At first, Daniël's downfall as a farmer is rather confusing. There seem to be two interchangeable causes. Daniël's family disintegrates (first the children run away from home, then his wife leaves too) and, furthermore, extensive farming does not produce the expected profits.²⁸

What is missing from the dialogues and reflections is the very relationship between both phenomena. Because Daniël's family disintegrates, he is not capable of continuing the large-scale agricultural practices. On the other hand, the family disintegrates because mother and children do not want to and/or are not able to adjust to the demands of the model of large-scale farming. Daniël does not succeed in disciplining his wife and children to follow the course of farming that he had put into practice. The conflict between disciplining and subordination of female and child labour seems inherent to, on the one hand, large-scale agriculture and, on the other, the urge for freedom and independence of women and children. The same conflict makes Daniël the patriarch who comes to oppress his wife and children.

As much as Daniël abhors wage labour, he strongly desires his wife's and children's labour. For family labour

... giet bûten it rekkenjen om, hy buorke nou mei eigen . . . hy hoegde nea wer in deihier út to kearen oan in frjemd. (. . . is kept outside of the accounts, he farmed under his own steam, he never again had to pay a day's wages; *ibid.*, p. 196.)

But the labour of wife and children is not just unpaid labour, however important this aspect may be. There is more. It is also fully 'malleable' labour. We already saw that Daniël extends his own working day. However, he also tries to squeeze the maximum out of his wife and children. Daniël becomes, according to the neighbours, a *boal* (tyrant) to his wife and children.

In conclusion, a final but certainly not unimportant aspect: defining who has to work, what needs to be done, how the work needs to be carried

out, how long and in which way – all this is under Daniël's control. He literally is boss. He becomes a patriarch, a *padre padrone* (Ledda 1978). He *becomes* one – for it can be deduced both from the indignant commentaries of neighbours and other farmers and from the denouement of the family drama that such a centralisation of the power to decide over family labour was definitely not (yet) widely accepted for men (see also De Rooij 1992).²⁹ Frouk, later to become Daniël's spouse, arrives at the farm as a maid. The death of Daniël's father and the illness of his mother necessitated such help. However, Daniël is not happy with it. Furiously, he wonders whether this is yet another sensible expenditure. Anyway, he is forced of necessity. Daniël goes to Frouk's mother and asks first of all:

Kin hja melke? Dat bitingst haw ik. (Can she milk? That is the condition I lay down; Brolsma 1979, p. 87.)

After Daniël's father's funeral, Frouk (they have secretly started courting in the meantime) stays to work on the farm – in the fields particularly:

Har knibbles binne iepen fan it sûnt lang útwende krûpen. Hja is rea, brún forband, de hannen ek en hwat hja oan stedskens opdien hawwe mocht yn har fammejierren yn'e herberch, dat forfljocht yn ien simmer lânwurk wer. Men kin net fan beiden wêze. (Her knees have been scratched from crawling in the fields, which she had lost the habit of. She is reddened and burnt, whatever was left of the town lady from her years working in the inn [Frouk had been serving in an inn on the cattle mart in Leeuwarden for a number of years when she was a girl] evaporates in one summer's work on the land. You can't be town lady and farm woman at the same time; *ibid.*, p. 107.)

Sometimes Daniël assesses Frouk with the glance of a farmer who needs help:

Soest wol opstekke kinne ju? Ja ik tink better as mennich keardel. Dou hast der lea foar. (Would you be able to load hay? Yes, I'd say so, I think it comes easier to you than to many a fellow. You have the right, strong body for it; *ibid.*, p. 109.)

Frouk's assistance suits Daniël perfectly. He begins to see a farm woman in her.

Dou bigrypst wol, hwat better as wy ús mei eigen folk rêdde kinnen, nammerstomear lân kinne wy oanhelje. Der komt by't hjerst in geadlik stik los. (You do understand that the more we can do ourselves [not to have to pay day workers], the more land we can take on? A suitable plot comes available this autumn; *ibid.*, p. 110.)

Initially, Frouk is surprised but also delighted, to notice that she is already more or less regarded as *eigen folk* (part of the family). Daniël's mother protests initially. She has little faith in Daniël's dual project: extra land and a farm woman:

Doe bygelyks, sei Lea tsjin Daniël, dou soest miskien noch mear oanhelje en oer dit jong frouminske de boal spylje. Mar hja sil wol wizer wêze. (You, says Daniël's mother to Daniël, you will perhaps take on even more land,

and be a tyrant over this young woman. But she will be more reasonable; *ibid.*, p. 111.)

However, Frouk is not *wizer*, for she is blinded by young love. She marries Daniël and works hard in the fields until the birth of their first child. This and the situation of breaking away from the traditional division of labour again causes considerable comment. A neighbour chuckles over Frouk:

Hja kaem as faem en die fammewurk, nou is hja frou en docht mântluswurk . . . haha, is dat net nûver. (She came as a maid and did a maid's work; now she is the woman of the house and does a man's job . . . haha, isn't that mad?; *ibid.*, p. 125.)

A second exponent of the social environment immediately offers an explanation:

It is in hûs fan de Mammon wurde. (It has become a house of Mammon; *ibid.*, p. 126.)

However, things become very serious only when Frouk's mother comes for a visit. The highly pregnant Frouk is not at home but in the fields, binding sheaves. When she arrives home exhausted her mother turns to her son-in-law:³⁰

Wie der oars gjin help to bisetten? Né, mar dat hoecht ek net, sei har skoansoan, wy kinne it nou mei eigen folk rêdde. En dat past ûs, en Dousen rjochtut tsjin Frouk: Past it dy ek, fanke, der wurdt net nei frege hê? Daniël sei neat . . . mar syn forhearde troanje pleite sa tsjin him. ('Can you not find any help elsewhere?' 'No, but there's no need for that, is there?', said her son-in-law. 'We can manage by ourselves. It suits us [*sic*] much better.' After which Dousen [Daniël's mother-in-law] turns directly to Frouk: 'Does it suit you better too, girl? I don't think anybody's interested in you, are they, hey?' Daniël doesn't say a word . . . but his angry face is not to his credit; *ibid.*, p. 130.)

Relations change after the birth of their first child. Frouk becomes seriously ill after the birth. Whether this is because she demanded too much of her body, or whether she does not want to have her child baptised – we do not know. In any event, she recovers after having hovered between life and death. But she is no longer the same person. Increasingly, she begins to refuse to work as hard as before and she also refuses to economise in the house.

Even though Frouk still participates in the work, she confines herself increasingly to the traditional tasks of the farm woman; she refuses the hard and heavy man's work, such as Daniël sets himself. She carries an effective weapon:

Hja sei it him planút en sûnder opmakkerij: as hja deis mei yn 't fjild moast, bigearde hja nachts de rêst en net de ûnstjuren . . . Gjûn bern mear, as hja syn ploechhynder wêze moast. (She told him straight out: if she had to go into the fields during the day, she wants to have a quiet night, not to have to tumble again at night . . . No more children if she has to be his workhorse during the day; *ibid.*, p. 161.)

This makes Daniël feel quite upset. He begins to withdraw in silence. It has thwarted all his plans:

*En wankte der jit wol aventûr om mear te bisitten, hie Frouk al niet drige him de hulde op to sizzen mei it lânwurk. Ja, der barden wûndere dingen, sa'n wiif mei de kreft fan in keardel, en dy groude him ôf – trouwde men dêr foar? Hwat in trelt deis mei biskie en nachts mei ôfkearigens. (Was there a future still in pursuing more possessions? Hadn't Frouk threatened to refuse all work on the land? Yes, strange things were happening; this woman, who had a fellow's strength, snapping at you, that wasn't why you got married [sic]. How dreadful, to object by day and to struggle by night; *ibid.*, p. 161.)*

After a few years, the *net to kearen delgong yn it bidriuw* (unstoppable decline of the farm; *ibid.*, p. 1985) begins to show. Daniël largely blames Frouk for this. And rightly so. Frouk's unpaid participation as labourer was essential within the relatively extensive and large-scale style of farming practised by Daniël. Frouk's desertion (first refusing heavy labour, later actually leaving, as do the children) hits him hard:

*It jildwinnen, nettsjinsteande syn gebealch, giet stadich. Dat is in forspiele ideal. En Frouk, dêr't er alles van forwachte hie om him by to stean, dat is ek in forspile ideal. Frouk is gjin frou wurden lyk as er tocht hie, gjin boerinne – neat fan torjochte kommen. (Despite his own labour, the realisation of profits happens only slowly. It is a lost ideal. And Frouk, of whom he had expected everything, is a lost ideal too. Frouk did not become the wife, the farm woman, who he had expected her to become; *ibid.*, p. 189.)³¹*

Daniël is the main loser in this conflict. The only thing left at the end of the novel is a sad, silent man, unable to explore and understand his own feelings. In retrospect, the writer remarks:

*Daniël . . . syn libben wurdt bihearske fan twa machten dy't him beide likefolle twinge en beide ek neelottich wurde kinne. De twang nei jild en de twang nei in gnap hynder, itsij dat er it yn it wurk brek hat of om der yn to hanneljen. (Daniël's life is dominated by two powers, both forcing him equally and both able to become his undoing. The desire for money and the desire for a good horse, either because he needs it in his work or to trade; *ibid.*, p. 296.)*

The desire for money. We already encountered this key aspect of Daniël's value system: money to buy more land – if need be by trampling on his neighbours, if need be by trampling on his wife and children.

Furthermore, the 'desire for a good-looking horse'. It seems as if the good-looking horse figures here as the precursor of the, then not yet realised process of mechanisation, another essential condition for the generalisation of large-scale farming. But this aside.

The compulsion for money becomes Daniël's undoing. A man who neglects (*forsmoarge*, literally 'pollutes') his land, who tried to sternly discipline and subsequently lost his wife and children; a man who became the outcast of the area, the laughing stock of traders at the cattle mart; a

man, finally, who was merciless to himself: working, always working hard.

In the closing sentence of the novel, Daniël wonders, while reviewing his failed life:

Hwat haw ik west: in wyld . . . of in minske? (What have I been: a wild [beast]³² or a human being?; *ibid.*, p. 338.)

2.7 Collective memory as part of cultural repertoire

The stories of the *Nijboer van Lyklemastate* and of Daniël fan Kuken of *Groun en minsken* both illustrate that agriculture operates within a clear normative framework – a framework activated as soon as it is violated. Such a moral framework, or cultural repertoire, is used to specify the way in which farming should be practised (Hofstee 1985a). The relationships between people, land, and livestock are clearly defined within a set of interconnected norms. The same applies to the way in which one should work. When digging for instance, it applies that *der djip hakke wurde moat, de blaumodder moat boppe komme* (it needs to be done so deep until the blue mud turns up). The view that *it mar lichtjes hoecht, net sa djip* (it can be done slightly easier, that it doesn't have to be that deep; Brolsma 1979, p. 232 ff.) is rejected. Thus, there are exact codes for all the tasks. These are summarised by the general position that one should farm *kreas* (gently) and not *rûch* (roughly).

Of course, all this also defines the relationships between people, and particularly the economic aspects of these relationships. In particular the relation between farm and market is specified. The economics of the farm cannot be organised arbitrarily. Even though it might sound pathetic – that is, when disconnected from the context and atmosphere of *Groun en minsken* – 'Mammon' (i.e. short-term profits as defined by the prevailing market relations) could not be the absolute ruler. An organisation of agriculture based solely on profit maximisation was rejected, precisely because it leads to practices that would be destructive to land, livestock, people, and community (Polanyi 1957). It would result in all-disrupting conflicts among farmers, in deserting women and children, in cattle losing their 'nobility', and in land being destroyed.

By applying a cultural repertoire that refers to *kreas buorkje*, such hazards and their related temptations could be prevented and resisted. Operating according to this cultural repertoire did not imply earning less, nor irrational economic behaviour. On the contrary, it provided the basis for long-term earnings and continuous development. Frisian agriculture could become prosperous precisely because 'Mammon', as an immediate guideline, was abandoned. Operating in the then already highly globalised markets was successful precisely because of this pre-eminently local repertoire.

The degree to which these elements are woven into a cultural repertoire, into a set of views about the way in which farming should be practised, is illustrated surprisingly by a source that seems difficult to fit into a scientific analysis. I refer here to the *Frysk boerenkwartetspul* (Frisian Farm

Happy Families; see also Van der Ploeg 1996a). This game of happy families, published in the 1950s, contains a number of images collectively describing various aspects of Frisian agriculture. Each image is accompanied by a short verse, summarising and explaining briefly and to the point the essence of the presented activity. Happy families is finite, it does not contain an endless flow of images. The most important and striking images and verses have been chosen. On the whole, the selected images and verses provide a succinct and fascinating summary of the cultural repertoire of Frisian dairy farming of the mid-1950s. Nowadays these images appear completely dated as if the subsequent wave of modernisation has wiped out everything, both images and words.

The first Figure (2.7) summarises straightforwardly the previous toing and froing with regard to the hay sales. The former confusion and the lessons learned are summarised in an essential element of what could be called 'collective memory': 'It is essential for the farmer to have the adequate amount of roughage'. Similarly, the images and stories in Figures 2.8 (youngstock) and 2.9 (dairy cows) stress the importance of cattle as a resource. What counts is not the monetary value (not cattle as commodity), but cattle (home-reared cattle in Figure 2.8) as part of (as tier of) a complex whole providing revenue (the *jeft*) and also insights into the future (*in moedjaend amerijke*). In that respect, the irony of Figure 2.10 (the cowshed) is possibly most significant: 'as if there would be an auction tomorrow'!

It is as if a complete agrarian history is concentrated in these images. Agriculture has been distanced from markets by way of a long and complex emancipation process. For this very reason there is a resource base (a set of resources), which can be unfolded and built upon according to the views of the farmer. This very resource base, which has become independent from markets, provides insights into and faith in the future. Of course, the various resources cannot be used at will: it should be done with *forderach* (a term that we encountered several times already in this chapter), it should happen in a reasonable, responsible, and well-tested way (see Figure 2.11).³³ *Forderach* applies equally to labour, central in the farm economy. Labour *was* essential in the realisation of the present resource base, just like labour *is* essential in its further development (see Figure 2.12). The attitude towards labour is easy-going (it is anticipated that things might go wrong at times; see Figure 2.13) but also clear. Work should be organised in such a way that the possibilities embodied in cattle, land, manure, plants, and so on are utilised and unfolded optimally. Work should be done in a *kreas* way. The times of raised stalls and treating udder infections with nettles have now passed. Labour is providing that which the resources require: *it lan moat sines ha* (Figure 2.14). In other words, the labour process is informed by the interaction with labour objects or resources and not directly by the prevailing market relations. It is of course impossible, on the basis of the previous discussion, to construct a 'morality' that would stand in a Hegelian sense above history.

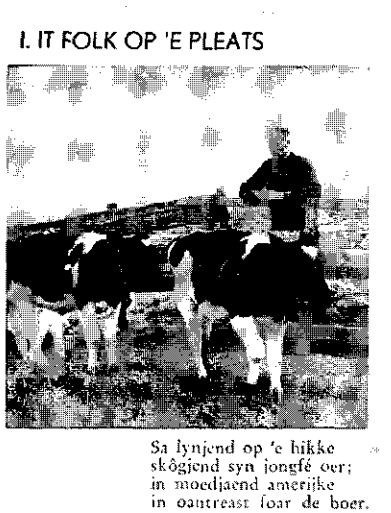
Figure 2.7 Self-sufficiency as norm



3. Ynkûlje
1. Kij útlitte
2. Bûthússkrobje
4. Skieppeknippe

Having plenty of roughage
That's what pleases the farmer
Whether it's spring or autumn
A haystack that topples over from
fullness

Figure 2.8 Youngstock



1. de Boer
2. de Boerinne
3. de Arbeider
4. de Faem

Leaning on the fence
Watching his young heifers
The farmer experiences a moment of
hope
A consolation

Figure 2.9 Dairy cows

VII. IT MELKEN



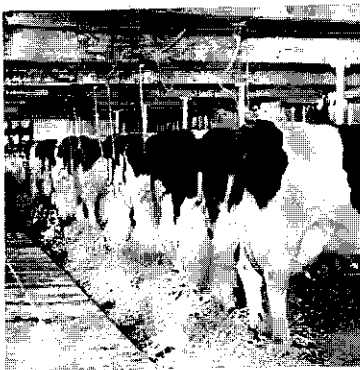
Hast kroadzjend oer de jaren
dy't steane fol en prûs,
bringt moarns en jouns de keppel
har jette stil nei hûs.

1. Kij ophelje
2. Yn 'e jister
3. Molkieegje
4. Kealleboarne

Nearly unbalanced by udders
Full and heavy
The herd proudly carry their gift home
Every morning and evening

Figure 2.10 The cowshed

II. DE BOERE-HUZINGE



De bisten stean der foar,
glêd, skjin en tsjok yn 't strie,
net liker oft it moarn
op dit sté boelguod wie.

1. it Bûthûs
2. de Skuorre
3. de Heasouder
4. it Keallehok

Look at the animals
Brushed, clean, and well-bedded in
their straw
Such a beautiful sight
The farm could be ready for sale

Figure 2.11 Working carefully

V. DE UNGETIJD



Goed en hurd operjen
is handichheit en slach,
kin 't hea net daliks droech
dan moat it mei fordrach.

3. Operje

1. Meane

2. Swylje

4. Weidloeije

Build the stack quickly and well
And that needs craft and skill
For if the hay doesn't dry quickly
You'll have to start using your wits

Figure 2.12 Enriching the land

VI. LANWURK



Hoe fynder men it jaget,
moai útspraet, glêd en sljocht,
hoe gauwer as it wei wurdt
en hoe mear frucht it docht.

2. Eidzje

1. Dongje

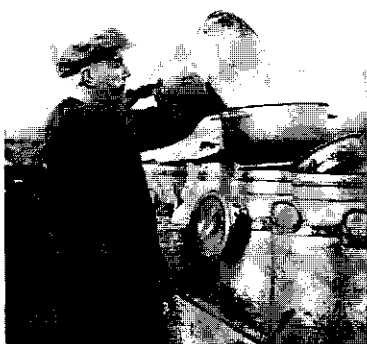
3. Greppelje

4. Heakkjelje

Spread it fine
Gleaning, even and smoothly
The soil will take it up quickly
And your harvest will be a rich one

Figure 2.13 Everybody makes a mistake sometimes

VII. IT MELKEN



Oppasse man! hwant ek
de aldertúkste boer,
jit wol in inkle kear
syn eigen bussen oer.

3. Molkleegje

1. Kij ophelje
2. Yn 'e jister
4. Kealleboarne

Watch out man
Even the best farmer
Spills his milk

Figure 2.14 Giving the land what it needs

VI. LANWURK



As jo lân hâlde wolle
dan moat it sines ha
en mei oars net as kunstdong
kin it net earlik ta.

1. Dongje
2. Eidzje
3. Greppelje
4. Heakketje

If you want to stay on the land
You have to give it what it needs
And you are unlikely to succeed
With artificial fertilisers alone

It is clear, however, that intentionality, subjectivity, and morality always constitute an intrinsic part of farming. Moreover, intentionality, subjectivity, morality, and previous experiences inspire new projects that are rooted in specific actions and in new practices. This is partly how various relations are created between agriculture, markets, and technology. Therefore, the functioning of markets and technology cannot be considered as separate from the cultural repertoire, particularly where this cultural repertoire is materialised, no longer through high or low stalls but as the particular ordering of many hundreds of farm aspects *vis-à-vis* each other and as the capacity to actually utilise this particular ordering.

2.8 Into the future

The family farm in agriculture constitutes one of the junctures at which commodity circuits and non-commodity circuits are structurally tied together. The way in which this attunement becomes established is very much historically variable, just like the particular outcome of the, always actively created, combination. Throughout all the fluctuations, however, it is possible to identify an unmistakable *tendance lourde* in Frisian agrarian history, which I have tried to define in Figure 2.2.

If, in accordance with dominant arguments, we interpret the agricultural entrepreneur or farmer in contrast to a peasant, we cannot but conclude that throughout history the Dutch farmer has increasingly become a peasant – and that this is precisely the hidden strength of Dutch agriculture.

This basic pattern is, as I have tried to make clear, partly the result of the way in which farmers have actively distanced agriculture from a market dependency that was too tight. Hence, a ‘collective memory’ was constituted too: a good farmer is more than *de earste de beste keapman* (any old merchant). Moreover, a good farmer is able to resist the temptation to operate *as* a merchant.³⁴ A good farmer organises the market relations (or commodity relations) into which he enters in such a way that they fit into a broader framework of normative notions and non-commodity relations. Various counterpoints keep these notions alive – and it does not make any difference whether these counterpoints are imaginary (such as in the cases of the well-read rural novels, plays, and stories) or real (that is, presented as the adventures of others who come to no good).

The described collective memory lives on in contemporary agriculture – ironically now as counterpoint, as critique of the predominant discourse of agricultural science and agricultural policy. In certain farming styles (in which a farming style is a set of particular notions about *kreas buorkje*) the search for the highest possible technical efficiency (for *tûk buorkje*, to run a farm in a clever, skilful way) and the search for the lowest possible supply-side market dependency (for *sunich buorkje*, i.e. farming economically) continue to be highly present.

Given the new challenges, which also face Frisian agriculture, these notions – and above all the practical experiences in which they are rooted

– constitute valuable springboards for the future (LUW *et al.* 1993). Given their history, it will not be the first time that established axioms have to make way for what initially seemed foolish, illogical, and unusual.

The representation of Dutch agriculture is now centralised largely in Wageningen and The Hague. I already referred to the Agricultural Economics Research Institute (LEI-DLO, *Landbouw Economisch Instituut*), which employs a method of representation that removes every form of regional specificity right from the start. Furthermore, in the course of this chapter I have repeatedly used a Frisian metaphor. Friesland has for long time had the CCLB co-operative, which is now part of AVM, an accountancy and advisory firm. Although it does injustice to the current services offered to Frisian farmers by this organisation, for the sake of clarity it can be mentioned briefly that we are talking here about ‘the accountant of the Frisian farmer’. These accountants are by the nature of their work involved in a direct dialogue with Frisian farmers. They are ‘organic intellectuals’ as it were.

In his comments in response to the farm results of Frisian dairy farms for the year 1990–1991, Miedema* (1991) uses a fine metaphor. This metaphor (‘one’s own engine’) will possibly cause some confusion among outsiders; it will be immediately recognised by farmers, however.

In his discussion, dairy farmers emerge as sailors. At other points the ship, the sails, the wind, and the available engine capacity are mentioned. Referring to the price fall that happened at that time, Miedema observes that ‘last year we had the wind in the sails nicely, but now we haven’t made any headway’. He adds:

We have just tacked, and it remains to be seen whether we will have enough space to round up in the wind. In any case, a minimal speed is required to keep the ship navigable. A ship that lies almost idle does not answer the helm at all (1991, p. 1).

Obviously, market relations act here as the wind. If the wind is favourable, it is not difficult to hold a steady course. However, if the wind comes around, or drops completely, the ship becomes out of control and faces the danger of drifting onto the lee shore. In periods of a favourable economic climate, in short, it is attractive and easy to set course for the logic of the market (Friedman 1980). If the economic climate changes, ‘the sailor will have to make himself certain of the engine capacity’ (*ibid.*). For if necessary ‘we will switch on the engine’.

The importance of the above is obvious in Miedema’s discussion. He specifies the engine as ‘*net worth and family labour*’ (1991, p. 5; my emphasis). This is contrasted with the situation in which farm management and farm development are supported primarily by external capital and external labour – in short, a situation in which there is a high market dependency and in which labour and capital represent direct costs.

The real difference between those two situations can be illustrated by way of an imaginary farm, indicative of the average Frisian dairy farm. If this

* *Translator’s note:* Miedema was a high ranking AVM/CCLB staff member at the time.

farm was highly market dependent there would be a negative net margin of NLG -42,000 (about Euro 20,000). If the same farm was more autonomous, it would result in a positive farm income of NLG +72,000 annually. On the basis of this, Miedema concludes: 'with only sails the ship would go adrift, but thanks to the inboard motor it is able to go against the current' (1991, p. 6).

Notes

1 Extensive parts of this chapter were previously published in the Frisian language (Van der Ploeg 1995b). I owe many thanks to the comments on previous versions of this chapter by Slicher van Bath, Spahr van der Hoek, Jan Bieleman, Henry Bernstein, and Lammert Jansma.

2 The most accurate concept can be found in Marxist theory. Within this theoretical framework, small entrepreneurs are regarded as simple commodity producers. The essential difference between simple commodity production (SCP) and capitalist commodity production (CCP) is that the latter is, above all, oriented towards the production of surplus value. In SCP this is not the case. SCP is the application of commodities in order to produce other use values. The essential exception here is labour: it does not function as a commodity within SCP. A further mode of production can be distinguished. So-called petty commodity production (PCP) is characterised by the fact that not only labour but the other resources too hardly function as commodities. These are means reproduced, in and through, the production process itself (and so within the farm) and/or obtained via socially regulated exchange. PCP constitutes the peasantry. In the course of this chapter I will make clear that a shift from SCP to PCP is hidden within Dutch agrarian history (and from CCP to PCP, see Van Zanden 1985) and that the strength of Dutch agriculture is in fact rooted in PCP (i.e. a certain distanciation from markets). Dutch farmers, rather than many of their colleagues in the Third World, are peasants (for a comparative analysis, see Bolhuis and Van der Ploeg 1985; Van der Ploeg 1990, chap. 5), and they are successful precisely because they are peasants.

3 Remarkably, farmers in many places the world over still count and calculate with such a concept. In large parts of Italy, for example, they use *la parte pulita* (the clean part; see Bolhuis and Van der Ploeg 1985, chap. 4). Many farmers in the Netherlands refer to this by saying, 'what is important is what is left in my account at the end of the year' (Van der Ploeg *et al.* 1992). The techniques and circuits change (here, a current account at a bank), but the notion remains essentially the same. An example from Zeeland can be found in Wiskerke (1992). Again and again, central to all these concepts is the safeguarding of the relationship between the commodity and the non-commodity circuits.

4 See, *inter alia*, DKB 1937; Vondeling 1948; De Winter 1952; Dewez 1958; Gerbenzon 1958; Kuperus 1964; Meihuizen and Kuperus 1968; Dijkstra and Baars 1975; Van der Ploeg *et al.* 1992; Wiskerke 1992.

5 Incidentally, Slicher van Bath observed a similar tendency for Overijssel at the time: 'Between the fifteenth and seventeenth centuries the *Naturalwirtschaft* has regained the lost terrain, a decline contrary to the development that could have been expected' (1950, p. 11). The terms used by Slicher van Bath are clearly those of the debate of the 1950s. However, its conclusion is not less interesting. Slicher van Bath remarks elsewhere: 'The shift from *Naturalwirtschaft* to *Geldwirtschaft* is not . . . a linear development' (*ibid.*). The downward trend in Figure 2.2 is a clear indication of this.

6 A strong tendency can be identified in the agrarian historical literature (see, *inter alia*, Slicher van Bath 1958) to deduce from the fact of the *calculating farmer* (as embodied by Hemmema, Koorn, and so many others) that we are in fact already dealing with capitalist entrepreneurs here. This seems to be a fundamental mistake to me: for a capitalist entrepreneur (capitalist commodity producer, see note 2) would have ceased production immediately, precisely because it was impossible to realise surplus value. Here simple commodity producers emancipate themselves by developing into petty commodity producers: this is precisely why they guard the market relations so much. In accordance

with the highly neo-classical fixation, Slicher van Bath and others included calculated interest as a cost in their calculations.

7 Here I use a metaphor that would be introduced much later (i.e. in the 20th century) by Miedema of AVM/CCLB. I will discuss this in detail at the end of this chapter. I suffice here in saying that the 'engine' refers to as much as the autonomous capacity (to the non-commoditised resources) of a farm.

8 This is raised again as a central issue in the later discussion of further developments in Frisian agriculture (see Friese Maatschappij van Landbouw en Veeteelt 1892).

9 Hence the preference at the time for situating transactions and market relations within the domain of family and kinship relations (a phenomenon that can still be encountered in parts of Africa and that is usually analysed by the term 'veniality'). Also, the various account books are always annotated with the names and persons involved in those transactions: an anonymous market is out of the question – again, safeguarding is the motto.

10 Incidentally, there is a debate among agrarian historians, started by Van der Woude, about the question of the extent to which this was a real phenomenon or ascribed to farmers of a certain period retrospectively. However, the *danger* of such a reaction can nevertheless have played a part in people's considerations at the time.

11 The outstanding authority on Frisian agriculture, Mr. Van Wijngaarden from Wageningen, drew my attention to this.

12 I am greatly indebted to Prof. Michele de Benedictus and his colleagues, who drew my attention to this 'reading' at a seminar on *mercificazione e rapporti sociali di produzione* (at La Sapienza, Rome, July 1991). The family farm (SCP) is not a remnant of the past; neither is it the result of the demise of CCP in agriculture (Koning 1982). It is the result of a complex but persistent emancipation process of the farming population itself.

13 Furthermore, as stated by Faber (1974), farmers were driven of necessity towards these 'inferior' types of farming, in which 'merchanship' dominated over 'farming well'.

14 Because they could only exist and continue to exist in the case of a further perfected farm management. Only if dairying was perfected would it be able to support breeding. The impressive story about Fokstal Knol, which explicitly discusses the enterprise's farming style, deals with this issue (see Bottenburg 1965).

15 This can be clearly observed in the shed of the Frisian livestock farm at the Open Air Museum, Arnhem.

16 This is often discussed as repeasantisation (the absolute number of farms increased dramatically). Incidentally, I am of the opinion that this concept can be used to describe and summarise the whole range of adaptations resulting in PCP dominating SCP.

17 Vondeling's Ph.D. thesis is based upon a longitudinal study (from 1923 until 1940) of 117 dairy farms.

18 I am greatly indebted to Lammert Jansma, Director of the Fryske Academy, who drew my attention to this publication.

19 This metaphor occurs frequently in this type of literature and, more generally, in the everyday vernacular of the Frisian countryside. To act as a 'beast' degrades a person. Even an 'animal' does not lower itself to what a 'beast' does. I will revisit this theme several times in this chapter.

20 Typical of this quotation, the notion of *keapman* (merchant) is confronted with the notion of farmer (see also Van der Ploeg 1995b). The notion of Mammon, discussed below, as guiding principle for the actual farming practice reinforces this opposition even more. It goes without saying that these notions relate directly to the normative tension connected with the various resource flows described in Figure 2.2.

21 There are further elements confirming my opinion that *Groun en minsken* mirrors a real drama of the time. They are the opinions of the most important Frisian literary critics. Dr Douwe Kalma calls Brolsma a *forhelfjend skriuwer*, a narrator, who, partly from the way he was in touch with things, could tell stories about Frisian folk life. Again according to Kalma, Brolsma was not only a sharp observer (*in tûke opmerker*) but also someone who knew how to get to the heart of events; he is *sa'n fiener fielder* (someone who can sense a situation very

well), he is no stranger to *it djippere forstean*. For 'hwat seit it feitlike kennen, as it djippere forstean en it meifielende hert net meiwurkje om fan it materiaal dat it libben biedt, hwat kostbers to meitsjen, dat duorret fier oer de eigen generaasje hinne?' (For 'what is the meaning of knowing the facts if a sharp insight and an emphatic heart do not co-operate to make something valuable out of the materials provided by life, something that reaches beyond one's own generation?') Piebenga calls Brolsma's work in *spegel fan Frysk folkslibben* (a mirror of Frisian folk life). Just like Wadman, Piebenga points to the sharp dividing line between Brolsma's work and that of 19th century *folkskriuwerij* (folk writing). If the latter is full of moralism, of speculating about the supposed national character, and of a strong desire for the return of better (i.e. former) times, the opposite can be found in Brolsma's work: he is *ien dy't objeektyf bisjocht en biskriuwt* (someone who observes and describes objectively). Mild humour is another feature of Brolsma's work: he is a stranger to *kâld synisme* (bitter cynicism), even though he rather writes about the victims of oppression, about those of whom there are so many in the Friesland of that time. *Hy koe it lân en hy koe de minsken* (he knew the land and the people), he did not write about an *imaginair Fryslân, mar oer Friezen lyk as wy dy allegearre koene of dêr't wy alteast fan oannimme koene dat hja der wiene* (he did not write about an imaginary Friesland, but about Frisians as we all knew them or who we could at least imagine to exist), wrote another critic, S. v.d. Schaaf. Frisians, in turn, loved to read him. Brolsma must have been the most widely read Frisian writer between the 1920s and 1940s. Did they read him to recognise themselves even better? Who knows . . . Finally, what convinced me perhaps most is that one of the few times that Brolsma actually did talk about his work, he said that he was often asked, for once, to 'write about the real, the progressive, Frisian farmer, the man who had all this beautiful pedigree cattle and numerous committee jobs'. Brolsma is supposed to have said that he refused to do that, that his conscience made him write about the *iensume, fan nimmen bigrepene, rûge wrotter* (the hard worker who is lonely, rough, and understood by no one). That book became *Groun en minsken*. His best, according to the critics. A sad and tragic epic, according to Piebenga. About a farmer, Daniël fan Kuken, understood by no one.

22 Various sources, especially from about 1969, refer to this.

23 This is a frequently recurring theme in rural novels. For a discussion of a pact with the devil on the large, prosperous farms, see, *inter alia*, A. M. de Jong (1979). Incidentally, the subordination of women and sexuality emerges here succinctly.

24 Later, at the barber's, Daniël nearly comes to blows with his neighbours. Again, because the land is mentioned that Daniël had obtained and had subsequently cultivated badly (for it is this that matters in particular). But I will leave those entertaining episodes to those readers who (want to) read the novel.

25 Here, the description of a calculus is fascinating: it can be found later in mathematical form ($Y/T * T/L = Y/L$) in standard texts such as Hayami and Ruttan (1985).

26 This is a direct reflection of one of the episodes of Frisian agrarian history described earlier in this chapter.

27 The greatest limitation of *Groun en minsken* is, in this respect, that a 'project' that becomes essential later on is still missing. This is the technological development culminating in the combination of the cubicle shed, new milking techniques, Holsteinisation, increased concentrate intakes, and grassland intensification. Hence, simultaneous scale enlargement and intensification becomes possible, without a proportional increase in labour pressure. The potential tension between men and women described in *Groun en minsken* will later be mediated by new technologies. Above all, it implied for farm women a restructuring of the nature and content of their work; see De Rooij 1992.

28 This did not happen, especially due to the 'desertion' by wife and children. Furthermore, the fact that there were no adequate technologies available to satisfactorily continue a project such as Daniël's played also a role.

29 On the basis of a comparative research, De Rooij argues plausibly that the farm women's influence and share was reduced highly on large-scale, specialised farms as against the smaller-scale mixed farms.

30 The portrait of Daniël as paterfamilias painted from quotations, as the man who tries to fit his family into to the particular needs of the practice of his extensive, large-scale style of

farming, might seem cynical, and highly exaggerated. If this is the case, it will largely be the result of the selection of quotes itself, since I have concentrated the selection on family conflicts. Again, I would like to call to mind that, according to the Frisian literary critics (Kalma, Piebenga, Wadman, Riemersma, etc.), *cynicism* is a feature lacking entirely from Brolsma's work. In summarising their opinions, an image emerges of a sharp observer (*in tûke opmerker en sa'n fiene fielder, die it folkslibben út'e pin koe*), who rather covers his observations with *mild humour*. If I try to situate the novel in a historical perspective, as a frame belonging in a longer series, it seems impossible to avoid the idea that the conflict that arises with Daniël in the farm family and that even explodes in the shape of a disintegrating family becomes structural with the generalisation of an extensive, large-scale agriculture. Although the writer exposes in *trysk en tragysk epos* (a sad and tragic epic; Piebenga, p. 218) in *Groun en minsken*, he also states that the family tragedy as described by him, ignored by the changing style of farming, would possibly go unnoticed to outsiders: *in frjemd sjocht dat sa net!*

31 It seems important to emphasise again that classifying farm women's work as 'men's work' – the expectation that farm women make excessive working hours just like farm men and the relation of farm men v. farm women as 'tyrant' v. *ploechhynder* (drudge) – is not inherent in agricultural production (and the family farm) as such but is the very result of the relatively extensive and large-scale production practised by Daniël in an almost pioneering manner. Judging from the novel, these phenomena, which we can summarise as the subordination of farm women, do not, or to a much lesser degree, belong to an intensive agriculture.

32 At first it is remarkable that the reference to 'a wild beast' arises both in the play about the *Nijboer* and in the novel about 'Daniël'. On closer inspection this is less accidental. For both expressions of local farm culture deal with the boundary between what is normatively given and what falls outside. In the latter domain they 'carried on like a beast', according to the above-discussed perceptions. However, not as an 'animal'. For animals have a 'built-in code' (see below): they have learned how to behave. 'Beast' is one of the worst curses to hurl at someone in the Frisian language. Thus it is often indicated by ellipsis (...) in written texts. It resembles a curse: it was not allowed to be written.

33 To work with *fordrach* in turn leads to *nocht* (taking pleasure in work), as is shown in various other cards not reproduced here.

34 There are striking parallels. See, for example, the study about 'sons of bitches' in Thai agriculture by Michael Moerman (1968).

3 Farming Styles as Socio-Technical Networks

At the start of the 21st century, Frisian dairy farming exhibits a high degree of diversity. Considerable variability can be noticed in all forms of farm structure and activity. In general there is more variety now than there was four decades ago. The increase in variation has not occurred accidentally. It is the expression of (and informs in turn) underlying *patterns of coherence*, which we will analyse here in terms of farming styles. A farming style is, generally, a mode of ordering: a systematic and continuous attempt to *create* congruence within those domains in which farmers and their families have to operate. However, they are not the only ones operating within these domains. Others are directly or indirectly involved – other actors, other institutes, other entities – each of which might represent a mode of ordering.

Thus emerges a *socio-technical network*: a particular constellation of various modes of ordering, interlocking in particular ways and collectively defining the apparent courses of action and development opportunities. A farming style can thus be regarded as a socio-technical network. ‘Socio-technical’ because the style is comprised of social elements, material elements (including aspects of the ‘living world’), and above all the interrelations between the two.

- ✓ Farm labour includes a wide range of tasks. By way of illustration, I would like to refer to a few labour tasks in the domain of production: feeding, care, milking, milk storage (and possibly milk processing), grass cutting, haymaking, silage-making, and so on. An almost infinite number of tasks can be identified. For example, over 200 tasks have been distinguished in the relatively simple cultivation of cereals. Moreover, in the domain of reproduction, old cows have to be replaced by new ones; soil fertility has to be maintained if not increased, which also involves engagement in water management, tillage, selection of grassland varieties, and so on. Other tasks may be identified as well, such as training new workers (usually a son or daughter), setting aside savings, maintaining buildings and machines, etc. – for the reproduction of the farm is unthinkable in the long term without such tasks. Similarly, the domain of economic and institutional relations is essential: the farmer has to enter into relationships with suppliers, banks, cattle traders, the dairy factory. Finally, the domain of social relations between and within the family and the wider community also generates an additional range of tasks (Marsden *et al.* 1992).

The broad set of tasks, which is highly variable both temporally and spatially, demands careful *coordination*. This process of coordination results in a particular structuring of time and space (Mendras 1970). If the process of coordination is ignored or executed less than optimally, the farm will function less well – costs will be excessively high, production too low, and the farm will lack cohesion. Therefore, it is crucial to create congruence and coherence. Tasks need performing in certain sequences in order to save time and money.

The construction of congruence and the active creation of association unfold along various development trajectories, which in turn lead to different farming styles. The creation of development opportunities is intrinsic to the nature of the agricultural production process and to the way in which it is connected to the wider environment.

Analytically, three central elements can be identified within the agricultural process of production. First, there are the objects of labour, i.e. those things that are converted into new values. For example, livestock is converted into meat, milk, new offspring and manure. It is characteristic of agriculture that labour objects are part and parcel of (are derived from) the 'living world' (for a more extensive explanation, see Sevilla Guzman *et al.* 1990; Toledo 1992). Secondly, there are tools or instruments: those elements that are fabricated and used to lighten and improve the labour process – think about tractors, artificial fertiliser, concentrates, and buildings. The third element is the labour force. Together, these three elements collectively compose the labour or production process.

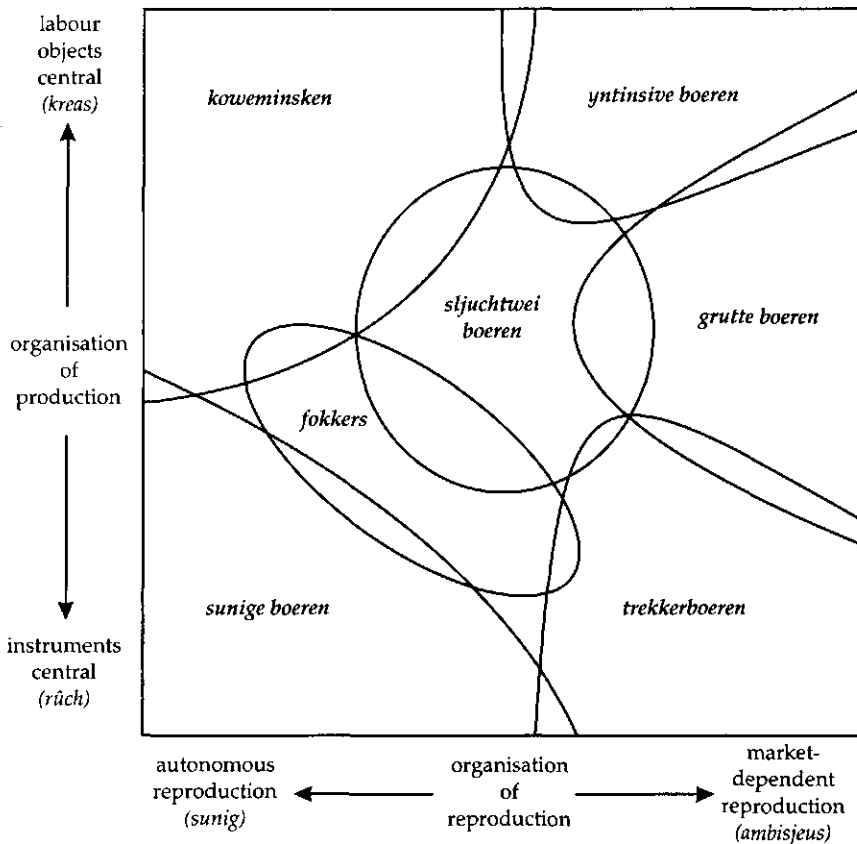
Its concrete structure (the interrelations between the constituent elements) will depend upon the social relations of production (Poulantzas 1974; Meillasoux 1975). Various aspects of the organisation and further development of this production process can be stressed in different ways (depending partly on the social relations of production). Thus, various development opportunities emerge.

Organisation and development can be centred largely around achieving high and increasing productive results per labour object. Thus the quantity and quality of labour become of strategic importance. Tools and instruments, or techniques, are 'skill oriented' (Bray 1986). On the other hand, emphasis can be placed largely on the tools. These are developed in such a way as to enable the management of as many labour objects per labour unit as possible – that is, the pursuit of as large a scale as possible. This usually leads to 'mechanical technology' (*ibid*). The nature of the labour objects and the realisable value per labour object are thus a function of the chosen scale.

Voilà, a first dimension, a first field of tension that is spanned by two contrasting development opportunities – which we encountered in the previous chapter through two concrete and mutually highly conflicting expressions: *kreas* versus *rûch buorkje* (farming gently v. farming roughly). The tension thus outlined is found and defined in some way in almost all agricultural systems (Robertson Scott 1912; Bolhuis and Van der Ploeg

1985; Maso 1986; Manolescu 1987; Hughes 1988; Leeuwis 1989; Van der Ploeg 1991a; Cristovão *et al.* 1994; Howden 1998; Zuiderwijk 1998).

Figure 3.1 Farming styles in contemporary Frisian dairy farming



Note: *koweminsken*, *yntinsive boeren*, *sljuchtwei boeren*, *grutte boeren*, *fokkers*, *sunige boeren*, and *trekkerboeren* are translated as, respectively, cowmen, intensive farmers, ordinary farmers, large farmers, breeders, economical farmers, and machinemen.

More generally, various modes of ordering, or two contrasting styles of agricultural practice,¹ are always involved. One pole is characterised by the centrality of the labour object and corresponding courses of action and modes of ordering, which we can define here as *fine-tuning*. Intensive production is pursued by means of the process of fine-tuning: high yields per labour object are both the guiding principle and the norm. The opposite pole is characterised by the centrality of the means of production and the corresponding pursuit of the highest possible level of labour productivity. Here, a large number of labour objects per labour unit (the scale of production) is the norm and the guiding principle. This dimension is represented in the vertical axis in Figure 3.1.

A second dimension can be identified by reviewing the reproduction of farming over time ('the dance through time'). Reproduction can be a

function of the production process as such; however, it can also take place largely *beyond* the on-farm production process. Relationships with other farms and with other institutions are established: labour objects and means of production are mobilised through markets (see Van der Ploeg 1990, pp. 12–26; Saccomandi 1991, p. 491).

Thus, a second axis emerges, which again is spanned by two contrasting development opportunities. It involves, on the one hand, an *autonomous* way of farming (in which reproduction is a function of the actual production process), while the second pole is characterised by *market-dependent* reproduction: reproduction (or development) takes place through the mobilisation of resources from beyond the farm gate, involving not only higher costs but usually also sharply increased transaction costs. This tension is referred to in the contemporary rural repertoire of Friesland by the concepts of *sunig* (economical) versus *ambisjeus* (ambitious).

3.1 Farming styles in contemporary Frisian dairy farming: an introduction

Figure 3.1 contains a number of local Frisian terms describing various distinguishable farming styles, which will be discussed throughout this chapter (for a similar example from North America, see Bennett 1981).

Initially, one regional style applied largely to Friesland as a whole (for a general discussion, see Hofstee 1946; Maris *et al.* 1951 and Swierstra 1971). Farming *kreas* (gently)² was the norm. At the same time one needed to farm *sunig* (economically). Collective memory had shown that the latter was the precondition for the former – and *vice versa*. Thus arose the style of *koweminsken* (cowmen; which, of course, included various subregional nuances). The extent to which this ideal goal could be realised varied greatly – however, the goal as such (for example described by the images and words included in Figures 2.7–2.14) was almost uncontested. Today, a multitude of contrasting farming styles have evolved. New development opportunities have come within reach. Returning once again to Daniël fan Kuken (see Chapter 2 of this book), he tried to cultivate more land, to keep more cows than the then available means of production allowed.³ Agricultural mechanisation has since developed immensely. ‘To achieve the highest possible output with as little labour as possible’⁴ was a project that imposed clear limits in Daniël fan Kuken’s days. Nowadays, this is far from utopian. The historically created development trajectories (resulting from the particular integration of certain projects) now explicitly include the prospect of a constant increase in labour productivity. If Daniël still failed, some seventy years ago, a distinct and solid pattern of machinemen has now been established in the Netherlands. In Friesland they are usually described as *trekkerboeren* (tractor farmers). Anyway, the ‘machine’ or ‘tractor’ is a clear metaphor for the strategy of ‘achieving the highest possible output with as little

labour as possible'. The necessary connection here is indeed the 'machine' or 'tractor'. This emphasises the orientation towards tools.

The use of folk concepts in Figure 3.1 should not be misunderstood. Although they appear to refer to particular individuals they evidently describe strategies and modes of ordering. Certain strategies are applied in more striking, and more recognisable ways, by some farmers. Hence, mention will be made of *economical farmers*, for instance. However, this should not conceal that what matters is the underlying approach: the *mode of farming economically*. The same applies, *mutatis mutandis*, to the other terms in Figure 3.1.

Initially, Dutch dairy farming maintained a certain, albeit flexible, equilibrium between cattle and grassland. This applied to Frisian dairy farming *a fortiori*. Not for nothing, a long battle was fought that resulted in self-sufficiency becoming the norm. In other words, there was a more or less stable relation between the most relevant labour objects: dairy cows and grassland. The internationalisation of fodder production and trade, that has occurred since the 1960s (and which was represented at the time by the so-called 'hole of Rotterdam', through which animal feed products were imported tax-free into the country), has made it possible to move beyond this once fairly stable relationship. A new development opportunity arose: a disconnection from the initially organic and highly local unity of fodder production and animal production. Thus the opportunity for developing the farming style of the *intensive boeren* (intensive farmers) emerged. A strategy that is summarised by the adage: 'if you put in as much as possible, you'll get out as much as possible.' One of the typical aspects of the way in which intensive farmers operate is a relatively high stocking rate (the number of cattle per hectare). This approach requires large purchases of roughage and concentrates (and high concentrate levels per cow) to achieve high production levels per hectare. Hence, the margin per hectare (an important indicator referring to the difference between monetary benefits and monetary costs per hectare) is also high. Intensive farmers also exploit other, relatively new development opportunities (that is, more so than other styles). Reference can thus be made to the reorganisation of time – notably in breeding and the replacement of dairy cows – to zero-grazing and to a sharp increase of grassland production (due to regular 'grassland renewal', high levels of artificial fertiliser, low-level drainage and irrigation, and an increase in the so-called 'mowing percentage'). I will discuss several of these aspects elsewhere in this book – here it is important that these changes (these changing tasks) are forged together into a new and congruous whole: the style of farming intensively.

Next, the *grutte boeren* (large farmers). The crucial characteristic of this style is that the resources obtained through market dependant reproduction (loans in particular) are used for accelerated expansion rather than for direct production. Large farmers believe, much more than

others, that they are involved in a 'battle for the future', a battle organised by the idea that only few, very large farms will 'survive' in the future (I will discuss this at length in Chapters 6 and 8). By implication actual production is subordinated to the desired growth process, which is in sharp contrast to the other styles where growth (the reproduction of the farm as a whole over time) is much more a function of the production process. This prevalent relation is reversed completely in the strategy of large farmers: the current farm is above all seen as collateral for, and as a 'leg-up' to the large farm of the future.

Within this style other relatively new development opportunities are employed as well. Highly accelerated farm enlargement is supported by new technological opportunities, by the prevailing fiscal regime, by generous credit facilities, and by an unmistakable change in the cultural pattern: if 'milking above one's head' (that is, trying to be much bigger than others) was taboo in the past,⁵ it is now strongly encouraged by the expert system, by the advisory service, by agribusiness, and by the farmers organisations. Accelerated growth has become a goal in itself for part of the farming population – it has become part of their identity.

A conceptual consideration is in order here. Up until now, I have presented the development opportunities used in the various farming styles as 'external' to the farm. As a matter of fact, this is a somewhat misleading representation. In an abstract sense, the aforementioned development opportunities (and also the ones discussed below) can easily be imagined as separate from concrete agricultural practices. In so far as concrete development opportunities are concerned, however, we are dealing with development opportunities that exist partly because they are realised within, and further extended through, the agricultural sector.

Even though every development opportunity requires a particular historical concurrence of circumstances and developments, the *interweaving* of the projects of groups of farmers with those of others (international trading firms, banks, governments, producers of technology, farmers organisations, other farmers, etc.) – that is, the *socio-technical network* – is decisive in constituting these development opportunities (see also Figure 1.1b and its discussion). Hence, we are not dealing with a question of 'internal' or 'external': the coming together of various possibilities, interests, and rationalities into one socio-technical network is pivotal (Iacoponi *et al.* 1995; Lowe *et al.* 1995).

We will continue with the *trekkerboeren* (machinemen). The guiding principle within this style is that 'you have to realise the highest possible output per person'. This leads to a particular perspective on farm management and the use of a particular technical indicator. If cowmen control and guide farm management and farm development by using the margin per cow, intensive farmers by using the margin per hectare, large farmers by the expected cost price, machinemen pay particular attention to the relation between gross output and labour input.

Figure 3.2 A *grutte* farmer

Rûch (rough), the notion that was so important in the past, is hardly applicable nowadays. Although cowmen will invariably conclude, when observing both rapid expanders and machinemen, that 'a lot has been left there' (that is, not enough care has been taken, the work has not been done properly), machinemen will not regard their often lower levels of intensity per cow and per hectare of grassland as problematic. On the contrary, they see themselves as working remarkably 'efficiently' (enabled by the technology they apply). They will, in turn, be of the opinion that a 'cowman' is wasting time by excessive attention to the cows. This refers back to the classification struggle sweeping the countryside, that essentially revolves around the question of what is an adequate, responsible, and promising way of farming.

Next up are the 'economical farmers' (*sunige boeren* in Frisian). Their overwhelming motive is to keep monetary costs as low as possible. This refers to both the nature of the growth process and the actual production process. Attempts are made to guard as closely as possible the balance between private and external capital, in order to minimise the financing costs. Investments are made cautiously. It is preferable to fall back on socially regulated exchange in the construction of new buildings, and to use and adapt existing buildings as much as possible (see also Figure 3.3). Machines are preferably bought second-hand (which presumes, of course, that other farmers are willing to sell them). Furthermore, the depreciation period is stretched as much as possible – maintenance becomes an important issue. In the case of the annual cycle of the actual production process, economical farmers again pursue the realisation of the lowest

possible monetary costs. Internationally, this approach is defined as 'low external input agriculture' (Reijntjes *et al.* 1992): costs of energy, artificial fertiliser, concentrates, livestock, and various services are kept as low as possible. Hence, the choice is usually for lower milk yields per cow, corresponding to a lower input of concentrates. If there are opportunities for substituting inputs with labour, economical farmers will prefer their own labour input (see also Chapter 5 of this book). Their labour input is usually higher than on other comparable farms. The orientation towards tools (see Figure 3.1) is translated here in a remarkable way: everything is geared towards minimising the monetary costs connected with the use of tools. At the same time, these farmers achieve a high efficiency in the use of their own resources. They are *tûke* (clever/reasoning) farmers: good grassland farmers, for instance, which has been known throughout the country for years and which has recently been demonstrated by scientific research (Rougoor 1999).

Just as the cowmen's approach contrasts strongly with that of the machinemen, the approach of the economical farmers contrasts strongly with that of the intensive farmers (in particular in the short term – that is, with respect to farm management) and with the approach of the rapid expanders (that is, *grutte boeren*). If the latter accelerate growth (partly by entering into large financial obligations), economical farmers develop their farms gradually, on the basis of their savings.

We encounter an interesting and doubtless typically Frisian approach in the *fokkers* (breeders). Their style shows a strong resemblance to the approach of the economical farmers. The difference between the two is in the keeping of a large number of youngstock, in order to supply heifers for export. This is a rather risky market, with sometimes very good prices but also with the proverbial lean years (at times up to seven years indeed). These are not the so-called 'top breeders' (who constitute a separate and very small group), but those who produce robust breeding stock very much in demand in North Africa, the Far East, and in Eastern Europe. A characteristic indicator is the value of 'output and change in volume dairy cattle' per 100 litre of milk:⁶ the extra revenues from cattle sales at a given production volume. Breeders excel in the respect. The breeders embody another development principle. Beyond the market for milk and 'sausage cows' ⁷ they exploit other markets as well. The underlying principle of producing for a wider range of markets is one that has subsequently been adopted by several other farming styles as well.

Figure 3.1 is based on data collected in 1990. It is, in a sense, already dated. Since this time several new development opportunities have emerged that run parallel to the *fokkers* strategy of producing for a wider range of markets. The upgrading of milk quality (and hence the milk price), for instance, has become a solid and rapidly spreading practice: organic dairy farming, the generation of quality products and/or region-specific products and direct marketing are new development opportunities that are being explored. (I will discuss these further in

Chapter 9 of this book). Other development opportunities have unfolded too, such as the management and development of nature and landscape, the rise of agri-tourism – and the combination of farming and off-farm employment. Again, I will discuss all these later. At this point, it is important to recognise that farming evolves along different tracks, which could subsequently burst, at specific turning points (see Van der Ploeg *et al.* 1993), into a suddenly expanded range of development opportunities. It remains to be seen whether or not, and to what extent, these new possibilities are fertile ones. The complex outcomes of variation and selection are hard to predict in advance.

Finally, the last group in Figure 3.1: the *sljuchtwei boeren* (ordinary farmers).⁸ This is a concept that can easily be translated literally, but which has another underlying meaning. They are the farmers that do not stand out. They are the farmers who sail a routine course: *sljuchtwei*. Perhaps I have been biased too much by my profession, but I am inclined to say that agency has developed to a lesser extent in this group. These are farmers who hesitate in making choices. They try to steer the path of least resistance, operating a little like one farmer and then a little like another. It is as if they are unable to conceive and pursue a clear project. They do not stand out but are almost invisible. As stated in Chapter 1: if we search for agency, we have to admit that something like non-agency does also exist. Whatever the reasons may be, it is remarkable that those who farm largely according to one style (whichever one it is) – other conditions being equal – realise higher incomes than those who hide in the ostensible safety of the unspoken. At equal production volumes (and under other *ceteris paribus* conditions), the ‘extreme ones’ in Figure 3.1 are able to realise better incomes and long-term perspectives than the ordinary farmers.

Of course there are ‘overlaps’ between these different farming styles. They are not discrete categories. Some farmers will combine two or even three modes of ordering. We know this from practical experience; it appeared also from the application of fuzzy logic in those analytical models that normally generate discrete solutions.⁹ Second, and this should be self-evident but apparently needs emphasising – considering frequent confusion and misinterpretation (Volker 1993, 1994) – the practices resulting from a farming style, defined as an ordering principle shared and practised by a number of farmers, do not have to be completely identical. On the contrary, the outcomes of the strategy of farming economically will vary widely, depending on the size of the farm, the availability of family labour, *et cetera*.

In other words, *styles* do exist, but varying conditions will result in *variations within the style*. A comparison with music will illustrate this: a theme leads to variations on the theme, but the theme does not become lost in all those variations – it presents itself only more strongly (Remmers 1998). Analytically, this implies that the variation *within* a group compared to the variation *between* groups (cf. cluster analysis) is decisive.

Figure 3.3 *Sunige* farmers



3.2 Towards a specification of farming style as construction of congruence

What is a farming style? Following on from the previous, a farming style can be defined (and researched) at three interconnected levels.

- 1 A farming style is a coherent set of strategic notions about the way in which farming should be practised. It is therefore a particular cultural repertoire. It is a mode of ordering: a coherent set of strategic notions that guide practical actions and informs farmers' judgements (Roep & Roex 1992). In this respect, a farming style is a decision-making model; it enables calculation: it is a *calculus* (Van der Ploeg 1990; Roep *et al.* 1991). These strategic notions are time and again shared by a larger number of farmers. Hence, it becomes possible to refer to the networks in which these notions circulate and are discussed (the French research tradition refers to this as *groupement professionnel local*; ref. Beaudeau 1994).
- 2 A farming style also appears as a particular practice: as an internally consistent, congruous, way of farming. The structure and the internal coherence of this practice is informed ('structured') by the cultural repertoire mentioned above. The practice is partly an expression of the strategic actions (of the mode of ordering) of the actors directly involved. And, vice versa, necessary feedback emanates from this practice. It reconfirms and/or modifies the cultural repertoire. The particular ordering of the practice can also be regarded as a specific model for income generation. Every one of the development opportunities discussed above contains a particular strategy (and hence a set of empirical cost-benefit relationships that are applied accordingly) with which income is generated. In dynamic terms, a farming style emerges, at this level, as a particular development pattern.
- 3 The described practice has to be realised through the integration of (or through the distantiation from) other projects, other modes of ordering. It is not only the 'internal relationships' (within a particular practice, as indicated under 2) that colour and have an effect on the final results, but also, and especially, 'external relationships'. In this respect, we can regard a farming style as a socio-technical network, as a particular interweaving of divergent projects. More precisely, a farming style can be defined as a set of particular relations between markets and technology supply, on the one hand, and farming, on the other. And when market ordering and technology policy are explicit parts of a governments' agricultural policies, we can also conceptualise farming styles as strategic positions vis-à-vis government policy.

Again, a farming style is a systematic and constant attempt to create congruence; at the individual level, but above all between the various levels. To farm in an *yntensive* (intensive) way without wanting (or being able) to enter into the required market relations is an illusion: every

attempt would founder on *discongruity*. Similarly, *sunig buorkje* (farming economically) with cows yielding over 10,000 litres is rather inconceivable. Congruence is indispensable. Here congruence can be seen as an extension of thinking to doing, and vice versa, and from the farmer's practice to the network in which the practice is embedded. Mode of ordering or strategic repertoire, practice and socio-technical network need to be congruent. Practice needs to be organised and reorganised in order to be in harmony with strategic repertoire and vice versa. The same goes for socio-technical networks, which need to be adjusted to the mode of ordering and practice. And sometimes, when new development opportunities occur, strategies, practices and networks all have to be readjusted. Agency defines whether this will succeed completely or partly.

Why do different styles emerge? Farming styles arise because agricultural practice has, always and everywhere, to be balanced with its environment. In the past, for example, the local ecosystem, the rule of law, town-country relations, history (and its collective memory) were important points of reference; they were modes of ordering that could not be ignored and with which the actual farming practice had to be forged into a 'working whole' (Roep 2000) – that is, into one particular socio-technical network. Variation in local ecosystems, town-country relations, etc. resulted in an impressive range of regional farming styles¹⁰ – this variation was repeated in various aspects of the farm and farm management: the architecture of sheds differed from one area to another, as did the 'ways of hitching horses' (Hofstee 1985a) and the shape of beet cutters.¹¹ The highly local nature of markets,¹² of available technological repertoires, and the 'detached nature' of agricultural policy¹³ emphasised and reinforced the heterogeneity.

The post-war period was characterised by an increase in state intervention in agriculture, especially from the early 1950s onwards: agriculture needed to be modernised. At the same time, certainly from the late 1960s onwards, an intensification of the uniformisation of markets and technological development occurred (as a result of both the strengthened influence of the EEC and the concentration of agribusiness). Market ordering, technology development, as well as the way in which agriculture had to be related to both, became increasingly subject to government intervention, to a mode of ordering geared towards a complete transformation of agriculture. I will discuss this 'modernisation project' further in Chapter 6.

The farming styles that can be identified in Dutch agriculture today are above all responses to this new, dominant point of reference – that is, the modernisation project of the Dutch government, and later of the European Union. Increasingly, the 'local' disappeared as a point of reference (whether local ecosystems, local markets, local rules of law, etc.) – and new, rather 'global' points of reference took its place (see Swierstra 1971; Van der Ploeg 1992).

Therefore, farming styles have become increasingly intra-regional: they criss-cross regions, involving divergent responses to the dominant modes of ordering. The modernisation project introduced new development opportunities; it also encouraged the generation of contrasting development opportunities, precisely because modernisation as a new, rather accurately defined and specified development opportunity could not be realised everywhere – it could not be aligned with other, often local modes of ordering.

A simple story may suffice here to illustrate the tension. In many parts of the Netherlands, there were numerous 'canal farms' (*vaarbedrijven*) which relied on flatboats for their transport within the farm and beyond. The introduction of new technologies, associated with modernisation (e.g. cubicle sheds, enlarged home plot, tankers collecting milk from the farm, increased stocking density, drainage in order to increase the carrying capacity of the soil; see De Bruin 1997a), created situations where the future of these canal farms became increasingly problematic. The *moment suprême* was usually constituted by the obligatory introduction of the milk tank and the necessity to gain road access to the farm. Even if this was physically possible, the costs of building bridges and/or ferries were prohibitive. The new development opportunities (the modernisation project of both the Ministry of Agriculture and the dairy industry) appeared unrealisable for these farmers. In many cases, it resulted in farm closure; in other cases, however, new development opportunities were unfolded – for example, by (again) taking up on-farm cheese production (see Figure 3.4). Thus, the (impossible) drive of the milk-collection tankers up to the milking parlour became unnecessary. Simultaneously, a completely new project was developed (on farm cheese making). This resulted in a new mode of ordering that demanded the development of that which had been unnecessary and superfluous within the then dominant socio-technical regime. A new socio-technical network was created that included new craftsmanship and new machines to enable small-scale cheese production; new relationships with traders and consumers; new forms of quality control; a careful aim at making these new activities profitable; the reordering of various internal relation on the farm; and so on. Thus, new relationships were forged, new perspectives conceived and consolidated, eventually resulting in a new farming style,¹⁴ a new pattern of congruence.¹⁵

The farming styles, as they can currently be mapped out, can be regarded as ever so many responses to the modernisation project that dominated Dutch agriculture from the 1960s to the 1990s. Some styles primarily represent the internalisation of the modernisation project (and are materially dependent on its continuation).¹⁶ Other styles, on the other hand, represent a distantiation from, and a deconstruction of the all-embracing and overpowering modernisation project. Socio-technical networks have been developed from within the latter group of styles that contrast, to differing degrees, to the networks that the modernisation project has helped forge.

Figure 3.4 On-farm cheese production as new development opportunity



How do different styles emerge? Three issues are of importance. The first issue can be defined, following international debate, as *resistance paysanne* (see Pernet 1982; Scott 1985; Antonello 1987; in the Netherlands, Kuypers (1996), following Berger (1990), speaks of the 'culture of survival'). The demise of the peasantry (Mendras 1970; Gudeman 1975) has been predicted for decades. The expert system in and around Dutch agriculture also views the peasantry as an intermediary stage of agricultural development. In contrast to this paralysing image, I support a different perspective: 'resistance capacity' is omnipresent in Dutch agriculture as well, maybe more than ever before. For resistance of the peasantry is more widespread than fragility (see Chapter 7 of this book). Failure to distinguish between the two, as is generally the case in the expert system, inevitably leads to a misunderstanding of agriculture and how it evolves through time. But this aside for now.

The second issue concerns the search for and the extension of new, contrasting development opportunities. Taking 'resistance capacity' as a starting point, new solutions, new perspectives, and the practices connected with them, are unfolded in such a way that once again 'working wholes', or congruous patterns, emerge (Bagnasco 1985; with respect to marginal agricultural regions, see Bowler *et al.* 1995 and Osti 1991). Control over the labour and production processes and the fundamental, and historically created, malleability of farming (see Chapter 4) offer prospects for this. The creation of a new congruence (the development of a new socio-technical network) can either succeed or fail.

Variation and selection are inherent to this dance through time. Some attempts have succeeded – often convincingly. The proof of the current abundance of farming styles cannot be ignored.

The third issue concerns the relationship between the farm and the dominant ordering principles: globalising markets and the also highly globalised technology supply. Farming can be highly integrated into various markets (at the input side of the farm), it can also be highly distanced from them (see Bolhuis and Van der Ploeg 1985; Van der Ploeg 1990; Saccomandi 1991; Saccomandi and Van der Ploeg 1995). This involves various transaction costs, as particularly Saccomandi has stated clearly.¹⁷ The core issue in neo-institutional economics – *make or buy* – arises here in an all-encompassing form and with all its repercussions. The same applies to the prevailing technology supply. This can be adopted integrally and be made into an ordering principle for further farm management and development – which can involve considerable transaction costs. However, the same technology supply can also be deconstructed, broken down into separate components, after which a critical choice is made to adopt certain elements and to convert them in such a way as to fit into the prevailing style. In turn, considerable ‘government costs’ can be involved in this process.¹⁸

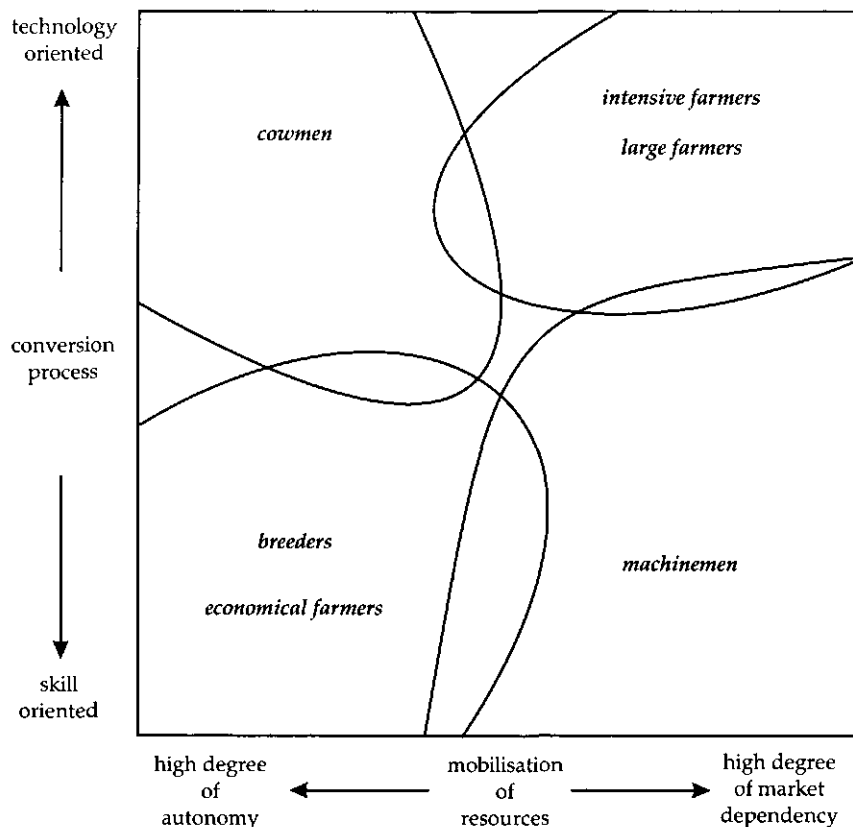
Thus, markets and technology do not determine the nature and development of farming in a unilinear way. Markets and technology create the environment in which various positions, that is various farming styles, are possible. Figure 3.5 (based on a canonical discriminant analysis relating various farming styles to the degree of dependence on or relative autonomy from markets and technology)¹⁹ illustrates this clearly. Various farming styles create highly divergent relations with markets and technology, and with the modes of ordering applicable there. This means that farming styles represent unique socio-technical networks (understood as particular combinations of several modes of ordering).

In summary, new farming styles emerge from the resistance capacity contained within agriculture. Farmers use the malleability of the process of production and the room for manoeuvre contained in markets and technology, to construct new congruent responses to the dominant modernisation project.

Particularly fascinating are the interrelations between the expert system that conceived and materialised this modernisation project, on the one hand, and the multitude of differentiated responses emerging in practice as a result, on the other. To summarise a lengthy discussion (which will be continued partly in the following chapters), the expert system clearly did not pay enough attention to diversity. Dutch agriculture was understood above all according to the logic of modernisation.

In response to research about the ways in which various farming styles were perceived at the level of agricultural institutes, the Ministry of Agriculture and the expert system replied that ‘there are only two types of farmers: real entrepreneurs and hobby farmers’ (Soldaat 1991).

Figure 3.5 Markets and technology as room for manoeuvre



The empirical reality of agriculture was of interest to the expert system only for as long as it provided information about the extent to which the modernisation project had already been realised. The practice of agriculture advised at most about the extent to which 'imposition' (that is, the imposition of perspectives and measures) had been successful. Development opportunities such as those present in the practice of farming (or such as activated by the imposition of the expert system) were ignored, because they were not *known*. This very point of view created an extensive set of problems later on.

On relevance and range

The practices as developed in various farming styles (see level 2 of the previous definition) can be projected on and investigated through various dimensions. Initially, the emphasis was especially upon intensity, scale, and degree of specialisation. More recently, attention has been drawn to other dimensions. These include:

- various types of entrepreneurship (Van der Ploeg *et al.* 1992; LEI 1996);
- the highly variable use of rural space (De Bruin *et al.* 1992; Renting *et al.* 1994);

- the possibilities for local self-regulation (Hees *et al.* 1994; Horlings 1996; NRLO 1997c; Hees 2000);
- the highly differentiated nature of environmental pressure on agriculture, and its solutions (Roep and Roex 1992; Schuthof *et al.* 1994);
- employment effects (Van der Ploeg 1994b);
- the way in which 'nature' or, in more concrete terms, the way in which cows, wheat varieties, irrigation systems, and manure are folded into particular, style-specific entities (respectively Groen *et al.* 1993; Wiskerke 1997; Van den Dries and Portela 1995; Eshuis *et al.* 2000);
- the way in which animals are treated (Commandeur 1998; for international references, see Seabrook 1997);
- the way in which various input-output relations are created (NRLO 1994; Ventura 1995);
- the way in which relationships between producers and consumers are folded along style-specific lines (Kerkhove 1994; Ventura and Van der Meulen 1994; Roep 2000);
- the interrelations between advisory and, more generally, farm management support, on the one hand, and farmers on the other (Leeuwis 1993; LEI 1996);
- the role, position, and influence of farm women (De Rooij *et al.* 1995; Bock 1998);
- opportunities for agritourism (De Bruin 1993; Oostindie and Peters 1994);
- and, more generally, the opportunities and starting points for new types of rural development (Van Broekhuizen and Renting 1994; Ettema, *et al.* 1994; Van Broekhuizen *et al.* 1997; Van Broekhuizen and Van der Ploeg 1997; De Bruin *et al.* 1997).

Figure 3.6 shows the heterogeneous ordering of the socio-material reality. It is always possible to arrange two- or multidimensional fields around this 'reality', onto which parts of the heterogeneous world can be projected; and the addition of new fields can uncover new aspects. This is precisely what was achieved in the aforementioned studies.

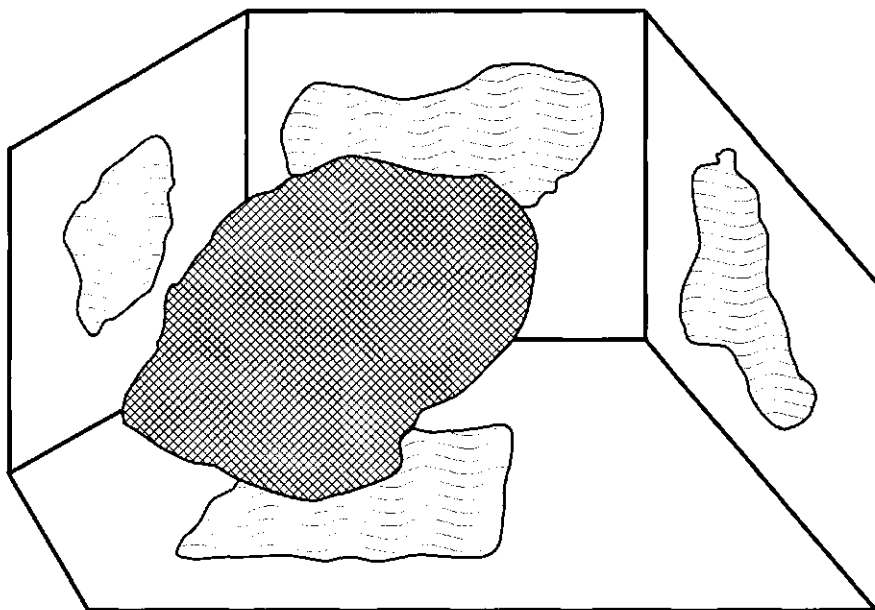
The core of this wide range of studies, supplemented by similar research studies from elsewhere in Europe²⁰ and the Third World,²¹ can be summarised in three points:

- 1 Irrespective of the dimension addressed, a relevant range of gradations could always be uncovered – which was sometimes wider, at other times narrower, and which was not only related to, but could also be explained by, the underlying differences in style.
- 2 This amount of variation relates to the issues articulated on, and along, the various dimensions as a potential reserve of solutions. Some styles are, for example, environmentally 'cleaner' than others. In principle, this offers considerable opportunities for policy. Furthermore, the most likely route to better environmental outcomes will also vary between

each style. This offers a second series of opportunities for policy, at least in principle.

- 3 Finally, it can be said that the range of potential solutions reaches *beyond* the currently identifiable variation. This applies 'arithmetically',²² but also more substantially: if favourable conditions are created for certain development opportunities, it becomes possible to create new, initially unanticipated, responses to various problems. I will discuss this at length in Chapter 9.

Figure 3.6 Projecting a heterogeneous socio-material reality onto various dimensions



Thus, studies into farming styles refer, above all, to endogenous development opportunities (Van der Ploeg 1994c): to responses, to new development opportunities, the seeds of which are already present, to responses that can be utilised and unfolded further.

However, other issues are at stake in early 21st century agriculture. The sector is confronted with a 'technological regime' (a semi-coherent set of artefacts, rules, procedures, views, interests, knowledges and ignorances, capabilities and incapacities; Van Lente and Rip 1998), a system of opinions and rules related to agriculture as it should be in the future and that is increasingly imposed upon agriculture in immediate and coercive ways. Development is no longer understood as a process of conditioned²³ unfolding from an existing position, but development is increasingly the 'imposition' of an image of the future which relates to the current, differential developmental tendencies as a rupture.

The connecting link is evident: it is the expert system in and around agriculture. This expert system excels in two apparently opposing, but at

closer view almost seamlessly dovetailing, aspects: on the one hand, ignorance and lack of knowledge about the current state of affairs, and the development opportunities intrinsic to this; and, on the other hand, expertise about the possible ways of organising agriculture, disconnected from the current state of affairs.

Research into farming styles implies a constant search for and identification of the production, circulation, and strengths of 'novelties': new and potentially promising practices with which, at least in principle, some of the many problems around agriculture can be tackled. These novelties include any of the above-mentioned dimensions and often others too. The point is, however, that these innovative practices are doomed to remain *hidden novelties* under the dominant technological regime: they remain unnoticed and are often actively obstructed by the existing regime. Perhaps the most essential contribution of the farming styles studies emerges here: this approach has contributed in a number of situations to revealing what was 'hidden', and it has at times even created some room for manoeuvre (a protected space) for what appears to be at odds with dominant regime.

For the time being, however, the farming styles approach can be no more than a *counterpoint* to the current generic approach, in which the imposition of future images domineers over the development opportunities contained in the here and now. But this can in itself be important enough.

3.3 Exploring farming styles

Many studies of farming styles have been carried out over the past 10–12 years. Collectively, they comprise a programme. Each study separately, as well as the set as a whole, is a return to empirical reality. This may seem surprising to outsiders – it is in fact extraordinary in a world composed of agriculture and expert system. The central questions are who or what represents the ordering principle in agriculture and where this moment is situated? Is it located in the future or in the present? In farmers, growers, and the other people working in the industry? Or in the experts, who from behind their screens, determine where we are heading?

The return to empirical reality can be organised and arranged in numerous ways. More generally, I think that methodological pluralism constitutes the strength of this research tradition. I will not discuss the multiplicity of the applied methods and techniques that have been employed, nor the many conceptual and methodological nuances and debates. Here, I will summarise only one research into farming styles in Friesland (of the ten research projects conducted in Friesland),²⁴ discussing possible alternative approaches in notes.

Table 3.1 summarises a principal component analysis (PCA) that was conducted on 300 Frisian dairy farms (year 1990).²⁵ These farms were taken from the database of the AVM/CCLB, the 'co-operative accountancy organisation of the Frisian farmer'. PCA is used to search for underlying patterns of coherence. As shown in Table 3.1, six patterns of covariation

can be identified (for the year in question and using this method), which correspond well with the overall description provided by Figure 3.1.

Table 3.1 Patterns of coherence

	large farmers	intensive farmers	machine -men	economical farmers	cowmen	breeders
SFU	.95					
Dairy cows	.93					
LU	.92		-.33			
Total forage hectareage	.92					
Milk quota (1,000 kg)	.90					
Gross margin/ha		.90				
Forage costs/ha		.89				
Dairy cows/forage ha		.83				
Output from cattle & cash crops/ha		.81			.38	
Machine costs/ha		.68				
Rent + building costs/ha		.66				
SFU/LU			.97			
Dairy cows/LU			.94			
Ha/LU		-.36	.91			
Enterprise output/LU			.88			
Milk price (excl. levy)				.90		
Protein				.80		
Butterfat				.75		
Margin/100 kg milk		-.43		.67		
Milk yield/cow					.92	
Margin over feeds					.89	
AI & recording fees					.63	
Output & change in volume dairy cattle/100 kg milk						.82
Calves < 1-year-old						.81
Calves > 1-year-old						.72

Note: SFU: standard farm units; LU: labour units; AI: artificial insemination

One of the research techniques we have applied in certain cases (for a detailed description, see Van der Ploeg *et al.* 1992) is the reformulation of these patterns of association (as contained in Table 3.1) into everyday language, after which these 'verbalised' patterns are presented to a group of respondents²⁶ (whose farms are part of the database used in the analysis). They are then asked:

- a whether they recognise the various patterns;
- b whether there are farms in their neighbourhood that could be regarded as typical examples for one or the other approach;
- c whether they can explain why farmers farm in this or that way;
- d whether they can characterise further the people on the respective farms;
- e what seems to be the most promising approach with an eye to various points of view (future prospects, income, sustainability, etc.); and finally
- f which pattern best resembles their own farm.²⁷

This approach enables researchers to understand the different patterns – that is, the patterns of covariation as revealed by PCA are loaded with the concepts, notions, and meanings of those who constructed them in

practice. Therefore, this approach results in clear portraits of strategies, farms and farmers. The above-presented description of the various styles is, in a way, a summary of these portraits. Incidentally, there are plenty of complications too.²⁸

I have summarised a number of farm characteristics and indicators in Tables 3.2 and 3.3; the data have been specified per style. To outsiders, the data in Table 3.2 will probably represent above all insignificance and/or confusion, since it often seems to involve minute differences. For what can possibly be the relevance of an average age of dairy cows²⁹ of 4.07, or of 4.77? Indeed, the difference is meaningless out of context. In combination with a range of other, equally small differences, however, the essential difference can by and large emerge. *Whether* it occurs, and if so *how*, depends on one decisive factor: the question of how various aspects and tasks are *coordinated* vis-à-vis each other. I will clarify this by way of a brief discussion. An average age of 4.07 means that on average cows are culled after two lactations. Thus, they have just had three calves: one and a half bull calves and one and a half heifer calves. Of course, one and a half heifer calf cannot exist in real terms; however, if we follow the argument through to its statistical conclusion and we subsequently take into account that part of this one and a half heifer calf will be disposed of as a result of illness and other ailments, we will approximate one heifer³⁰, ready to replace the culled cow. Other data confirm this.

Intensive farmers have 40 heifers per 100 dairy cows available to replace old cows. At the same time, 32 per 100 of the dairy cows present are sold per year (mostly as 'sausage meat'). Thus the margin to select the best of the available heifers (a classic mechanism to achieve progress) is minimal here (8 per 100).

An interesting difference appears if we compare this with the situation of the cowmen. Although the 'average age of cows' is only a fraction higher (4.48 versus 4.39, i.e. 4.3 per cent), *in combination with* keeping more youngstock (43 versus 40 heifers per 100 dairy cows, i.e. a difference of 7.5 per cent) a somewhat better ratio of heifers to culled cows emerges: 43/31 or 1.39 versus 40/32 or 1.25. This is a difference of 11.2 per cent. Thus, taking together, two almost microscopic differences create a slightly larger difference. And we could carry on in this fashion, piling one difference on top of another.

I would rather refer to a completely different way of 'piling' these differences, however. One which is part of the strategy and practice of the breeders. At first glance (that is, if the various variables in Table 3.2 are considered in isolation) they do just about everything that God and science forbid. Heifers calve 'too early' (as early as 1.93 years old, against 2.15 years old in the case of the economical farmers). The calving interval is 'too short' (the calving index is only 255 days!). Cows are disposed of quickly (the average age is 4.18 years) and the number of heifers per 100 dairy cows seems alarmingly high: 53 per 100.³¹

Table 3.2 Farm characteristics

	forage ha	stocking rate (livestock units/ha)	dairy cows/ha	milk yield/cow	concentrates /dairy cow (NLG)	roughage purchases/ dairy cow	total add. feed costs/ha	followers > 1-year- old/100 cows	price dairy cow	dairy cows sold/100
Large farmers	75.8	2.48	1.81	6956	668	67	892	37	1222	26
Intensive farmers	37.4	2.76	2.03	6795	816	124	1129	40	1246	32
Machinemen	53.4	2.30	1.72	6511	698	71	868	37	1153	28
Economical farmers	44.9	2.38	1.72	6310	646	60	811	39	1258	28
Cowmen	45.1	2.24	1.58	7542	754	56	926	43	1278	31
Breeders	47.5	2.54	1.58	6699	724	76	1017	53	1303	31
Ordinary farmers	40.2	2.23	1.61	6327	631	53	793	39	1248	30

	average calving age heifers	average calving index (days)	average age cows	kg N/ha	margin/100 kg milk	labour units (LU)	dairy cows/LU	no. dairy cows	output/h a (NLG)	rent & building costs/ha	labour income/ LU
Large farmers	2.15	352	4.76	350	64.20	2.8	48.8	137	10790	1800	110,000
Intensive farmers	2.03	303	4.39	415	58.43	1.8	43.1	76	11800	2360	51,200
Machinemen	1.89	300	4.07	363	62.17	1.4	66.0	92	9590	1950	88,400
Economical farmers	2.15	337	4.77	315	67.33	1.6	47.6	77	9890	2060	66,300
Cowmen	2.07	300	4.58	334	64.79	1.7	42.6	71	10440	1980	67,500
Breeders	1.93	255	4.18	336	67.71	1.7	44.6	77	9820	2010	65,600
Ordinary farmers	2.04	330	4.51	323	63.52	1.6	41.4	65	8850	1800	49,500

Table 3.3 Optimisation criteria

	total quota (kg/farm)	annual expenses related to quota purchases (NLG/farm)	margin /ha	gross output/ labour unit	monetary feed costs/ha	monetary artificial fertiliser costs/ha	contractor costs/ha	milk price/ 100 kg	margin /cow	output & change in volume dairy cattle
Large farmers	944,800	47,880	8092	339,000	1589	477	303	76.81	4716	633
Intensive farmers	507,400	14,880	8023	292,500	2260	574	457	77.10	4252	625
Machinemen	598,800	26,780	6949	429,700	1522	478	499	77.02	4314	562
Economical farmers	492,600	22,640	7310	298,700	1399	442	433	80.59	4493	596
Cowmen	533,400	34,660	7727	323,400	1457	461	518	77.56	5153	706
Breeders	508,700	14,970	6782	300,200	1637	479	429	77.09	4575	971
Ordinary farmers	407,900	15,040	6402	262,100	1279	454	417	76.35	4242	605

Of course, there is an evident rationale underlying all this: breeders aim for a high production of good and robust breeding cattle, for dairy cows, but especially for heifers, that can be sold on the export market. From this perspective, individually surprising elements fall into place. Collectively, they result in a figure for 'output and change in volume dairy cattle' per cow that is considerably higher than in other styles (NLG 971 per dairy cow as against, for example, NLG 625 for intensive farmers, i.e. a difference of about 50 per cent). If the output and change in volume dairy cattle is calculated per 100 kg of milk, the difference would be even greater.³² Thus, various seemingly negative elements are forged together into one coherent pattern that constitutes the strength of at least this farming style.

I could go on. The same variables could tell the story of those economical farmers who create 'robust' cows (as they call them) – cows that, in turn, enable them to keep various other costs low (see, for example, concentrate purchases per dairy cow). And we could flick through the other variables in Table 3.2, moving left to right and bottom to top. I will not do this here – it has been done meticulously elsewhere (see e.g. Groen *et al.* 1993; Roep *et al.* 1991).

The point I want to make here is that the various practical data (as I have illustrated above) can only be 'read' in a meaningful way if one holds the 'key', which is hidden in the purposeful actions of the actors involved – that is, the set of strategic notions with which various practices and processes are actively geared to each other and mutually coordinated. Without an explicit knowledge of 'level 1' (of the above-mentioned definition of farming styles), an adequate understanding of 'level 2' – that is, of farm practice – is impossible.

This does not alter the fact that other perspectives can be constructed – it is very much common practice in agricultural research to do so. It is possible to construct agricultural economic and/or agronomic optima from which to look at the various practices. This subsequently informs about the (varying) degrees in which these practices are or are not optimal (the latter usually being the case). Such an approach remains *blind*, however, to an understanding of the aforementioned practices: no information is given about the question *why* a certain 'inefficiency', 'irrationality', and/or 'suboptimal levels' occur. This 'blindness' increases exponentially, especially where the supposed 'optimality' is defined according to a reductionist method in which higher aggregate levels (for example, the farm or, even worse, a complete agricultural region) are understood and represented through the simple addition of 'laws' that would apply to lower levels. I will revisit this issue in the following chapters.

I have added a brief overview of various optimisation criteria in Table 3.3. Optimisation criteria are the standards with which farmers perceive, evaluate, guard, and adjust their farm organisation and development. These are concepts such as the one we encountered in the previously outlined history, namely in the case of the *suivere deel* (the clean part).

Optimisation criteria are accompanied by 'indicators': variables and/or ratios that enable accurate quantification. Indicators are more or less the operationalisations of optimisation criteria.

Indicators and the underlying optimisation criteria are largely *style specific*. A number of preferred indicators are used in every farming style to guard the development of one's own farm and also to enable comparison with other farms, 'to see whether we can still keep up'.

Cowmen, for instance, will especially keep an eye on the margin per dairy cow. They do this not only to critically guard their aim of the highest possible milk yield per cow ('you have to avoid excess'), but also and especially because they are convinced that a good margin per dairy cow is the most important cornerstone of generating a good income – which is indeed the case in their situation. Their farms are, above all, ordered (constructed) around this relation.

Things are different in other styles – without implying any form of inferiority. Take the breeders, for instance. They will pursue slightly lower milk yields, because this provides more room for breeding. They order various farm internal relations and the 'materials' connected with these relations (in this case the cows) differently; they do this in such a way to optimise another indicator, the output and change in volume of dairy cattle per cow (or per 100 litre). This is how they safeguard their incomes.

Thus we can move along the various styles distinguished above. Large farmers observe farm size and the annual expansion (such as reflected in the financial expenses connected to quota purchase).³³ Economical farmers will try to keep costs as low as possible (as well as trying to realise the highest possible technical efficiency with their own resources). Machinemen will pursue the highest possible gross farm output per labour unit. For intensive farmers everything revolves around the margin per hectare.

Different indicators and optimisation criteria can be identified for different farming styles. The intriguing and significant element is that the socio-material reality or the farmer's practice is moulded in such a way that every style does actually show the best results for the indicator regarded as the preferred and indicative one.

3.4 Farming styles as socio-technical networks

Figure 3.7 gives a description of, at least part of, the socio-technical network resulting from the style of farming economically. It seeks to show how the interlocking of various projects is essential. This applies to *every* socio-technical network. Subsequently, what makes a network special is the number and nature of the relationships between various projects. Collectively, these relationships compose the solidity but also the fragility of the project at the 'heart' of the network, in this case the project of farming economically. Solidity and fragility go *together*. It is usually assumed in the social sciences that this involves a contradiction. It is argued here that nothing could be further from the truth. Today's strength can be tomorrow's weakness.

Let me show this by means of one particular relationship in Figure 3.7: the one between economical farmers and others who sell newly bought machines as soon as the depreciation period is over (large farmers and intensive farmers are especially involved in this). The latter can buy new machines while still acquiring an attractive residual value for their discarded machines. Thus an attractive supply of not too old second-hand machines emerges for economical farmers, with which they can build a cheap and reasonably complete set of machines.

Thus a concrete axis is formed between the projects of large farmers and intensive farmers, on the one hand, and economical farmers on the other (however, one particular government project – that is, the fiscal regime – is partly responsible for the emergence of this axis). Without the particular nature of this association (of this connection), the project of the economical farmers would be much harder to realise. It is still a solid base, however, although changes along this axis can suddenly make the project of the economical farmers a lot more fragile (for further examples and a more detailed discussion, see Van Broekhuizen and Schakel 1991).

In short, the style of farming economically does not exist in isolation, but is rooted in a particular socio-technical network, in a set of specific relationships with other farmers, with the dairy industry, with banks and supply-side industries (the key phrase here is low dependency), with a flow of government subsidies (in the sense that subsidies have hardly been taken up; although a certain change is now occurring), a critical relationship with the 'advisory complex', etc.

The thus composed socio-technical network not only includes human-human relationships but takes place largely via artefacts: via second-hand tractors and machines, via forms, cows, accounts, and transfers. These are mainly relations covering a considerable time-span. Fields, savings, the ability to maintain machines, buildings that are (can be) converted – time and again this involves resources that have been handed down through history and that are now being tapped and extended.

- ✧ In short, the socio-technical network connects *past*, *present*, and *future* in a particular way – one that contrasts sharply with those included in other networks.

This applies equally to space in the socio-geographical sense: even though there are few face-to-face relationships, many economical farmers know about realities and points of reference tens, if not hundreds, of kilometres away (Chapter 4 will deal with many examples of this). Furthermore, new points of reference emerge partly due to the socio-political and institutional struggle within the network: new cows, new sheds, new documents, new contacts. And, vice versa, 'control at a distance' can be implemented through the same socio-technical network (from 'the outside in'). This happens, for example, due to the fiscal regime, to minerals regulations, to the future prospects as articulated by the expert system in agriculture, to technologies designed for a particular purpose (and other potential technologies that are *not* designed or marketable; see Staudenmaier 1985), etc.

Figure 3.7 Farming economically as socio-technical network

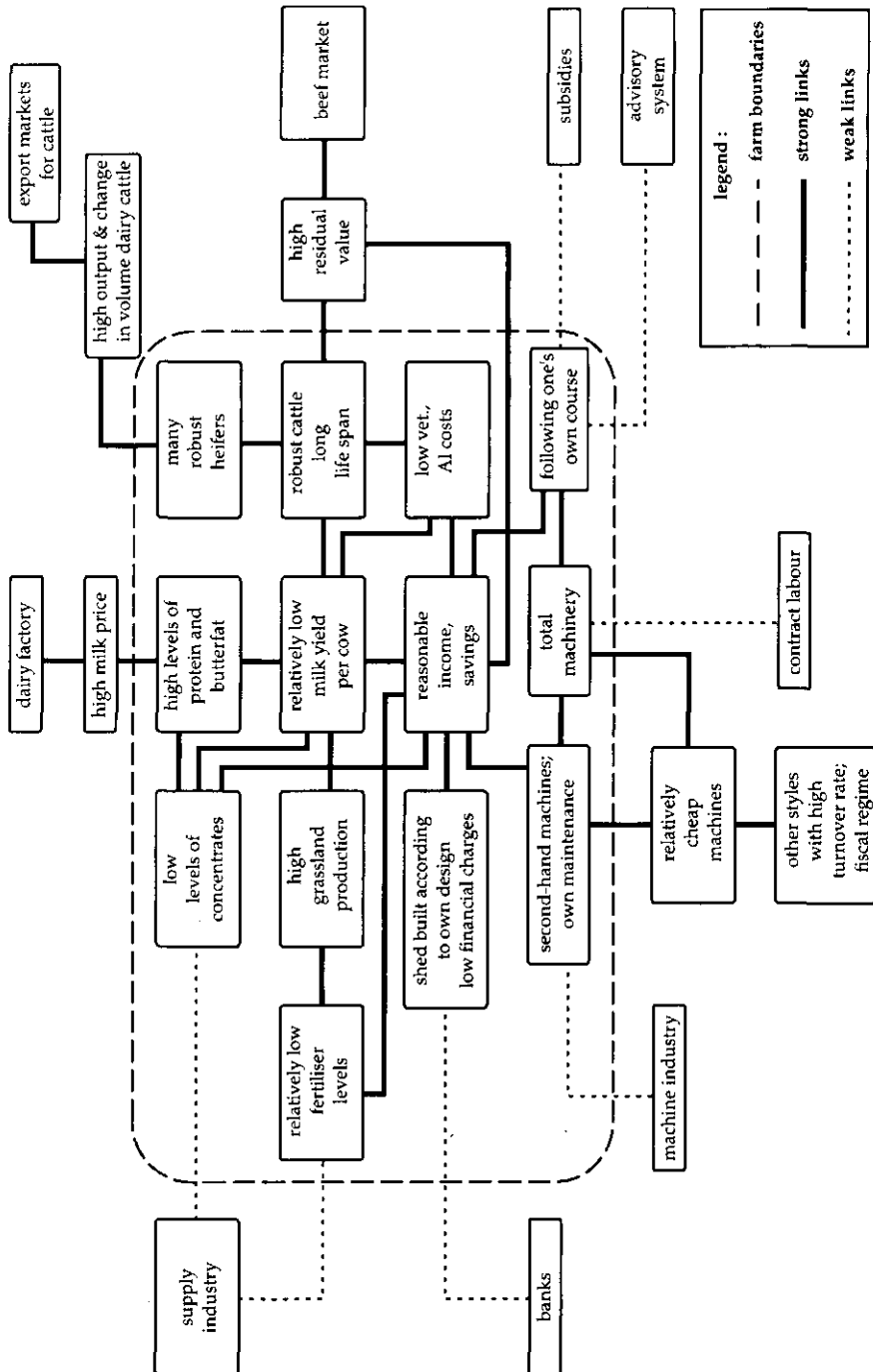
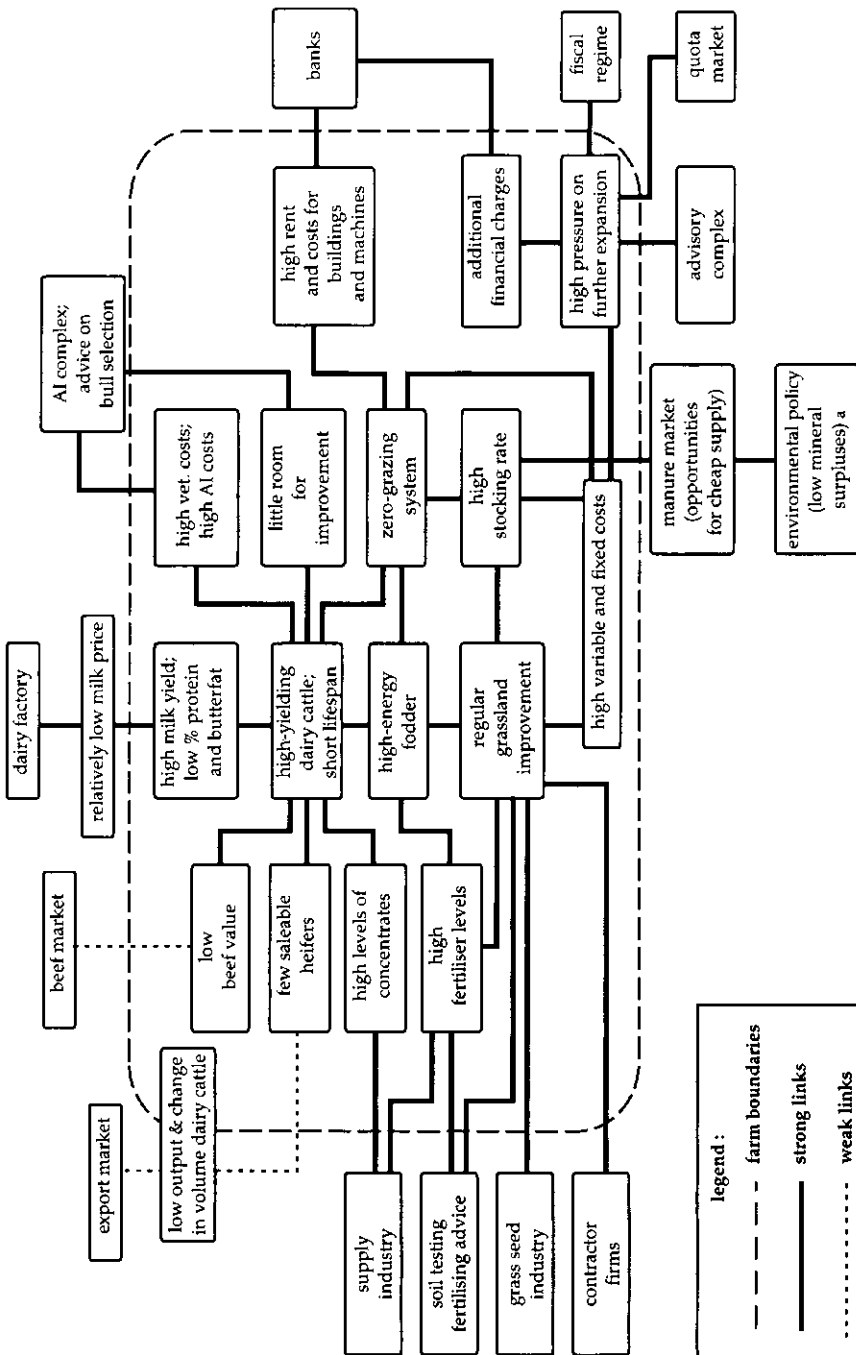


Figure 3.8 Farming intensively as socio-technical network



Note: ^a Registered by the Mineral Accounting System (MINAS), which has been introduced into Dutch agriculture in 1998 in order to monitor and restrict the amount of nitrogen and phosphorus surpluses.

Alongside the socio-technical network in which the style of farming economically is situated, there is the socio-technical network that is defined in and around the style of farming intensively. This is illustrated in Figure 3.8. The contrasts are striking. Apart from the immediate empirical content, there are quite string differences. In the first case, there are a number of relationships that could each individually be characterised as 'weak links', which does not alter the fact that the *whole* of these 'weak' relationships can form a strong and solid unit.

In the second case (farming intensively as a socio-technical network) far more of the links are 'strong'. If characterised in terms of dependency relations, this evidently involves a higher degree of system dependency (see also Bolhuis & Van der Ploeg 1985, pp. 170–171). The 'nature' of the constituent relationships goes back to two fundamental issues. The first concerns the relation between past, present, and future. The purchase of new machines and their subsequent use, ordered ('regulated') by depreciation periods and residual values as defined by the prevailing fiscal regime, implies that a certain claim is imposed upon subsequent farm development. This has to occur in such a way as to correspond to the choices that have already been made: purchase and use define, at least in part, the agenda and calendar for the coming years. Farm development becomes rigidified – this is true to a much lesser degree for economical farmers. Of course, it applies to an even larger extent to the credit trajectory (or more generally, the balance between net worth and liabilities). Where hectares, cows, machines are burdened with high financial charges, there are unchangeable agendas and calendars. If high financial obligations have been taken on, it is difficult to reduce the intensity of production, for instance, however desirable this might be from other considerations (Van der Ploeg 1998b).

A second important issue is that some networks (such as that of the economical farmers) have an almost built-in, fundamental 'balancing capacity', whereas this is very much absent from other networks (such as that of the intensive farmers), as a result of a very high level of functional integration and specialisation. To a certain extent, the former can 'play' with their relations in the output markets, because, amongst other reasons, different products and sales opportunities exist – apart from milk, there are good beef cows and, at times, heifers for the export market – and, furthermore, (but this is a more recent theme) possible contributions to nature management and nature development.

Once entered into relations (particularly 'strong' ones), they often manifest themselves on the farm as constellations, which, in turn, appear as unchangeable, as no longer malleable (I somewhat anticipate Chapter 4 here). Take the intensive farmers from Figure 3.8. High fertiliser levels are typical but, above all, indisputable. Why? First, because grassland is regularly improved – that is, ploughed up and reseeded with high-producing, highly nitrogen-sensitive grass varieties. But also, and this is the second issue, because it is hardly possible to reseed other grass types. especially since (this is the third reason) soil biology has changed to the

extent that the autonomous nitrogen delivery capacity of the soil has been sharply reduced. More importantly (fourth), the available cattle have been raised on, and selected for, extremely high-energy fodder, which presupposes high inputs of artificial fertiliser. Fifth, the manure (slurry) of these highly productive cattle is of such quality that it cannot be used easily (if at all) as a substitute for artificial fertiliser. Finally, sixth, some of the machines used in the zero-grazing system cannot, in the short term, be set aside as useless; and, seventh, there will be high financial charges per hectare and per cow as a result of which a reduction of outputs becomes unfeasible, something that cannot even be contemplated.

In other words, the reproduction of a set of relations such as that described in Figure 3.8 (that is, further development of the technological regime supported by it) is a material necessity within the style and the network of intensive farmers. Style and network cannot be disconnected and/or represented separately. The one orders and reproduces the other, and *vice versa*.

3.5 The driving forces behind various socio-technical networks

Why do *different* styles exist? Why are different development opportunities pursued, constructed, and used? Why does one style prevail in some situations and another in other situations? Why does one socio-technical network unfold and reproduce itself in one time and place and another elsewhere?

Theoretically, the answer is simple; at least at first. The development, consolidation, and reproduction of farming styles are closely related to the social relations of production.

Social relations of production are, following Poulantzas, the relations that constitute the labour and production processes. They shape labour and production processes (see level 2 of the aforementioned definition) into concrete and distinguishable practices. Social relations of production regulate the relationships between people and between people and 'things', according to Poulantzas. Finally, relations of production are also the sets of relationships that regulate the distribution of produced value.

To this I would like to add an important distinction, which to my knowledge was first introduced by Burawoy (1985) and which has subsequently been applied on a large scale in rural sociology. It is the distinction between social relations *of* production and social relations *in* production. If the former group of relations is situated around agriculture or, if preferred, on the interface between farming and the political-economic environment, the latter group concerns in particular the relations that apply *within* the farm and *within* the actual labour and production processes. This distinction is used widely, for example, to develop a clearer understanding of gender relations in agriculture.

What are the relevant social relations of production? It is impossible to identify from the outset what they are, how they function or how they

interlink. As Meillasoux (1975) argued, talking about social relations of production defines a research agenda. The set of concrete relations that has a 'constituting' (i.e. moulding) effect on agriculture, has to be defined, time and again, through patient empirical research.

In this section, I will investigate three examples. These are usually omitted from the traditional literature on relations of production and are probably even regarded with suspicion. However, I think that they are essential to an idea of what makes agriculture function. Thus, I will discuss gender relations, landscapes, and culture *as* social relations of production.

Gender relations

It happened at a lecture in Oranjewoud, in the beautiful castle where the *Instituut voor Coöperatieve Vorming* (Institute for Cooperative Education) used to run its courses. According to tradition, it is also the castle where my grandfather was caught poaching. But that is a different story.

I gave a lecture to a large group of farm women. It was in the early stages of the farming styles research, and there were still more questions to be asked than there were answers available. At that moment, I do not remember precisely why, I thought, 'well, I will grit my teeth and do it'. And so I asked them: 'Could you please explain to me why the style of the economical farmers is so widespread?'

I will not easily forget the uproar and amusement. Finally, one of the women spoke:

Sjoch, wy witte dat wol, mar oer sokke dingen praat men eins net. (Look, we know what it is, but this is one of those things that it's better not to talk too much about.)

An ambiguous statement. Still, the message was clear: it is because of us, because of farm women.

Much more than most men, women represent a concrete axis within the agricultural firm, connecting the social and the economic spheres. Precisely this makes them 'guard' farm development: it is not allowed to be at the expense of the health of husband and children, too much stress must be avoided. Putting the farm itself at stake, for example by taking out large loans and thus running too many risks, is taboo to many women.

In recent research (De Rooij *et al.* 1995) the following question was presented to farm women: 'If a man wants to grow 100, how much does a woman want to grow?' The researchers add: 'The number in the question is of course an arbitrary symbol. What is important is to determine whether men and women view continuous growth in the same way or differently' (1995, p. 30). The result was surprising: '73 per cent of farm women say that generally women choose less growth than men; 56 per cent of women indicate even that women choose 50 if a man wants 100' (*ibid.*, p. 30). Another series of questions (see De Rooij *et al.* 1995, Table 2.9) supports this conclusion further.³⁴ Moreover, it is important to note that the more women participate in farm work, the more they take part in

decision-making. This happens more on the relatively smaller, more mixed farms, and less on the large-scale, highly specialised farms (see also De Rooij 1992): in the latter category, women are to a certain extent dispossessed – they are far less present as a driving force.

Landscapes

In the first half of the 19th century, a landscape was created in the Frisian area of the *Friese Wouden* (Frisian Woodlands) that became recognised only much later as a site of cultural heritage and as a carrier of distinctive ecological values (Van der Ploeg 1999). Characteristic of this landscape are the numerous wooded banks (or *dykswâlen*) and alder belts bordering the often minute fields. The 'scenic landscape' is alternated with lower lying and open *mieden* or old meadows. The juxtaposition of high and low, of open and closed, and of wet and dry constitutes one of the jewels among Dutch landscapes.³⁵

Initially (especially in the first half of the 19th century), the wooded banks were built as plot separators – to prevent cattle from breaking through from one field to another. Barbed wire was not yet available, and there was no point in digging ditches because they would run dry in summer. Furthermore, wooded banks are also useful as windbreaks (the cultivation of rye, fodder beets, potatoes, and oats was then still an important part of farm management). Finally, they provided wood for fences, construction, cooking and heating. A farmer who had more wooded banks than needed would lease them out. More recently, *dykswâlen* and alder belts are recognised as valuable locations for useful predators.

A fragment of a detailed map from the mid-19th century is presented in Figure 3.9: it indicates the extent to which an extremely intricate structure of wooded banks and alder belts existed by then. The successive images, which always refer to the same area, indicate how the basic structure of this pattern remained constant over the subsequent 150 years (see Figures 3.10 and 3.11). Although some wooded banks and alder belts disappeared, the most striking aspect (above all in comparative terms) is that the incredible richness in landscape and ecological values has been retained – especially considering that, in effect, only from the mid-1980s onwards, government started to formulate policies for the preservation and protection of these landscape and ecological elements (ironically, these policies were highly counterproductive at first).

The landscape that was formed in the mid-19th century (see Figure 3.9) can be regarded as 'objectified labour': it is the result of the co-production that previously took place. In other words, labour objectifies not only as capital, it objectifies or materialises here as a concrete set of production circumstances (that is, a concrete landscape), which, in turn, constitutes 'living labour' (that is, the subsequent labour and production processes; Meeus *et al.* 1988).³⁶ Farming took, and takes place, in the *Friese Wouden* in such a way that it fits into the landscape. Initially because wooded banks were needed, later because the removal of wooded banks encountered high, and continuously rising, costs and finally, because it is

recognised by the late 20th century that wooded banks represent cultural and ecological capital.

In Figure 3.1, I described a number of farming styles that can be found in Frisian agriculture. Machinemen are an important element of the palette. Typically, this style is highly underrepresented in the Frisian Woodlands: it has not been able to unfold properly, because it would run counter to the landscape as objectified labour.³⁷ Past, present, and future were (and are) connected here by the landscape – by the landscape understood as the result of past labour, which, in turn, orders future activities.

Of course, the continuity of the landscape does not just go back to cost-benefit analyses restricted to a particular time and place. The *cultural* component is at least as important. ‘If I were to die here’, small farmers from the Friese Wouden said to each other when they were working in the empty and open Frisian grassland areas, ‘for God sake bury me at home in the *smûkens* [the sheltered and cosy space between the trees], because my feet would be freezing here for as long as I’m dead [in the open and cold plains]’ (see De Bruin *et al.* 1992).

For the people who grew up in this historically created scenic landscape, it represents more than a ‘home’; it provides an identity, a feeling of belonging.³⁸ This feeling did *not* exist, as the quote indicates, merely by the grace of isolation and ignorance, but rather by the knowledge of the other and, consequently, the revaluation of what was one’s own. In other words, the transaction costs related to the possible grubbing of the wooded banks can only be defined and understood within a cultural matrix.

Within every farming style, farmers use a sometimes explicable image about what is considered the ideal ‘rural’ or production space. Such an image will include various levels: grassland composition, plots and their presentation, the architecture of buildings and presentation of the yard, and the overall lay-out of the farm. Thus, numerous landscape elements and structures (and hence carriers of biodiversity, see Gerritsen, forthcoming; Renting, forthcoming) are defined implicitly. These ideas have been elaborated methodologically by De Bruin *et al.* (1992), for various levels of scale, by presenting contrasting images and asking which image was preferred (the methodology was developed previously by Ruiz and Ruiz 1984; Ruiz and Gonzalez-Bernaldez 1982). The results were integrated into maps: every style does indeed contain a ‘subproject’ with regard to the space in which it unfolds.

By implication, most styles operate in practice in the Frisian Woodlands as active carriers of the present landscape and ecological values. They interweave past (the then performed and materialised labour), present (the present landscapes and their ecological values), and future (the reproduction and further unfolding and enrichment of landscape and ecological values) almost seamlessly and at the same time dynamically, just like *dykswâlen*, alder belts, plots, a relatively low stocking rate, ideas about future organisation – in short, farmers and trees – weave together into a solid socio-technical network.

Figure 3.9 The scenic landscape at about 1850



Figure 3.10 The scenic landscape at about 1910



Figure 3.11 The scenic landscape at about 1990



Later, these findings (which are activated³⁹ especially when government tries to *take over*⁴⁰ the management of nature and landscape) will lead to the establishment of the first environmental co-operatives. I will discuss this in Chapter 9.

Culture

Dutch farmers, their partners and children do not live *outside* of society. Even the most extreme expressions of what is seemingly the opposite, the contestations of the 1980s and 1990s, confirm this; the fierce and often coarse rejection of social desires highlights the extent to which these desires penetrated into the heart of the farming world. However, I will not discuss this contestation until Chapter 8.

What is important here is how the great cultural movements in society at large are translated into the microcosm of the farm. From the late 1970s onwards, increased unrest about the ecological effects of industrial farming emerged among farmers. Typically, for example, more and more arable farmers no longer take potatoes for home consumption from the 'big heap' but increasingly from a separate plot that gets no, or much less, pesticides. Often farm women were the crucial link in this. Such trends are of course nowhere documented (it was impossible to do this), but I have roamed in that world long enough to know that this is happening. Other trends that can be documented speak volumes in this respect.

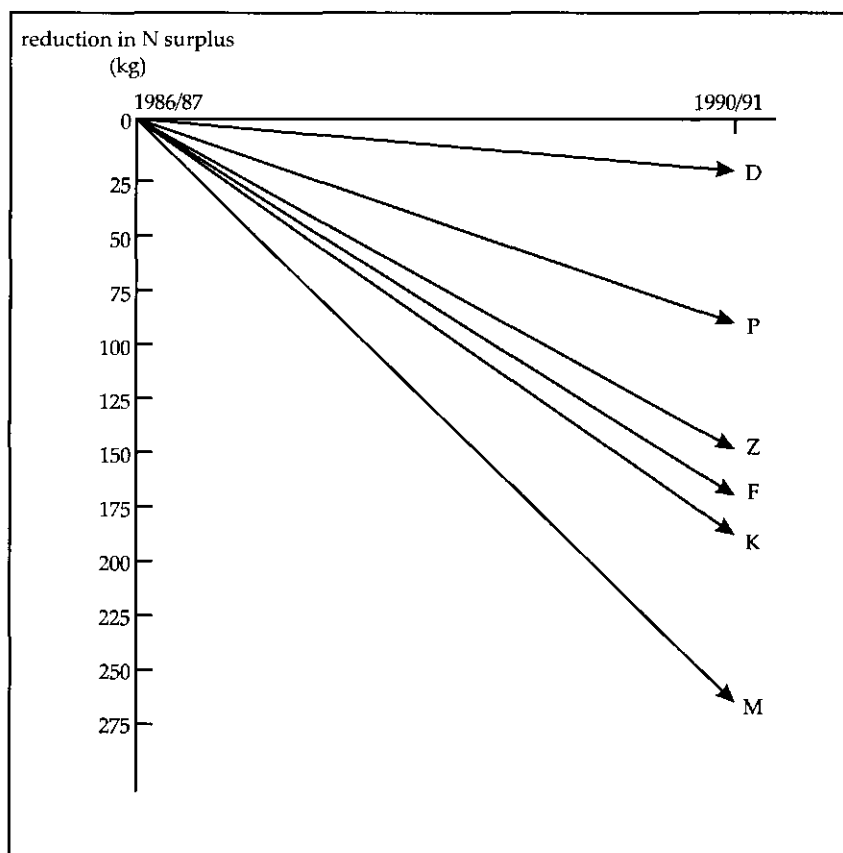
Figure 3.12 portrays the development of nitrogen surpluses per hectare for a number of farming styles in the Achterhoek area in the Netherlands. The period under research is 1986–1991, when strict regulations were not yet in force. It can be noted that surpluses were already reduced considerably in some farming styles, modestly in others. In terms of driving forces, these reductions go back to nothing but the factor of *culture*, to the insight among farmers that emission levels had to, and could, be reduced.

This does not imply that government policy would be superfluous – on the contrary. What is crucial, however, is the question of how government policy and the cultural repertoires of farmers and their partners relate to each other: whether interweaving and mutual reinforcement occur, or whether there is a case of increasing antagonism.

3.6 Differential developments through time

Every farming style contains a calculus: a more or less explicit framework of interconnected concepts with which to 'read' the relevant empirical reality (in this case the farm and the relations in which it is embedded) and 'translate' it into new actions. A calculus is, as it were, the backbone of a particular strategy. It is the 'grammar' of the decision-making process. It entails the way in which farmers evaluate pros and cons (see Van der Ploeg 1990, pp. 59, 69; Roep *et al.* 1991, pp. 43–94).

Figure 3.12 The development of environmental pressure (1986–1991)



Note: D: double-goalers; P: practical farmers; Z: economical farmers; F: fanatical farmers; K: cowmen; M: machinemen. Local concepts in the Achterhoek and the associated expressions are somewhat different from those in Friesland.

The presence of various calculi makes a reasonable case for the existence of different ways in which farmers react to *overall* changes. In most cases, the responses and reactions will be of a *differential* nature (for a general discussion about this, see Long 1985; Long and Van der Ploeg 1990; Long and Van der Ploeg 1994). Indeed, the encountered situation (and its diversity) will almost always be the result of differential developments as they have occurred until then.

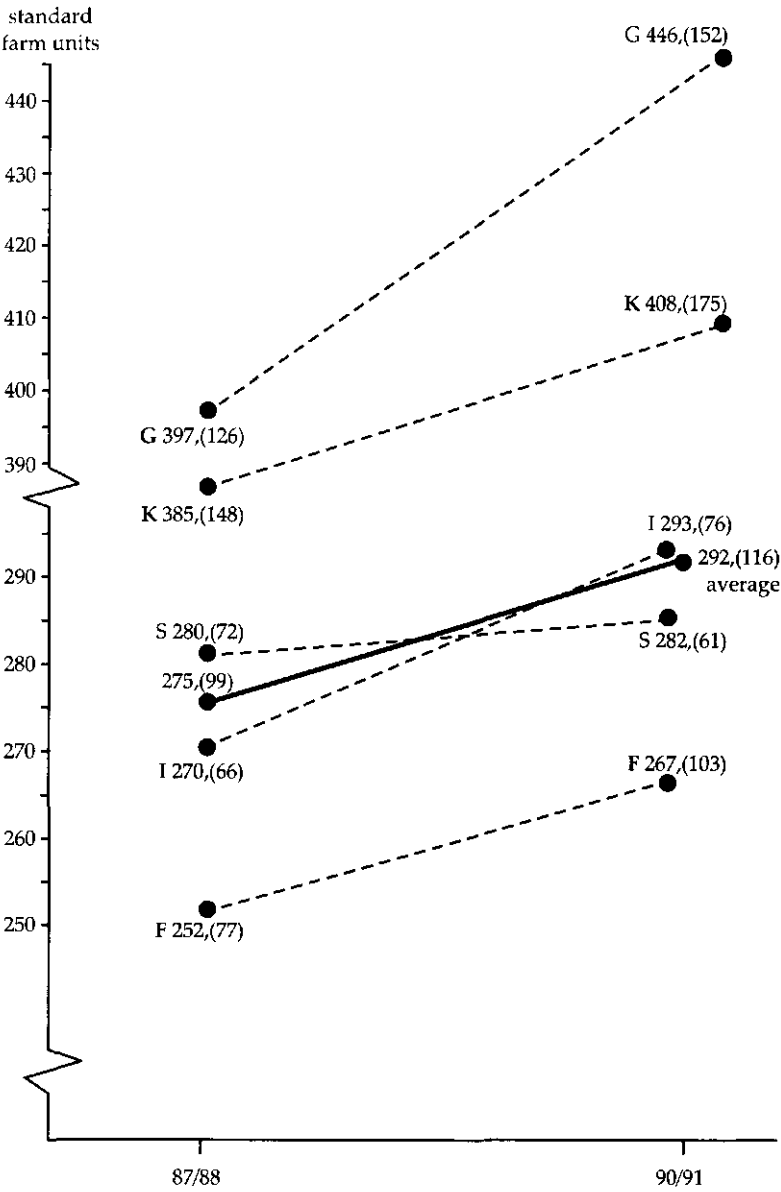
The data in Tables 3.1 to 3.3 can be read as the outcome of such differential developments. Figures 3.13 and 3.14 contain details of changes in the behaviour of different farming styles between 1987 and 1990. They show that differential developments occurred in this period. Large farmers expanded their farms most (from 397 standard farm units (SFU) to 446, an increase of 49 SFU/farm). This quantitative growth is much less in other styles. It fluctuates from +23 SFU/farm for intensive farmers and cowmen, to +15 SFU/farm for breeders, to a minimum of +2 SFU/farm for economical farmers. At the same time, it indicates the insignificance of

averages: in average terms farms grow by 22 SFU/farm, but the range around the average is enormous. Large farmers realised more than double this amount in this period, whereas economical farmers grew by only a fraction of the average.

Does this imply that they are marking time? No. As Figure 3.14 shows, these economical farmers succeeded in dramatically increasing the margin per dairy cow in the period in question (with about NLG 250 per dairy cow per year). They managed to do this by further reducing the costs per cow (which were the lowest already compared to other styles), while increasing output per dairy cow at the same time. A different development can be observed in other styles: they all reduced the costs per dairy cow (without approaching the cost levels of economical farmers, however) but outputs per dairy cow also decreased (albeit to a varying degree).

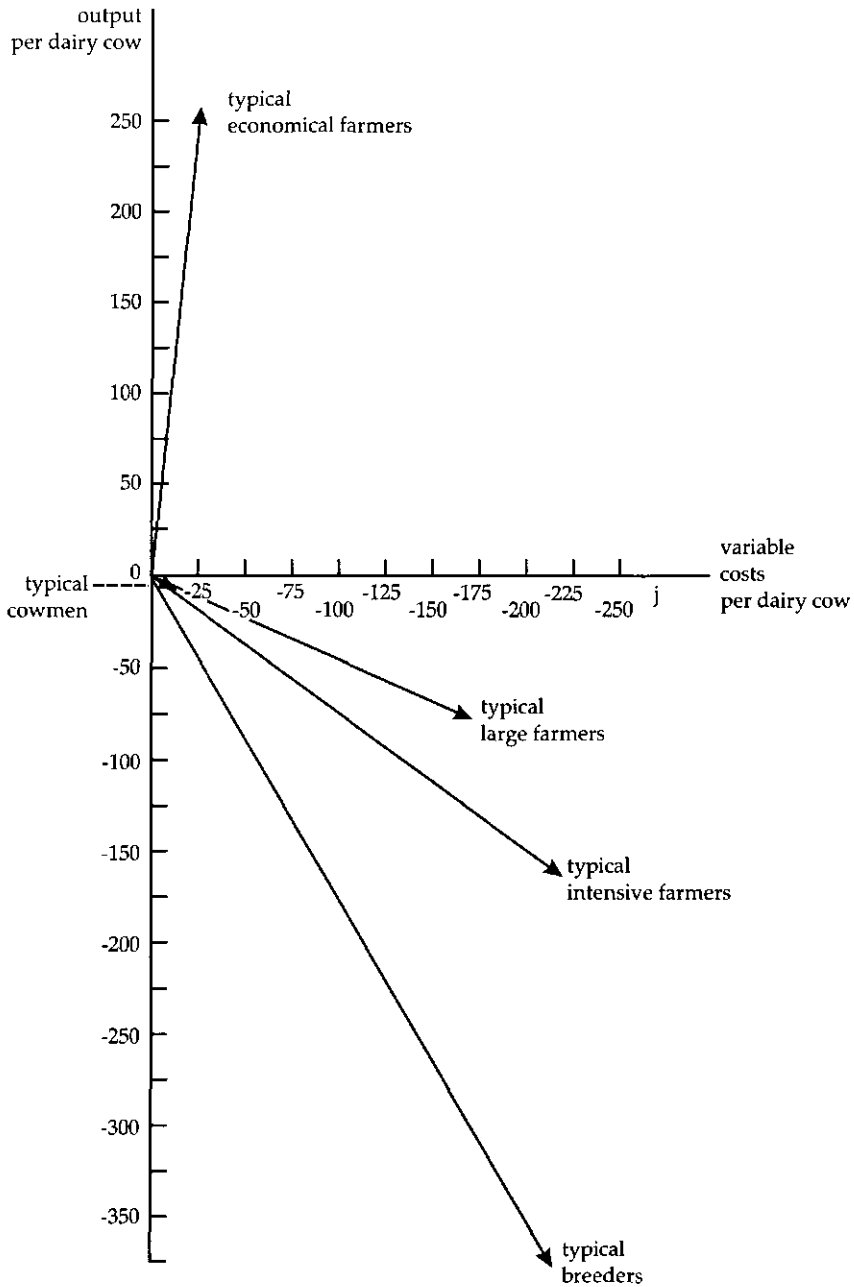
It is important to remember that the farmers mentioned here do not operate on different planets, nor in regions that are far apart: they all operate in the same region (the Frisian clay area), where the same economic, ecological, technological, and political preconditions apply. Nonetheless, differentiation is the rule, a point to which I shall return in Chapter 5.

Figure 3.13 The development of farm size (Frisian clay area; N = 100)



G = large farmers;
K = cowmen;
S = economical farmers;
I = intensive farmers;
F = breeders

Figure 3.14 The development of outputs and costs per dairy cow



Notes

1 This term refers to abstract development opportunities and principles: they have been stripped of the specificities of time and space. A farming style, on the other hand, is a particular time- and space-dependent expression of a more general style of agricultural practice.

2 *Kreas* means beautiful, aesthetically sound, and also 'orderly', well organised. The term refers to something that is well arranged and therefore beautiful. In Frisian you can refer to a girl as a '*kreas* thing'. If you refer to a farm (*it leit er kreas hinne*) the double meaning applies: it is beautiful, aesthetically sound, and attractive, because it has been made that way, it has been unfolded that way.

3 Of course, a certain range already existed then, see Louwes and Van der Giessen 1926; for a more general discussion, see Van der Ploeg 1987, chap. 3. The problem described in *Groun en Minsken* is that Daniël tried to jump over the given boundaries.

4 This is the adage of the *trekkerboeren* of Figure 3.1. I will discuss this further below.

5 See, for example, A. M. de Jong (1979), who described how large farmers made a pact with the Devil to be able to have the farm as large as possible and to remain that way. Again (just as in Daniël fan Kuken's case) the women become the victims. Theun de Vries describes several episodes in *Stiefmoeder Aarde* (*Stepmother Earth*) in which a sense of doom (that is, pride goes before a fall) hangs over farmers who want to be larger than is proper (and just as in Brolsma's case, thoroughbreds play the role of seducers and tempters!).

6 Output and change in volume dairy cattle is the value of sold animals plus the calculated value of the genetic improvement of animals on the farm, plus the value of the increase in cattle numbers.

7 This term refers to the slaughter destination and slaughter value of culled dairy cows (of the Holstein Frisian race in particular). It is in sharp contrast to the meat quality of real beef cows and double-purpose cows.

8 Again, this involves a 'folk concept' that emerged during a series of qualitative interviews, when it was also constantly checked. The methodology used is explained in De Bruin 1993; Spaan *et al.* 1992.

9 An application of this can be found in Dijk *et al.* 1998; Henne 1995. By the way, the emerging forms of overlap are significant. They are located along the borders described in Figure 3.1. However, no overlap was found between the real opposites (cowmen and machine farmers, economical farmers and intensive farmers).

10 The work of Hofstee is above all concerned with such regional, or locally rooted farming styles.

11 In late 19th century, an English freighter ran aground near (the Frisian fishing town of) Lemmer. From the wreck a machine is recovered that after years of inattention is 'rediscovered' by an attentive young man as being very useful for cutting fodder beets. Soon afterwards, neighbours ask the village blacksmith to make such a beet cutter for them. Subsequently, a major movement sweeps first through Friesland, later through the rest of the Netherlands, in which time and again the beet cutter is adapted to local circumstances (the thickness and heaviness of beets as a result of soil type), the amount of beets to be processed (which is related to farm size), the extent to which beets have to be cut into smaller or larger pieces (which is related to the type of cattle), etc. Within 20 years, there are tens of distinct variants of beet cutter in the Netherlands.

12 Up until the 1950s, considerable differences existed in labour charges, but also, for example, in the price of milk, within the Netherlands. These continued even longer elsewhere. Thus, the *zone blanche* around the big cities in Italy (which resulted from negotiations between farmers organisations and workers' unions, and which involved considerable differences in milk and other prices) were only eliminated in the 1960s as a result of European legislation. Initially, the technological repertoire varied from one area to the next.

- 13 There was not yet any question of direct prescription (see Benvenuti 1982 1990) such as we see today.
- 14 See research into farming styles in the Veenweidegebied (peat district) in the province of Zuid-Holland, in which this style is referred to as *pioniers* (pioneers; Van der Ploeg and Roep 1990).
- 15 This was later extended into a co-operative project: the production of *Veenweidekaas* (region-specific cheese from the Veenweidegebied); see Roep 2000.
- 16 This is shown not only by the highly differentiated use of grant opportunities (see De Bruin 1997a) – a phenomenon that is still reflected in the term of ‘grant chasers’, still used in the country – but also in the political-economic preconditions necessary for the reproduction of these styles (see Tracy 1997; Van der Ploeg *et al.* 1998).
- 17 Transaction costs are all the direct and indirect, already spent or still to spend, costs and risks involved in conducting a transaction; see further Saccomandi 1998.
- 18 More generally, it can be said that every farming style contains a particular interpretation of government or management costs, of transaction costs, and of transition costs. Above all, every style contains a particular balance between these costs.
- 19 Based on LEI 1996. A few modifications have been made for the sake of the explanation adopted here.
- 20 Collections can be found in Van der Ploeg and Long 1994; Van der Ploeg and Van Dijk 1995. See further Olsson 1990; Kerkhove 1994; Ventura and Van der Meulen 1994; Jurjus 1996; Remmers 1998; Van der Meulen 2000.
- 21 For Africa, see, *inter alia*, Hebink 1990; Van der Ploeg 1991. For Latin America, see, *inter alia*, Bolhuis and Van der Ploeg 1985, chaps. 6–7; Gerritsen, forthcoming.
- 22 It is possible to further explore the range of certain endogenous solutions not only by comparing the average per style per variable to the average of other styles, but also by calculating the standard deviation of the style in question.
- 23 In the sense that there are clear environmental, planning, and qualitative preconditions.
- 24 De Bruin *et al.* 1992 (in the Frisian Woodlands); Van der Ploeg *et al.* 1992 (Frisian clay area); Antuma *et al.* 1993 (linear programming Frisian dairy industry); De Bruin 1993 (mid-Friesland); Hidding *et al.* 1993 (spatial perspectives); Van der Ploeg *et al.* 1993 (projection of Frisian agriculture into the future); Wossink *et al.* 1993 (linear programming Frisian arable agriculture); Van Broekhuizen *et al.* 1994 (farming styles in South-East Friesland); Renting *et al.* 1994 (development of environmental co-operatives in Friesland).
- 25 For convenience of comparison, varimax rotation is applied to the results of the principal component analysis. The ‘rotated’ results are presented in Table 3.1. Furthermore, methods such as cluster analysis, canonical correlation analysis, and canonical discriminant analysis can be employed (see Figure 3.5).
- 26 Needless to say, the description summarised in plain words included only farm characteristics and their interrelations. Every reference to a possible style (as in the caption of Table 3.1) was absent. The naming of these styles in terms of *grutte boeren*, etc. was developed on the basis of the interviews. Apart from the presentation of such verbalised results of a principle component analysis, the presentation of ‘portraits’ and/or simplified farm models has been used frequently in other research projects. Furthermore, it is possible to start with the most important dimensions along which farms are distinguished in an area (according to regional experts) and to enquire subsequently about the location (and reasons for this) within those dimensions.
- 27 In other words, this is a more extensive exploration (and above all an exploration based on rather more ‘real’ and recognisable starting points) than the first attempts such as made by Bolhuis and Van der Ploeg (1985) in Italy, and Leeuwis (1989) in Ireland.
- 28 This is, of course, not easy. First, it requires interviewers who are regarded as serious discussion partners in the eyes of those involved; in short, interviewers who know about fields, cows, farm economics, and hay tedding. Second, there is eternal doubt. Invariably, 70–80 per cent of farmers define their own approach in terms congruous with previous analyses; in the cases of 20–30 per cent of farmers it remains a matter of pinching and

rankling. Third, a colourful bouquet of interpretations emerges as a result of the question under d. (for a description, see Spaan *et al.* 1992; De Bruin 1993). There is a skill in distilling the most significant and least ambiguous ones from this array of terms (although ambiguity is never removed). We have tried to overcome these problems partly by discussing the draft text of the research report with respondents individually and later in collective meetings.

29 This is the average number of years they spend in the shed before they are sold – note that cows often only start producing milk in the third year of their lives.

30 This is a young cow of less than two years old, served for the first time, and which will start its first lactation at the beginning of its third year.

31 Every one of these are 'error messages' in the management systems designed and implemented today.

32 The latter indicator is, since the introduction of the quota system, the most relevant.

33 The cost price per 100 kg of milk is also an important indicator. However, this concerns not so much the current cost price as the future cost price. To be able to realise a low cost price in the future implies considerable costs that are to be made now, according to the large farmers; see Van der Ploeg *et al.* 1992.

34 Furthermore, women were asked how their own situation related to this: 'Generally, men want to grow faster, invest more, and borrow more than women – is this the case in *your* situation?'. Fifty-two per cent of farm women said this is not the case, 48 per cent say it is the case. 'In almost half of the cases, farm women think differently about the necessity of continuous growth than men do' (De Rooij *et al.* 1995, p. 31).

35 Especially the gradients mentioned, of high and low, wet and dry, water and land, thicket and open land, are extraordinarily valuable as carriers of particular ecological values.

36 Probably, the use of words appears unnecessarily long winded here. However, those familiar with Marxist analysis will be able to grasp the import of the terms used and of the argument as a whole.

37 Most of the machinemen present in the area come from elsewhere. Notwithstanding local resentment, they often reorganised the entire range of spatial production conditions abruptly and en masse.

38 The sense of belonging is perhaps one of the strongest human drives and usually one of the important ordering principles. What I tried to emphasise here is that the essential symbols connected to this, such as a landscape, will be strongly defended for that reason alone.

39 Very indirectly, as in the statement: 'we and our fathers have made this area as beautiful as this and we want to continue doing this: we refuse to be pushed out'.

40 The initially intended implementation of the Temporary Act on Ammonia and Livestock Husbandry (IAV) and also the intended realisation of the national ecological network were the triggers in creating this. Further episodes will be added later on, see Chapter 9.

Part III

Unfolding: The Utilisation and Development of Resources

4 Capturing the Intangible

From a strictly agronomic point of view, farming can be regarded as a conversion process: resources are converted into intermediary and/or end products: inputs into output. This process can involve various, interconnected conversions. Dairying, for instance, is based on the conversion of nutrients into feedstuffs and the subsequent conversion of feed into animal production (milk, meat, calves, etc.).

Every conversion process in agriculture is embedded in and, at the same time, the object of the labour process. There is no universal or fixed relation between, for example, fertilisation (as input) and grassland production (as output). The interrelationships can take many different forms which are, above all, dependent on the way in which farming as socio-technical practice is ordered. The particular connection between inputs and outputs is created in, by and through the labour process.

It is not only end products such as milk and potatoes that are created through the labour process, but also particular socio-technical practices – that is, *styles* of farming – are created and reproduced. These practices are multidimensional. They contain numerous aspects, relations, and expressions. They consist of, *inter alia*,¹ particular ways (sets of actively created technical interrelations) for creating end products. Although these technical subsystems – the conversion of resources into end products – can be distinguished from farming practice as a whole, they can definitely not be separated from it. The production process *sensu stricto* is part of agriculture as a well integrated practice. The technical subsystems are constituted by the whole of which they are part.

Farming is characterised by an impressive diversity. This applies across the board, even if we focus solely upon the technical or agronomic processes or systems (Almekinders *et al.* 1995; Bolhuis and Van der Ploeg 1985; Jollivet 1988; Hebinck 1990; Steenhuijsen Pijters 1995; Jongerden and Ruivenkamp 1996). Analytically, the multiformity encountered in technical systems is the expression of a multiple malleability. Different development opportunities emerge as a result of this. Thus, *folding* and *unfolding* constitute the core of farming as co-production.

4.1 The multiple malleability of farming

The malleability of agricultural conversion processes can be attributed to a number of factors outlined below:

- 1 First, there is a wide variation in local ecological conditions. As farming takes place in the natural environment, so it is shaped by it

(Toledo 1992; Altieri 1990). Most importantly however, the natural surroundings are, in turn, influenced, depleted, enriched and/or further differentiated by agriculture, because the elements comprising the natural surroundings are unfolded or particularised in terms of time² and space³ in order to be recombined into a new, more productive, whole. By unfolding – that is, (re-)moulding – the natural surroundings, agriculture as a practice particularises itself. Where relatively undifferentiated ecosystems existed initially, farming produces a particularisation and enrichment of diversity – both in the natural surroundings and in farming itself (Gerritsen, forthcoming).

- 2 As indicated in the previous chapter, agriculture can be characterised in a more technical sense as the interaction between labour, labour objects, and tools. It is typical of farming that labour objects, tools, and labour are reproduced in, and by, the labour and production processes.⁴ These elements can be particularised and improved via this, perpetually repeating, process of reproduction. They are folded and shaped according to the insights, needs, and interests of those who control farming. The fields⁵, cows⁶, instruments and machines⁷, skills, expertise, knowledge of those working⁸ are all constantly developed and moulded; and, hence, farming as such is unfolded into different directions.
- 3 The process of setting the components in motion – i.e. farm organisation and management – can also be ordered in numerous ways. A certain amount of labour objects can be combined with more or less labour. The labour process can be 'skill-oriented' or directed towards a 'mechanical solution' (Bray 1986). One can, following the terms introduced in Chapter 2, work in a *kreas* or *rûch* (gentle or rough) way. Therefore, scale and intensity can vary considerably. A fascinating description of these differences can be found in *Fatal Shore* by Hughes (1988). The choice of tools can vary considerably too, which again has implications for both the scale and intensity of farming and for the nature of the labour process.
- 4 A fourth type of malleability emerges if we examine the labour process more closely. The labour process in agriculture is characterised by a vast number of tasks by which numerous aspects of the conversion process are influenced, if not driven, both directly and indirectly. The tasks do not constitute an amorphous whole; they are purposefully tuned *vis-à-vis* each other. Hence, the conversion process is further folded according to the insights, needs, and interests of the actors involved.
- 5 A fifth type of malleability results from the *caprichos*, the capriciousness of the mechanisms described thus far. Nature, with which agriculture interacts, is like the Pink Panther, 'it always strikes back'. For example, the molecular structure of pathogens evolves to overcome disease resistant cropvarieties. Conversely, the interaction between agriculture and nature constantly gives rise to new varieties⁹ (and new resistants). Finally, the attentive observation of multiformity,

inherent in agriculture, results constantly in the identification of previously unknown growth factors and/or in fascinating and often far-reaching forms of product and process innovation (Remmers 1998). Needless to say, a thorough knowledge of the multiformity, of the existing and the new, is an essential condition for the use of this fifth mechanism. Consequently, 'diversity is a way of coping with the possible. It acts as a kind of insurance for the future . . . Selection from pre-existing diversity appears as the means most frequently used in the living world to face an unknown future' (Jacob 1982, p. 66).

In summary, agriculture is characterised by *multiple malleability*. The natural environment with which agriculture interacts, the components of the production process, and the labour and production processes can be influenced, modelled, and remodelled – in both a general and a specific sense. The capriciousness inherent in the interaction between nature and agriculture further contributes to extending this malleability, which has been used, over the centuries, to make steady progress in agriculture¹⁰. By the same process, different practices are particularised into as many unique agricultural systems (Grigg 1974; Dumont 1970).

Of course, malleability was not applied in a directionless or random way. People lived and worked through social relations that left an indelible mark on the extent to which malleability was recognised, used and, extended. Certain social relations, such as high levels of market dependency, could, just like the lack of freedom in feudal systems,¹¹ exclude the search for, and the realisation of, practical improvements. Other social relations, on the other hand, could encourage and accelerate such a search. In any event, the use of malleability, the actual process of folding and further unfolding, never occurred arbitrarily. The risks inherent in change were acknowledged only too well. Change was therefore measured out with extreme care. It was especially expected of those who had enough resources to be able to take risks.

More importantly, however, once a search direction (the one that corresponded closest to the local cultural repertoire) was set out, it would determine the subsequent search process. If fields are developed in a particular way, if cows are bred along a certain line, if certain instruments are designed, a code (Van der Ploeg 1991, chap. 6) – that is, a particular combination of opportunities and limitations – is built in to the respective labour objects and tools.

A cow developed (folded) into a dairy cow differs from a cow constructed as a beef cow. A field gradually developed into a clover field differs from one developed into a meadow. Similarly, evident differences exist between a threshing roll and a flail, between the architecture of a Frisian *kop-hals-romp* farm and a *los hoes* in Twente.

The trajectory already travelled (the thus far realised development of farming) unmistakably influenced the search for new types of development. The past left its mark on the present and, hence, on the future. Where dairy cows were bred 'with nobility' (Popta 1962), rich meadows had been created and the accordant architecture had been

materialised in sheds, houses, and outhouses, the thus established socio-technical network developed further in an almost taken-for-granted way. The introduction of another breed of cattle would make the already created fields and the size and lay-out of the sheds futile and superfluous. Established practices became the matrix within which innovations were pursued. Similarly, these practices became the standard or norm to separate sense from nonsense, to sift the wheat from the chaff.

The simple fact that the use of multiple malleability did not occur along arbitrary lines, but rather followed the particularisation of what was (had already been created as) one's own, implied that diversity in agriculture increased all the time. Farmers were well aware of this. As Robertson Scott, an English farmer, observed:

Every year that I live in the country, and every year that I know more of what the people who work the land of the United Kingdom are doing, I realise more fully the profound agricultural truth underlying the remark of a skilled Dutch farmer to an English landowner: if you should come to Holland to farm, you would imitate me, but if I were to go to farm in England I would imitate you (1912, p. ix).

Initially, classical agronomy, the precursor of the today's technological agricultural sciences, contributed significantly to the further increase in diversity. Classical agronomy was above all accumulated knowledge about the diversity in ways of farming. Hence, classical agronomy became an important channel of communication between various regions and cultures. Consciousness of one's own style was increased by this channel of communication. At the same time understanding of the repertoires of knowledge from elsewhere increased, which enabled the selective adaptation and introduction of new elements into existing styles, thereby strengthening them.

4.2 The uncaptured peasantry

Through the ages, the malleability of farming has been used by farmers to mould and shape the labour and production processes according to their own insights, experiences, needs, and prospects. This process took place under various conditions; it generated – and, subsequently, occurred according to – different styles. An enormous diversity was thus created – a diversity expressed by (and hence repeated at the level of) the actual production process. Even if the agricultural production process is regarded in a strictly technical sense (for example as the conversion of inputs into outputs), an impressive variation can nevertheless be encountered – for example in input-output relations. This variation is the outcome of the fundamental and complex malleability of farming and of the fact that this malleability is repeatedly applied through the prism of different social practices of farming. I will discuss this further in this chapter, in the light of analyses of contemporary agriculture.

The multiformity, complexity, dynamics, and sometimes stagnation resulting from the complex use of malleability have made farming into an

almost intangible phenomenon. This applies in a theoretical sense and certainly in a practical sense. Even though separate agricultural systems can be understood through rigorous study – particularly if the knowledge, insights, and concepts of the actors involved are taken into account – inclusive theories that pretend to explain farming as *disconnected* from the particularity characterising every social practice seem doomed to fail. This is solved in contemporary agricultural science by waving *goodbye* to empirical reality: the actual way of farming is considered to be less, or no longer, relevant (WRR 1992). A point of view that I consider to be untenable.

An *intangibility* also exists in a practical sense. Farmers always do things differently from expected or required. Goran Hyden interpreted this phenomenon aptly in the title of his book about agriculture in Tanzania. The title refers to the ‘uncaptured peasantry’ (the peasantry that cannot be tamed). There are plenty of empirical illustrations to support the notion of an uncaptured peasantry, not only in history but also in present. Numerous examples of the ‘uncaptured farmer’ are documented from the Third World, but at least an equal amount of episodes can be reported about farmers in the heart of the industrialised world. However, these are stories that often remain untold – for they always disturb the illusion of ordering, the idea of a certain grip on events, which is cherished so much in science and policymaking.

Nevertheless, recent Dutch agricultural history is replete with such stories: The small farmer’ who did not want to disappear. The uncontrollable question of overproduction¹². The sustainability theme. Time and again, agriculture seems unable to be captured.¹³

The pig sector represents perhaps the most extreme example. When it was concluded in the mid-1980s that the sector was overpopulated by pigs and laws blocked further expansion, the pig stock grew like never before. Intangibility is everywhere: it concerns not only the relation between state and agriculture, farmers organisations also find that they lose their grip on events, often misjudging new developments (e.g. the quota system introduced in the mid-1980s was completely misjudged). It also includes their grip on the rank and file of the organisations (Frouws 1995). Ironically,¹⁴ the issue of control became recognised as the sector’s cardinal problem in the mid-1990s. In summary, the uncaptured farmer is back at the centre of the agenda.

4.3 The Cartesian theatre

In order to get a grip on what is uncaptured, the agricultural sciences have struggled for a long time with what is called the *object definition*: what is the actual object of the agricultural sciences? Is it the confusing, complex and above all heterogeneous use that farmers make of the essential malleability inherent in farming? Or is it something else?

The answer conceived in the 1930s is summarised most strikingly by Bordewijk, who stated that agricultural science

is involved in systematically and critically ordering the practical experiences of agriculture at all times and in every country, while attempting to explain those experiences on the basis of what is disclosed by the natural sciences, on the one hand, and the social sciences, on the other, about the laws of nature and society. It sets out to deduce and track down guidelines from all this, according to which the farm as an enterprise should be organised and exploited, and according to which farming as a sector of industry should be undertaken (Bordewijk 1936, p. 2).

A double abstraction is presented in this definition. First, explaining 'the practical experiences of agriculture' abstracts from the experiences, insights, and knowledge of actors who fold this practice into what it is. Farming is essentially reduced to the application of the laws of nature and society. Hence, it goes without saying that those people who are best able to understand and represent such an application are scientists.

The second abstraction concerns the further development of farming: the way in which farming should be undertaken is not understood as emerging from agriculture as a social practice; its development is to be derived from scientific laws and their application. A logical link exists between explanation and guidelines. This is the capacity to 'transform' (the term is from Mertens and Koningsveld 1986) the identified laws into technology. If X is carried out, under specified conditions, then Y will be the end result. Or, according to Koningsveld:

Agricultural science conducts systematic research into natural processes that are considered relevant to agriculture and that are dependent on conditions that can be realised by technical interventions (1986, p. 46).

A striking feature of the definition above is its *prescriptive* element. Once laws are identified, rules (or 'guidelines') can be deduced on the basis of which agriculture has to be organised. The phrasing seems based upon the assumption that a tension exists between farming as practice and the way in which it should be conducted. Theoretically, the rules mentioned by Bordewijk could be interpreted as a series of possibilities for action. However, the more inclusive and systematic the nature of the scientific design (the set of rules), the more coercive its character: the rules become explicit prescriptions for action.

Initially, Bordewijk's definition is controversial. De Vries and Timmer, *inter alia*, take an unmistakable stance on the issue. 'Agriculture is not the same as applied science and economics' (De Vries 1931, thesis 1). More poetically, Timmer refers to 'a play that is very important to the world; the play is called agriculture, and the farmer plays the leading role' (1949, p. 22). Or as Koningsveld would later state more accurately: 'Agriculture as a domain of action is the result of a particular social coordination of all these (technical) actions' (1986, p. 45). A position such as Bordewijk's is criticised:

[They are] not yet ready for the total concept of agriculture; they do not dare to go outside the boundaries of the concept of soil production; if the human

factor is mentioned, it happens at most in its function as economic subject (Timmer 1949, p. 11).

In spite of all past and contemporary critique, a definition similar to Bordewijk's is dominant in today's agricultural sciences. Agriculture is, according to Zadoks (1985), 'a type of applied ecology, subject to the laws of physics, chemistry, and biology'. And Sansavini, the Director of the International Society for Horticultural Science, states that

today, horticulture is the 'sum' of inputs from various disciplines that range from the basic sciences of biology, physiology, biochemistry and above all genetics to the 'applied' fields of engineering, information science, and economics and management which are skills needed to run a viable enterprise.

Sansavini goes on to conclude (with striking resemblance to Bordewijk's reasoning) that

horticulture can only continue developing with the aid of high-technology resources in areas such as computerised irrigation, fertilisation, harvesting, storage and marketing schedules, integrated pest management and production, farm management and market organisation (1995).

Agriculture is increasingly understood as an area for the application of scientific blueprints – that is, as a *Cartesian theatre*.¹⁵ Progress in this theatre is increasingly and necessarily seen as dependant on further scientification (Van der Ploeg 1987).

By representing agriculture as a Cartesian theatre – that is, as the unfolding of scientific and economic laws – farming was made (at least potentially) into a controllable phenomenon (for a more general discussion, see Christis 1985). The double abstraction and the attempt at controlling are combined in the notion of *production function*. Within the agricultural sciences, the production function constitutes an essential (though repeatedly modified) cornerstone. A production function specifies, generally, a precise relation between inputs and outputs derived from scientific knowledge. A production function is usually based upon field trial data or, as is increasingly the case today, upon simulations.

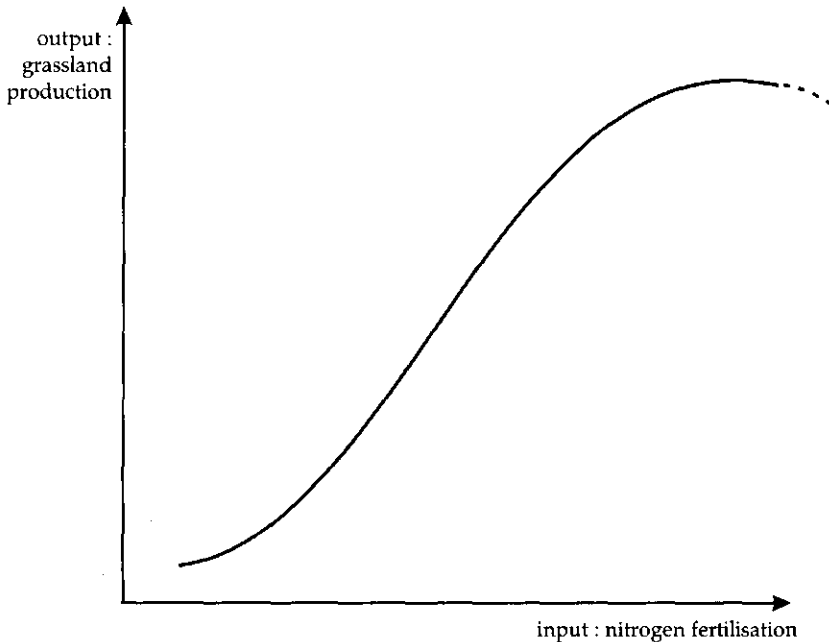
Subsequently, it is possible to deduce an optimum from the combination of a production function and the prevailing or expected economic relations – that is, from a combination of natural laws and those of society. (In neoclassical agricultural economics, the farm is indeed understood and represented essentially as a production function, Saccomandi 1990). Hence, a *technological determinism* is created, with which, in turn, different practices can be defined as backward, as inefficient, or – at the other extreme – as 'too intensive' (Galetti *et al.* 1956).

Thus, *prescription* becomes self-evident: farmers have to work towards an optimum specified by agricultural science (as illustrated by WRR 1992). Consequently, new disciplines emerge. For the question became, as Röling (1985) states sharply: 'How do I get them where I want them'.

Abstraction from multiple malleability and from the multidimensional and comprehensive nature of the labour process in agriculture plays a crucial role in the construction of production functions. The only way a close connection between inputs and output can be constructed is by ignoring this fundamental malleability and the way in which it is utilised in the labour process. Furthermore, once the production function is constructed, it can only be used prescriptively (and hence normatively) by again ignoring the multiformity of agriculture and the active and innovative role of farmers.

Production functions are *artefacts*. They are definitely not what they are intended to be – that is, a reflection of a given and unchangeable biophysical world. I would like to explain this in detail by discussing one of the most basic subjects of the agricultural sciences: grassland production.¹⁶ Numerous production functions have been constructed for grassland production. Usually, they define the relation between fertilisation and total production for an hectare of grassland for one year. A classic example is shown in Figure 4.1. This simple concept, this abstraction is so at variance with practice as to constitute a fiction. Grass does not grow as presented in Figure 4.1.

Figure 4.1 A production function (the relation between nitrogen fertilisation and grassland production)



Over the course of a year, grass is grazed or cut several times. Therefore, Figure 4.2 presents a more realistic depiction. It shows that various cuts can be distinguished. Growth varies per cut. Grass grows faster and more abundantly in spring than in autumn. Furthermore, growth is, *inter alia*,

dependent upon fertilisation – this too is presented in Figure 4.2. The moment at which a cut is utilised depends on the decision of the farmer. Numerous considerations play a role in these decisions. First, it involves the question whether a heavy or light cut is desired. A heavy cut is grass that has overgrown, its colour is often darker and it contains a particular proportion of energy to protein. Such grass is obtained by moving the mowing date backwards.

Moving the mowing date forwards results in lighter grass, characterised, *inter alia*, by a high proportion of protein and hence relatively less energy. Such considerations are also important with regard to grazing. Different grazing systems are employed (some more suitable to heavy grass, others above all suited to light grass). The proportion of grazing to mowing can vary considerably too. In some farming styles the emphasis is on grazing, in others on mowing.

Utilisation of the cuts is interdependent to a certain extent. If grass has grown towards a heavy crop, the aftermath will be slightly paler. It will take longer before the next cut will start to grow. If mowing is carried out earlier (if the growth curve is interrupted at an earlier stage), the next cut will start to grow earlier. Furthermore, the first part of the curve – that is, the part of accelerated growth – is always utilised in the case of early mowing.

By implication, total grassland production per hectare per year is partly, if not pre-eminently, dependent upon the organisation of time, upon the proportion of mowing to grazing, upon the chosen grazing system, and upon numerous other aspects of the labour process.¹⁷ If we limit ourselves to the organisation of time, its effect can be illustrated by a few simple graphs. Figure 4.3 indicates schematically which pattern will occur on a farm where a farmer shows preference for a heavy crop. Figure 4.4 shows the reverse situation: mowing early and often. The wide variation found in the so-called mowing percentage indicates that the examples are not at all illusory.

The relation between certain inputs and the output realised with these inputs depends upon a wide range of conditions of which the concrete organisation of time is only one. Farm labour, as an all-encompassing practice, is in principle related to as many of these conditions as possible (while the possibility of knowing and influencing conditions is highly variable historically). By influencing certain conditions, the relations between certain inputs (fertilisation, for instance) and certain outputs (grassland production) can be influenced to a large extent. Figure 4.5 clearly illustrates this.

Figure 4.2 The interrelations between grass growth, fertilisation, and grassland utilisation (growth research PR 205)

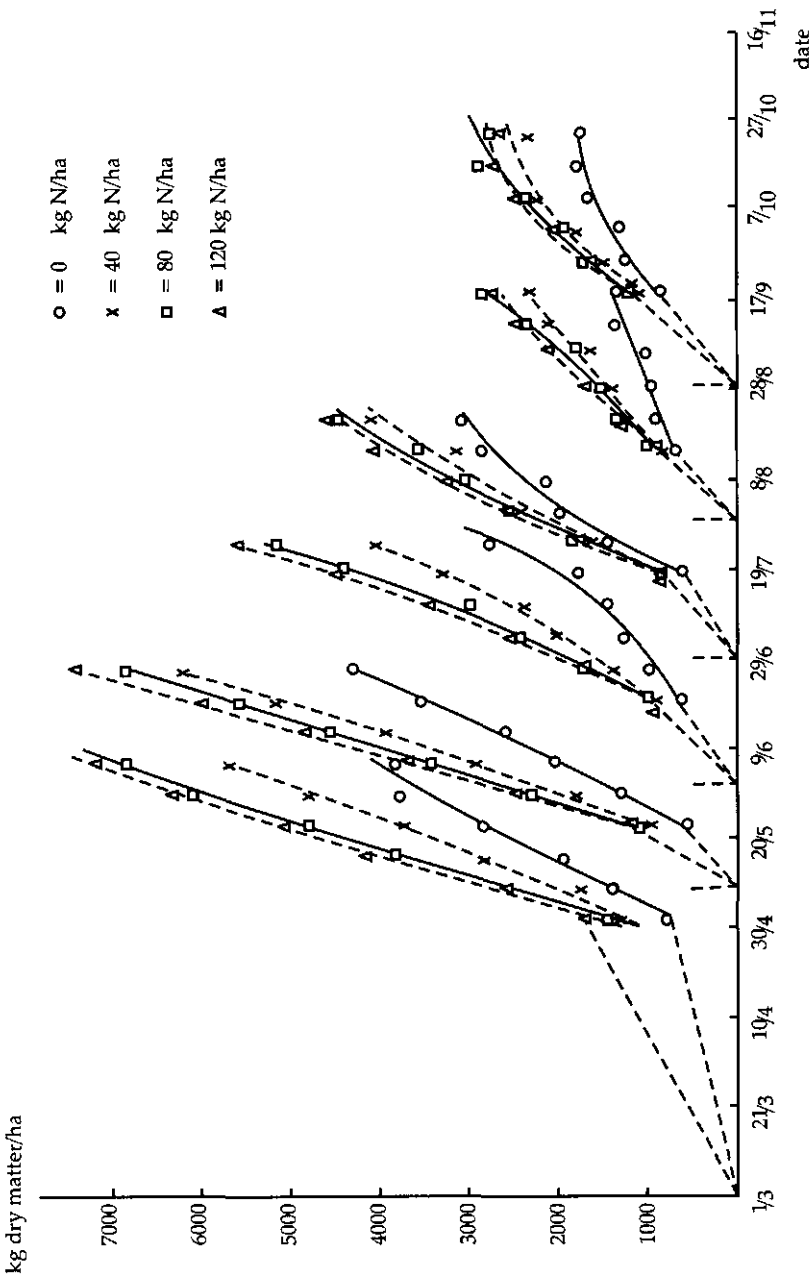


Figure 4.3 The creation and utilisation of heavy cuts

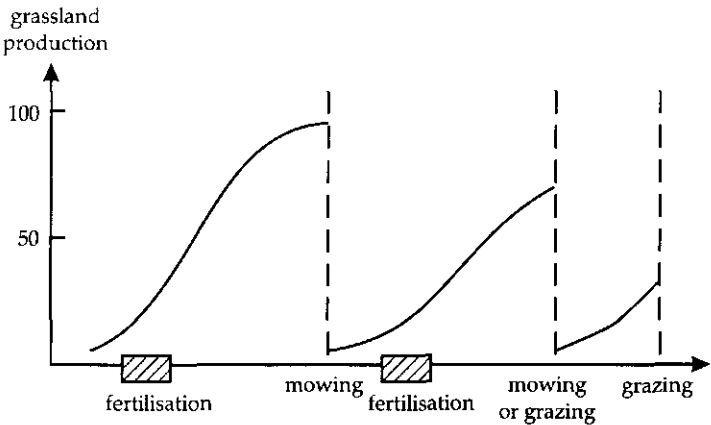


Figure 4.4 The creation and utilisation of light cuts

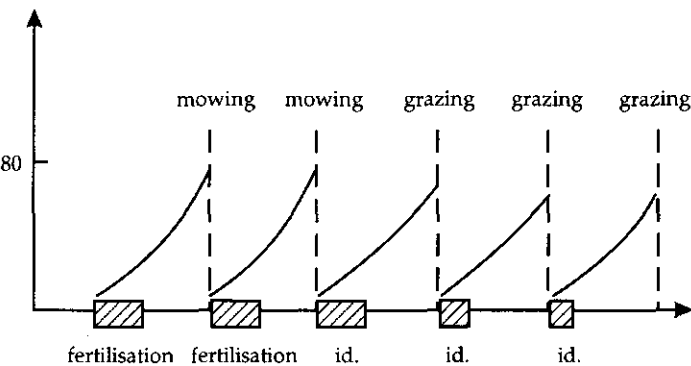
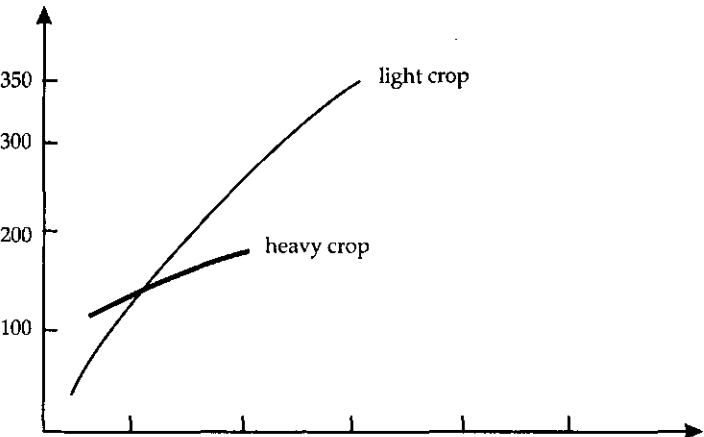


Figure 4.5 The construction of various 'production functions'.



A production function such as that expressed in Figure 4.1 is an artefact. It is a construction in so far as it suggests an unambiguous connection between one *input* and its realised *output*. This connection only applies under a comprehensive range of conditions (which usually remain undescribed). Production functions can only be constructed by assuming that this set of conditions and associated interventions, i.e. malleability, does not exist. In summary, *a production function is the negation of farm labour as a comprehensive, purposefully organised, and highly differentiated practice.*¹⁸

In contemporary agronomy, the substantial range of conditions and variables that determine the eventual output are usually summarised by the term *growth factors*. The amount of nutrients in the soil, their composition, the availability of these nutrients to root systems, absorption, the available amount of water, etc., are all growth factors. Within these growth factors, it is the most limiting one that is assumed to constrain the level of output. If this limiting growth factor is adjusted, production levels increase to a point at which a subsequent factor becomes the limiting one. This approach has been graphically presented as a barrel made of staves: the shortest stave determines the water level – that is, the output level (for an accessible summary, see De Wit 1992a 1992b). Several interesting conclusions can be drawn from this approach. First, the law of diminishing returns becomes highly relative. It involves an exceptional situation, since it only applies if the next limiting growth factor has not yet been identified. Second, it thus becomes easier to imagine the sheer infinite field of solutions. Take 10 growth factors, each with 5 partial solutions, the number of possible final solutions will be, theoretically,¹⁹ 5 to the power of 10, each with their own input–output relations. Now, this almost untameable complexity is averted within agronomy by focusing the attention onto the highest possible solution on the production function – that is, the final solution (the combination of partial solutions) containing the most optimal input–output relation (for a good example of such an approach, see De Wit and Van Heemst 1976; De Wit 1983). Below, I will try to show that such an approach only inadequately describes the practice of farming. Third, I would like to point to the fact that most growth factors cannot be regarded as determined by nature. The available amount of nutrients in the soil is not definitively anchored into nature with Genesis. It has been an object of farm labour through the centuries. More generally, what counts as a growth factor in theoretical agronomy is regarded within the perspective of the social sciences as an element of the labour process. So far, growth factors and the barrel of staves form the perfect meeting ground for the technical and social agricultural sciences. In and through the labour process, farmers regulate actively the set of growth factors that they know and consider relevant.

This holds true all the more if we understand that an *a priori* definition of limiting growth factors is impossible. Again and again, it will have to be investigated in practice (that is, in the labour process) which factor is the limiting one. Hence, the interaction between mental and manual labour,

as included in farm labour, again emerges as strategic. Farmers not only regulate growth factors in the labour process, they also develop an overview and understanding of the relevant set of growth factors, in order to adjust *de facto* the limiting factors in a continuous process of experimenting, observing, interpreting, adjusting, and evaluating.

Relevant growth factors are regulated, understood, and developed further in and through farm labour. Thus, interaction with the scientific expert system can be understood as part of the labour process in the broader sense of the word. Hence, the extent to which the process of farming moulds agriculture – and especially agriculture as a conversion process – into an differentiated whole is emphasised once again.

Does this imply that ‘anything goes’? Of course it does not. It means simply that agriculture cannot be equated with the supposed ‘unfolding of scientific laws inherent in nature’. Farming is involved in an active and goal-oriented interaction with nature. Farming is co-production, in which both the natural and the social are indispensable elements. Thinking in terms of hierarchy is therefore meaningless. Certain agricultural systems, and certain conversion processes, result from the interaction, interweaving, and mutual transformation of the natural and the social. These systems and processes are characterised by certain regularities and patterns. The regularities (symbolised and represented by, and thus often misunderstood as, a production function) inform about the way in which the conversion process is folded. This also demonstrates that *different* regularities (different production functions) can be identified more often than not alongside each other – precisely because agriculture is folded in always varying ways.

Perhaps nature and its inherent laws (photosynthesis, for instance) can be understood as ultimate limits within which farming has to manoeuvre. If nature represents clay and farming represents kneading, agriculture (and its inherent conversion processes) is indeed workable as clay. However, this also implies that kneading and the kneaded result are marked by the starting material. Clay is neither gas nor water. One cannot model a hot air balloon (one which actually takes off) out of clay. The material is unsuitable. The ‘anything goes’ approach of postmodern constructivism, must be kept in proportion, if not rejected outright.

This does not alter the fact that our knowledge about what is possible and what is not possible is a product of its time. New and previously unknown possibilities repeatedly arise. The history of agricultural sciences constitutes probably the most convincing encyclopaedia about this. In spite of everything else, knowledge development is a progressive process.

The relation between nitrogen fertilisation of grassland and total grassland production (usually expressed as metabolised energy per hectare) is a fascinating example of this. New insights (Van Bruchem 1997a 1997b, 1998; Van Bruchem *et al.*, forthcoming) are unravelling and challenging this once seemingly fixed relationship. Why? Because a

previously unknown or ignored link (or intermediary variable) is coming into view. This is the indigestible crude protein percentage of grass.

In some farming practices, increased nitrogen fertilisation results in an increase in the percentage of indigestible crude protein (a highly counterproductive process), whereas in others it is translated mainly into an increase of metabolised energy production. Developing our understanding of this important intermediary variable has the potential to lead to a reorganisation of grassland production on a new and potentially more sustainable basis. One which is very different from the practice that evolved from our previous understanding of production functions. The former production functions have been blown up as it were. Established routines make way for new regularities.

For the time being, we are, ostensibly, occupied with trying to understand the possibilities of using 'clay'. Or rather, we get to know 'clay' better through the development of new alternatives for its usage. Even though we know that there are limits somewhere, we also know that more is possible than what has been mapped out thus far. The development opportunities extend much further than the ones that have been unfolded thus far.

A production function is an attempt to reduce the (actual, but especially the potential) results of farm labour to a more or less complex set of cause-effect relations. The variables that constitute this model do not refer to any aspect of the labour process. They are constructed as object-object relations. Furthermore, they have to be standardisable, quantifiable, and controllable. Typically, fertilisation models are never built upon (not even partially), for example, well-ripened manure,²⁰ but only upon artificial fertiliser. But this is better left aside for the moment.

The purpose of these models (think about Bordewijk's second step – the 'guidelines') is to result in prescriptions for action. In other words, they are used to direct (or, as is often thought: to develop, to assist) and to control – in short, to dominate – the uncaptured peasantry. And this has happened a lot. One only has to remember the fertilisation advice of the previous decades and/or to take note of the enormous increase in the use of artificial fertiliser and the environmental problems resulting from this.

Nevertheless, the intriguing question remains *why* farmers have widely accepted the recommendations and prescriptions derived from production functions constructed in agricultural science.²¹ In the end – that is, without taking note of various relevant details – only one answer is adequate: science creates knowledge and, therefore, *ignorance* at the same time (Hobart 1993). Thus, science – in this case agricultural science – acquires its highly directive and prescriptive role. Because of the widespread dissemination of knowledge about production functions, grassland management is focused almost exclusively on the quantity, composition, timing, and dosage of artificial fertiliser. Undeniably, a lot of relevant and useful knowledge has been developed within this range. Yet, at the same time, this also defined a boundary – since hardly any research at all was conducted *beyond* this well-defined range, as it did not seem to

be relevant. Consequently, grassland production expressed in metabolised energy per hectare (the effect) seemed mainly, if not predominately, dependent on the use of artificial fertiliser (the cause). It seemed hardly worthwhile to search for other intervention alternatives apart from the (presumed) cause. Alongside the realm of well-defined cause-effect relations, ignorance was increasingly created. Nitrogen fertilisation emerged as the most important lever of grassland management for farmers.²²

Human conduct (I will draw this conclusion a couple of times in this book) is influenced principally by the given distribution of knowledge and ignorance at any time or place.²³ Knowledge 'leads the way',²⁴ knowledge inspires faith (or trust; see Chapter 6). On the other hand, the domain of ignorance is threatening and should be avoided at all cost. The *other* becomes increasingly tabooed with the development of a particular type of knowledge and the practices connected with this knowledge. The long and difficult build-up that organic and biodynamic farmers had to go through is a prime example of this.

Ironically, the far-reaching influence of a particular distribution of knowledge and, by implication, of ignorance also emerges when we look at the extent to which agricultural scientists are prisoners of their own production functions. A heated environmental debate raged in and around Dutch agriculture in the latter half of the 1990s, when the necessity of reducing the use of minerals became evident. Translated into the available stock of knowledge about production functions, this led to the conclusion that a reduction in fertilisation levels would necessarily result in lower grassland production. Farmers would have to move 'along the function'. Thus, agricultural science (more specifically, certain institutes) introduced an extremely counterproductive element into the discussion. Obviously, farmers wanted to maintain their levels of grassland production. Nurtured by the idea that less artificial fertiliser input would imply lower levels of grassland production, farmers organised to obstruct the then emerging agri-environmental policy. The very fact that, by then, many farmers (at least 10–20 per cent) achieved completely acceptable grassland yields at very low fertilisation levels, and with very low mineral losses, was, and remained, a non-fact (a 'refrigerator anomaly', following Koningsveld 1976). Apparently, the then most relevant part of empirical reality did already belong to the domain of ignorance. Through reliance on production functions, theory prevailed over practice. Farming becomes irrelevant, especially if practice deviates from theory.

Agricultural science could have played a formidable role in the agri-environmental debate if the relevant deviations had been analysed. However, the only possible 'progress' institutional science could imagine consisted of counterproductive moves 'along' previously constructed functions. As much as they prescribe the future, scientists are prisoners of the past.

4.4 The 'farming systems' approach

Attempts have been made in the 1970s and 1980s at pairing off the many shortcomings of the production function approach with what became known later as 'farming systems analysis' (Gibbon 1994). Here a farm is represented as a system that is interacting with a certain environment and articulated internally according to various subsystems. Water, soil, crop, animals, labour, family, and so on constitute a whole, as it were, in which various relations can be aggregated. This approach is refreshing and useful from a number of viewpoints although some fundamental problems have not been resolved (Brouwer and Jansen 1989). Agency – that is, an actively ordering subject – has not been built into the system. No prominence is given at a conceptual level to the capacity to regulate actively and from the inside out – that is, to react, to unfold, to extend, and hence to (re)order. That is precisely why dynamics and differentiation cannot be integrated into farming system models.

Let me clarify this by means of a brief excursion into animal science. A cow can be modelled (that is, represented and understood) as a combination of two subsystems: the *digestive* subsystem, in which feed (grass, silage, hay, maize, etc.) are converted into nutrients (amino acids, saturated fatty acids, etc.), which can be utilised in the second, *metabolic* subsystem to be converted into reserves, milk production, etc. Sauvant (1996) remarks that

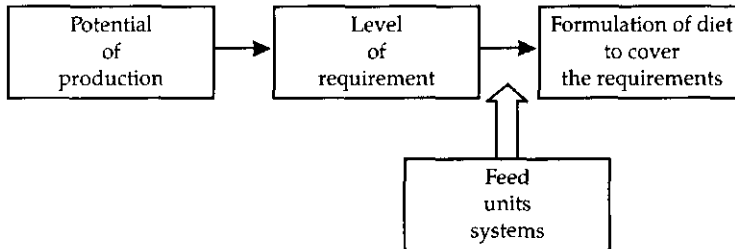
research in animal nutrition has been basically sustained by laboratory experiments and has progressed in parallel with the improvements of the methodologies of investigation of biological events occurring within the organism. Therefore this . . . area was principally the support of Cartesian or reductionist approaches.

This implies, for example, that the actual feeding of cattle (see also Figure 4.6) is, in the end, governed by the laws of nature (since it is derived from the 'potential of production' in the cow). However, such an approach becomes 'more and more obsolete', according to Sauvant. In contrast to this reductionist approach, Sauvant presents an alternative model (see Figure 4.7) in which 'operating subsystems' (OSs) are driven by a 'regulating subsystem' situated in the cow:

The regulating subsystem (RS) mainly corresponds to a part of the endocrine system of the organism. The RS receives information relating to the status of the OS (size of the compartment, flux passing . . .). This information is interpreted and treated by the RS which in turn responds 'orders' resulting in alteration of the value of one of the several flows. In fact, the regulating system is also subdivided into at least two subsystems to allow the organisms [the cows, JDvdP] to achieve their 'two major life purposes': the survival of the live organism and the perennity of its species. The homeostatic regulations (HS) deal with the first target, they are directed at maintaining life despite external perturbations among which is the meal (and the nutrient input) pattern. The homeorhetic regulations (HR) . . . are involved in the second purpose: they control metabolic events which support growth, pregnancy,

*lactation . . . A better comprehension of the homeorhetic regulations is of utmost importance since they sustain the bio-synthesis of animal products.*²⁵

Figure 4.6 The institutionalised view on cattle feeding

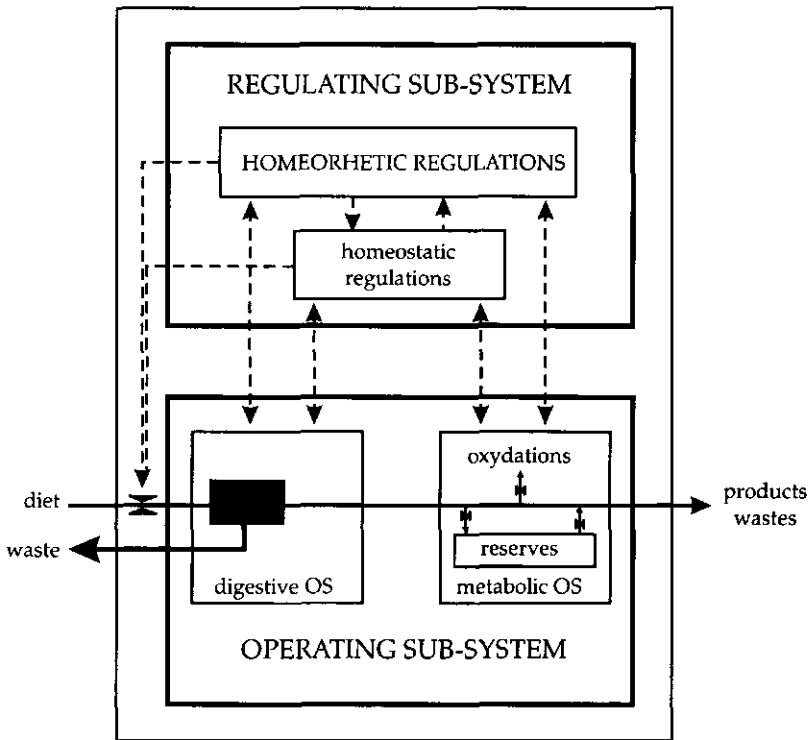


If all this appears slightly cryptic to outsiders, its implications are important, as the following example shows. If the available amount (or quality) of feed changes greatly in an ecosystem, an animal will react to this, for example, by reducing the times it is in season.²⁶ In turn, such an adaptation will affect the regularities that apply to the level of metabolism. In Sauvant's model, the RS affects the relations within the OS. The regulatory system affects the conversion relations (input–output relations) that apply within the operating subsystem. Thus, the most appropriate input–output relations are always created from within the RS. A productive system – whether a cow or the farm as a whole – cannot be represented simply as a number of interlinked subsystems. The presence and smooth functioning of one or more regulatory systems is essential. The nature and functioning of the operative subsystems is driven from within the regulatory subsystem. From here, linkages between various operative systems are introduced, adjusted, and/or radically changed. The interaction (within more complex wholes) between various regulatory entities is probably one of the most interesting, but also one of the most complex, issues here.

Again, take cows. A cow contains an RSc (where c stands for cow). Echoing the German proverb *Was will das Weib?*, the following question has been raised in Dutch literature: 'What does the cow want?' (Van Zomeren 1995). The question can be paraphrased: what does RSc do? At the same time, a cow is integrated into a farm, where the farmer is alive and well as a regulatory subsystem. Here we can speak of an RSf (where f stands for farmer). There is a continuous interaction between RSc and RSf, so to speak, in farmers' everyday practice (see the fascinating, but completely neglected, research by Seabrook 1977, 1994). It is relevant here not only that farmers try to understand RSc and to see through it in their own way (to optimally use their animals in the short and longer term), the farmer also largely conditions, if not remodels, RSc. Farmers (RSf) make their cows into typical dairy cows or typical 'dual-purpose animals', as discussed below. Farmers make them, in the vernacular of the countryside, into 'easy cows' or 'racing cars'. Anticipating subsequent

sections in this chapter, farmers can actively influence the appetite and the nature of their cows by making the appropriate breeding decisions. In other words, RSc is actively changed. This takes place by purposeful selection and the creation of particular circumstances. The same applies to the fields: farmers create fields (those operating subsystems) that are most suited to their cows and their overall objectives.

Figure 4.7 The live organism as a regulated system

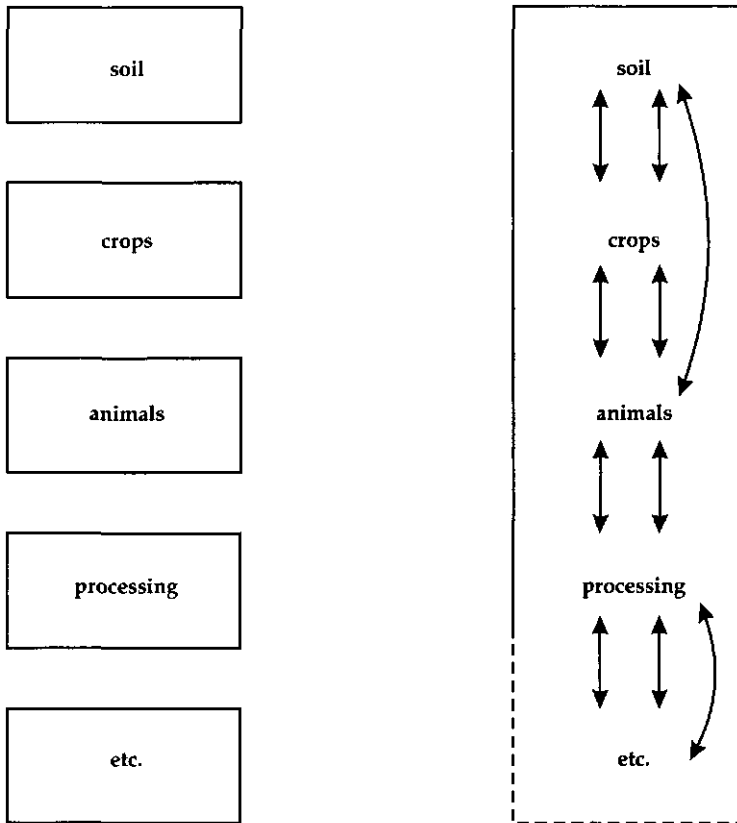


Source: Sauvant 1996

This implies, first, that none of the subsystems (whether water, soil, crop, or animal) can be understood as the direct expression of immanent scientific laws – they are always modelled on the strategic notions and experiences of the entrepreneur involved. Thus, the possibilities and impossibilities inherent in modifying the various regulatory systems (such as RSc) constitute the self-evident boundaries within which such modelling takes place.

Second, it implies that various subsystems cannot be imagined in terms of simple addition – indeed, the actively and purposefully created integration turns the whole into more than a simple sum of its parts. Therefore, agricultural production cannot be understood as a more or less complex accumulation of ‘basic ingredients’, each one regulated by a production function – the very interaction at higher levels of aggregation affects behaviour (and the regularities) at lower levels.

Figure 4.8 Scientific knowledge systems versus local knowledge systems



Third, the integrative moment has to be reconsidered: if knowledge of the individual subsystems is principally segmented in agricultural science, interaction is the knowledge-organising moment par excellence in local knowledge systems (see Figure 4.8). Manure is known in local knowledge systems by its effects on soil life and grassland production. Grass and other feed components are understood partly, or even predominantly, by their effect on the animals. The animals are understood partly by the way in which they react to a certain diet and by the peculiarities of excreted manure (some cows, for example, produce thin manure, which says a lot about the kind of feed they have had). I will elaborate on this below.

However, let us first return to the essentials. Productive subsystems cannot be understood by means of a simple stimulus–response (that is, cause-effect) model. Integrative and interactive regulatory subsystems exist at various levels. Various responses to changes in the environment can be developed from within these ordering or regulatory subsystems. By implication, no unilinear relations exist between stimulus (that is, changes in the environment) and response. This results in a conclusion that appears simple but is far-reaching in its consequences: ‘A more comprehensive system whose constituting components are represented by a number of deterministic equations has no mathematical solution’

(Sauvant 1996). This holds particularly true when time is introduced into the equation. Sauvant illustrates this convincingly with respect to feeding. Of course, his conclusion applies *a fortiori* to more complex systems such as a livestock farm as a whole.

According to Sauvant, mechanistic modelling leads nowhere:

During the last years such . . . models have been fairly criticised due to their inability to be applied out their specific context of elaboration and calculation.

The alternative presented by Sauvant is 'the elaboration of empirical models of multiple response'. I think that this points to the heart of co-production as a theory.

4.5 The empirical variation in input–output relations

Figure 4.9 comprises a structure of three quadrants in which the essential conversion processes in dairy farming can be situated. The bottom-left quadrant concerns grassland production, the conversion of nitrogen into grass, silage, and/or hay. Here, output is operationalised in terms of energy value of grassland production (expressed in metabolised energy). The actual conversion – that is, the relation between applied fertilisers and realised grassland production – is highly variable. First, because this conversion is integrated into a labour process that is always structured in specific ways (various stipulating growth factors such as soil structure, water availability, etc. vary considerably with this). Second, because a farmer's grassland production always represents a particular interest. One farming style may pursue the highest possible level of grassland production. Other styles may pursue the most efficient grassland production. And yet other styles may pursue cost minimisation or labour reduction as important objectives. Hence, the importance and organisation of grassland production differ time and again.

On a contemporary dairy farm, home-produced fodder is complemented by purchased feed (see the second, i.e. bottom-right quadrant in Figure 4.9). Usually, this involves concentrates, but it can also involve purchased fodder. Again, the interrelation between home-produced and purchased feed is highly variable. Home-produced fodder will form the basis in some types of farming (or farming styles), whereas purchased feed will be the pith and core in others (see Chapters 2–3). Similarly, the proportions of home-produced to purchased feedstuffs can vary considerably: sometimes there will be complementarity (mutual complementing), sometimes there will be substitution.

Taken together, grassland production and feed purchases result in a certain availability of feedstuffs (expressed in metabolised energy per hectare). This total amount of available feed is the basis (the input) for the second conversion process: the conversion of feedstuffs into milk, beef, and cattle (situated in the third, i.e. upper-right quadrant in Figure 4.9).

Again, this conversion process is above all dependent on (because it is embedded in) the labour process and, at the same time, it is the explicit

object of this labour process. Here, the obvious tasks are breeding and raising of youngstock, and thus the genetic improvement of the herd, the nature of the herd, the organisation of feeding, milking, the relation between youngstock and productive cattle, the daily care of cattle, shed conditions, etc.

Figure 4.9 Conversion processes and I/O relations in Frisian dairy farming

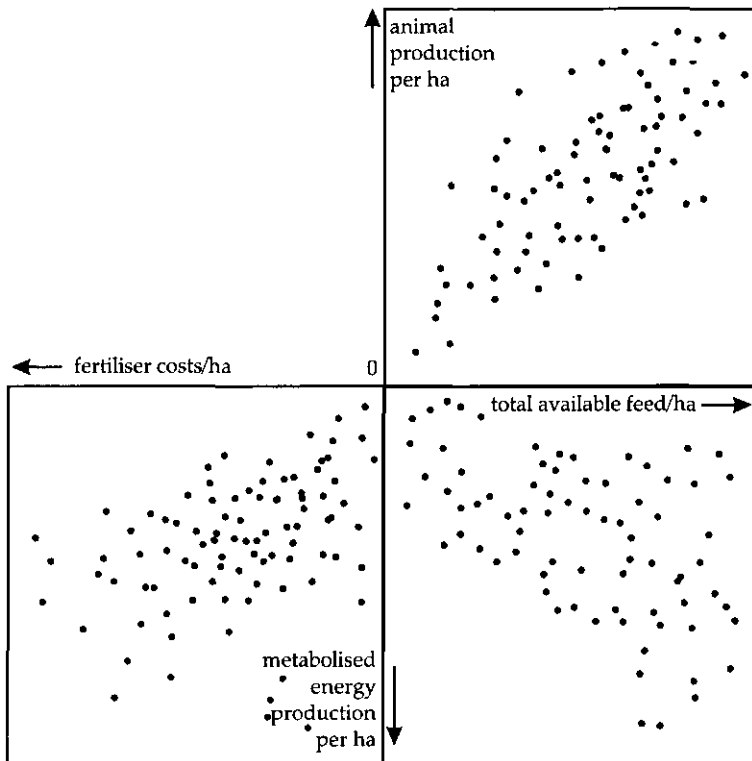
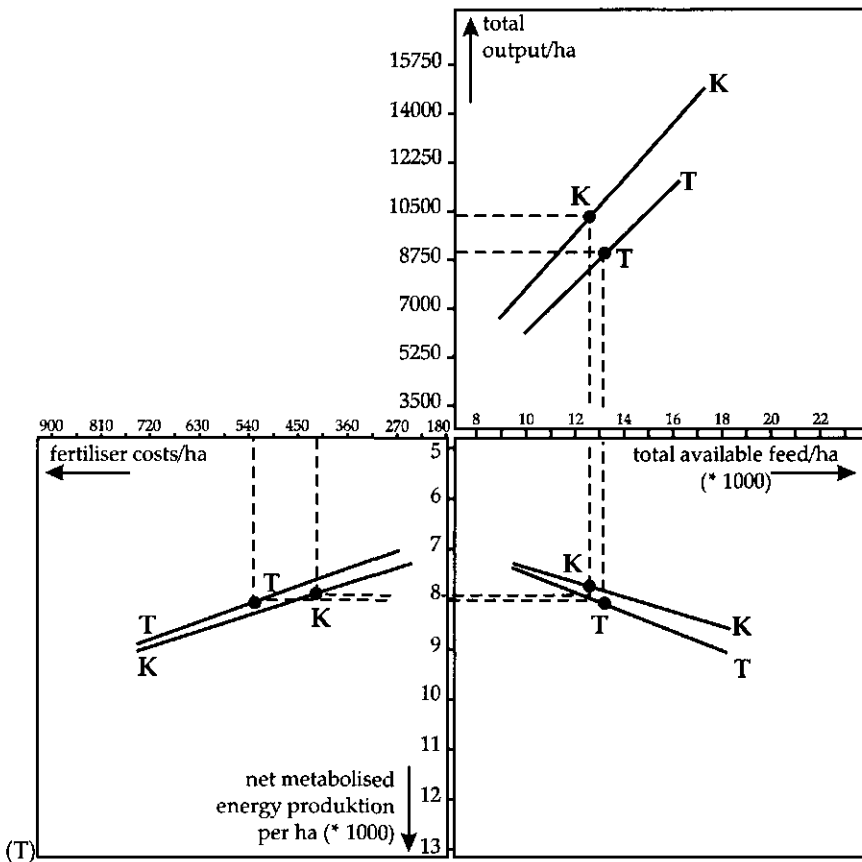


Figure 4.9 draws on data from 300 Frisian dairy farms, equally distributed over the clay, peat, and sandy regions of the province. The figure is based upon accountancy data collected by the AVM/CCLB, and relates to the year 1990–1991.²⁷ Figure 4.9 shows a considerable range in (summarised) input-output relations in the first and third quadrants. The range should not be understood as a random phenomenon but relates largely to the always varying way in which the labour and production processes as a whole are ordered. Regularities are created in every farming style. This point can be illustrated by analysing more closely two antipodes: cowmen and machinemen. Figure 4.10 is the guiding principle in this discussion, the input–output relations are presented per quadrant for both styles. The first quadrant (the bottom-left quadrant) shows that machinemen (T) produce on average more feed per hectare than cowmen (K) (the measure used here is metabolised energy production/ha).²⁸ Incidentally, they need more fertiliser to achieve this than their counterparts. The regression lines

indicate that, viewed from a distance, machinemen are less efficient than cowmen.

Figure 4.10 Triquadrant diagram with 'regularities' for cowmen (K) and Machinemen (T)



After diligent research, it seems that the explanation is clear and self-evident: machinemen like mowing.²⁹ Cowmen prefer to let the cows do the work. In their practice, the emphasis is on grazing. Machinemen manage their grass production (see Figure 4.2) differently from cowmen. If the latter usually opt for slightly heavier grass, the former choose to mow and ensilage a lot. They prefer the light crop.³⁰

Preference is perhaps an unfortunate term here. Machinemen produce a light crop, just as cowmen produce a heavy crop. The purposefully created relation between grazing and mowing, the chosen grazing system, fertilisation, the specification of the best time for mowing, the losses that are taken for granted and so on, are all relevant conditions which contribute to actually creating the different relations presented in this quadrant. Regularities are generated by the goal-oriented directing of different tasks – that is, by the strategic organisation of farming as practice. Thus different input-output relations emerge. Input-output

relations are modelled in particular ways – according to the practice of which they form part.

The second quadrant concerns the degree to which home-produced feed is supplemented by purchased feed. The proportion of home-produced to purchased feed can vary considerably. Determining this relation is an important field of attention for many farmers, it is an issue of strategic consideration. Throughout history the nature of these considerations and the resultant balance between the two have changed radically. Figure 4.10 demonstrates that different regularities apply here. Machinememen on average buy more additional feed (roughage, but particularly concentrates), but, at equal metabolised energy production per hectare, cowmen buy in more.

The third (upper-right) quadrant depicts the transformation (conversion) of feedstuffs into animal production. Different, mutually contrasting regularities can also be found in this quadrant. Here they are, to a large extent, the outcome of different breeding strategies. Cowmen and machinememen create cows that not only differ in various ways, but also fit into the created context as best as possible.

The cows that populate Dutch pastures are above all *social constructions*. This applies generally: every cow is the outcome of previous chains of interrelated decisions. These decisions involve choice of bull, replacement of dairy cows, selection of mother animals, rearing of calves, age of first calving heifers, care and feeding of youngstock, proportion of youngstock to dairy cattle, and so on. Today's cow is the outcome of decisions taken in the past, just as today's decisions contain the cow of the future. Thus, past, present, and future weave together along different paths, along different chains.

More specifically, these decisions have to be forged into a coherent whole time and again (see, among others, Beaudeau 1994), and this whole is always highly *style specific* (see Barkema 1998), resulting in the creation of different cows.

In extensive research (related to 10,000 cows on about 260 farms in three regions) Groen *et al.* (1993) have analysed the extent to which breeding indexes (informing about the quality and nature of cows) and bull selection vary between styles. Not surprisingly, cowmen create excellent dairy cows. Their breeding indexes for INET (a measure for genetic progress *vis-à-vis* mother animals), produced amounts of protein, etc., are substantially higher than, for example, those of machinememen. There are also significant differences with regard to exterior. Dairy cows created by cowmen are – it could be said – more beautiful, 'more of a dairy cow', than the cows bred by other farmers. There are striking differences in terms of development, and above all in type of udder.

On the other hand, cows of machinememen stand out because of their legs. This corresponds with the way in which machinememen handle their cattle. They define cattle often as 'use' cattle, as cattle 'that should be able to get its own feed in the shed'. Clearly, legs are necessary for this. A cowman,

on the other hand, pays individual attention and care to cattle; he will bring feedstuffs to the cows.

Thus, every style is reflected in the cows that it creates, in the cows that fit in with the respective style. All things considered, the cows constitute the *pars pro toto* for the farming style.

In conclusion, cows are social constructions. Nature (in this case cows) becomes folded in and by the labour process, in such a way as to optimally fit in with the rationale followed within the particular practice. This is demonstrated strikingly by Groen *et al.* when they make a distinction between typical milk-type cattle (Dutch-Friesian and Holstein Frisian, FH and HF respectively) and dual-purpose cattle (predominantly Meuse-Rhine-Yssel, MRIJ), where the latter represents cattle that produces both milk and meat. These two, very different types of cattle were related to the styles of the different farms in the research by Groen *et al.*³¹

I confine myself here to cowmen and the so-called double-goalers (a folk concept from the Achterhoek, the River regions, and South Holland, which refers to farmers who specialize in both milk and meat production; see Maso 1986; Van der Ploeg *et al.* 1990; Roep *et al.* 1991; Van der Ploeg 1996b). Some results have been summarised in Table 4.1.

Table 4.1 The malleability of cattle types (breeding indexes for exterior characteristics: development and muscle; muscle values are in brackets)

Cattle type	Style	
	Cowmen	Double-goalers
Milk-type cattle	98.9 [102.1]	96.1 [104.4]
Dual-purpose cattle	99.7 [101.2]	98.6 [103.2]

Note: all breeding indexes are significantly different

Muscle values are an indication of beef-producing capacity. Table 4.1 shows that irrespective of the type of cattle, so-called double-goalers develop their cattle into animals that produce a lot of beef, alongside milk. This is obvious if they use the red-and-white MRIJ cattle (double-purpose cattle). However, if for some reason (*rouge ou noir* is, following Maso (1986), a fundamental issue in the countryside) they work with black-and-whites or, more to the point, with typical milkers, these double-goalers 'transform' their cattle in such a way that they stall excellent beef producers in the end.

The same applies to the reverse situation. If cowmen work with MRIJ cattle (essentially a double-purpose animal that excels less in milk production), they develop their cattle, over time, into cattle that distinguishes itself in terms of milk production and that is hardly striking in terms of muscles value. Nature is folded in and by farming. Cows are (just like fields) made into something special.³²

Let us return to the cowmen and machinememen in Friesland. Cowmen realise a considerably higher input-output efficiency in the third quadrant (the upper right quadrant relating to work in the shed in Figure 4.10, i.e.

relating to the conversion of feed into total animal production) than machinememen. There is no need to discuss in detail the question why, after the detailed descriptions of both styles in Chapter 3. In summary, cowmen have bred better cows (at least in this respect); they feed and take care of their animals in distinctively different ways. All of this (and much more) results in the emergence of the distinguishable regularities presented in the third quadrant of Figure 4.10.

One could say that cowmen realise a different production function from machine farmers. This would indicate implicitly that a certain relation between inputs and outputs is not so much determined by nature or by available technology, but rather that it is the outcome of particular social practices in which nature and technology are shaped and folded in a particular way. However, I prefer to use the term *regularities* instead of the established concept of production functions. The notion of production function contains a trace of determinism, implying, e.g., observations that cowmen (or whichever other group) 'should move along their function'. Or, it is observed that 'there is a lot of variance around the production function of, for example, cowmen' (which, it is assumed, indicates a problem).

In contrast, I think that only one position is possible: production functions do not exist.³³ They are artificial relations that were and are created by scientists. On the basis of these, they think they can understand and prescribe farming. Production functions are essential for external prescription – yet it is very possible to produce grass and milk cows without those functions. Farmers create certain patterns and certain regularities in and through their work, in and through the process of folding nature (more particularly, in and through the making of their cows, for instance). These patterns and regularities vary between styles. They vary also *within* styles. Farmers seize this variation in order to produce progress (in continuous cycles of observing, comparing, interpreting, adapting, and again observing). This occurs by building on the variation within their farms; it happens especially through the constant and above all systematic comparison between farms.

Furthermore, it needs to be stated that farmers definitely do not move their farms *along* (imaginary) production functions – on the contrary, they create *new* 'functions' in and through their work. This implies that the relations between farming as practice and institutionalised forms of technology development have to be conceptualised differently. Progress, even if it is defined in strictly technical and/or agronomic terms, emerges as essentially an *endogenous* process, in which *exogenous* elements can acquire complementary importance. But I will leave this aside for the moment.

4.6 A methodological intermezzo

The above presented results became the object of interesting discussions, since the correlation between styles and input–output relations is slightly surprising from a Cartesian perspective. With hindsight, there were two

phases in this debate. In this intermezzo, I would like to discuss in more detail the arguments and counterarguments that evolved. Of special interest are the different methods of analysis (for a summary, see Dijk *et al.* 1998). Readers who are not interested in multivariate methods of analysis may choose to skip this section.

First, it was argued that regularities such as those illustrated in Figure 4.10 represent at most statistical noise around a generally applicable series of input–output relations. The most our discussion partners could accept was that various styles would take different positions on this otherwise generally applicable relation. An economical farmer will choose a ‘lower’ position on the function, an intensive farmer will choose a ‘higher’ one.

Taking a playful approach to the terms used here, one could say that alpine climbers do not create Mont Blanc. It ‘is there’ whether or not climbing takes place. Mont Blanc is an objective fact (just like a production function). The only issue that is assumed to be of importance is that some alpine climbers reach the top, while others do not seem to pass the halfway point. As an empirical researcher, one cannot but state that a production function can be approached like the Mont Blanc.³⁴ Some farmers manage to climb higher, whereas others are not as successful at it. It is possible that it happens like this, but perhaps it does *not* happen like that.³⁵

Figure 4.11 presents a path diagram³⁶ describing (indirectly) a series of input–output relations in dairy farming. The style-specific β (a measure of the effect of one variable on another and thus an indication of the nature of the input–output relation) is presented for each partial relation.³⁷

Figure 4.11 shows that important differences exist between different styles. Variation in stocking rate (dairy cows per hectare) does not translate into milk yield ($\Sigma K = -0.01$) in the style of cowmen (K), whereas the same change would have a strong negative effect (in $\Sigma Y = -0.66$), for intensive farmers. If this was represented graphically, (partial) production functions would have varying angles.

The same issue can be approached in a different way. Figure 4.12 summarises an alternative approach. It concerns the same model, but (in contrast to the approach such as summarised in Figure 4.11) here *general relations* have been calculated. *Additional* effects per farming style have been calculated subsequently.

Figure 4.12 shows that style ‘distorts’ the assumed generic relations in a number of decisive places. Let us look, for example, at the correlation between purchased feed and total output per cow. If we approach this correlation as a generic relation, we find that β equals +0.71. However, this generic relation varies between different farming styles. The input of purchased feed is systematically lower for economical farmers (additional $\beta = -0.15$), while the partial result – that is, the total output per cow – is systematically higher ($\beta S = +0.17$). The generic relation is bent (‘folded’) as it were. The exact opposite is the case for machinemen (T) and intensive farmers (Y): they are also involved in folding, but in a different direction.

Again, we reach a similar conclusion: style-specific input-output relations are created in and through the labour process.

Figure 4.11 Style-specific input-output relations (Friesland, n = 300)

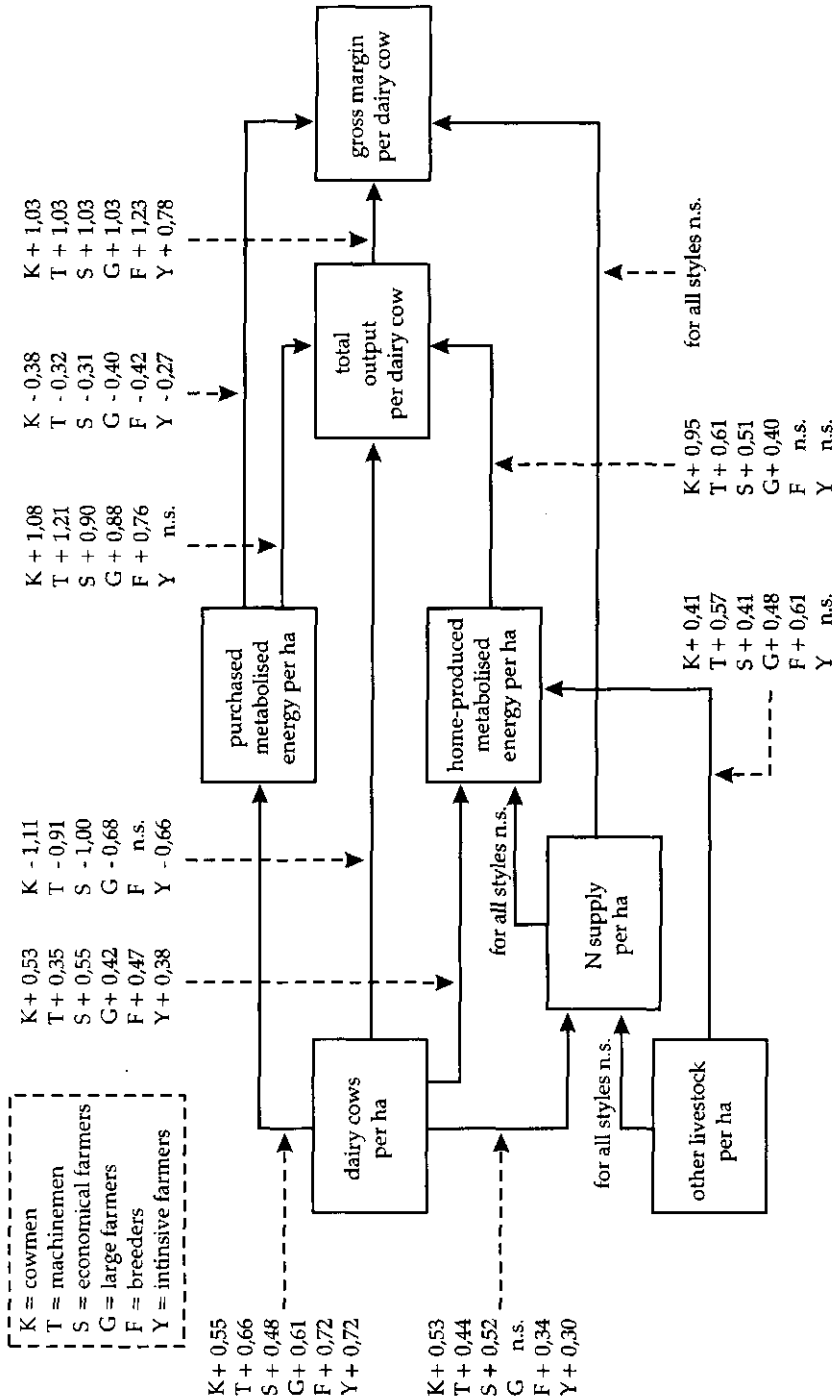
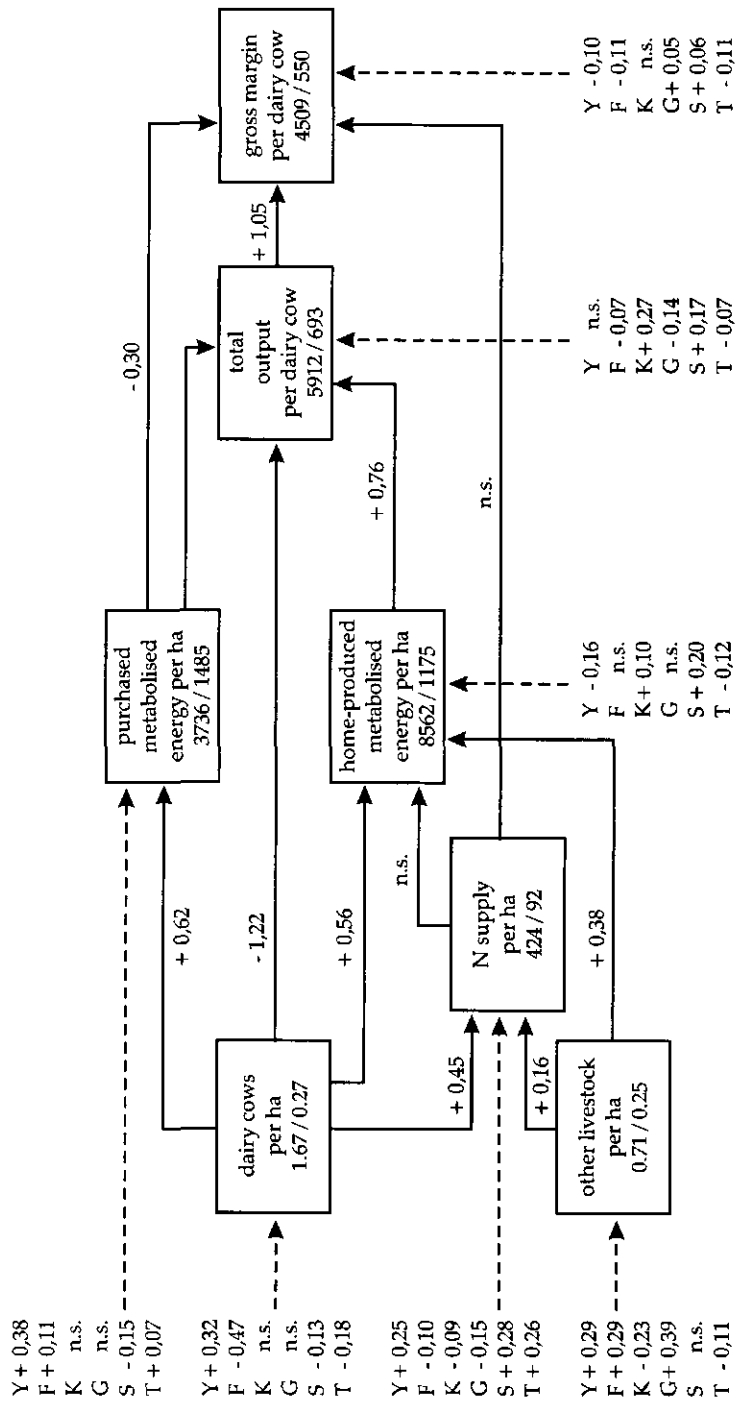


Figure 4.12 The additional effect of style



A second round in the discussion revolved, essentially, around the reintroduction of the conventional concept of *structure*. Our colleagues from the Agricultural Economics Research Institute (LEI) accepted the existence of variations around the generally applicable input-output relations. However, they argued that these variations stem from structural differences. Some farms, for example, have a high quota per hectare, whereas others have a low milk production per hectare. Such structural differences are translated, it was claimed, logically into various aspects of farm management. A high, structurally determined milk production per hectare obviously goes together with high concentrate levels, high purchases of roughage and high milk yields per cow.

This argument accepts the strategic and internally consistent ordering of the farm as a whole. At the same time, however, the process of purposeful ordering is interpreted as a reflex of structural characteristics. Thus the uncaptured peasant has been tamed and located, as it were. Summarised polemically, farming styles are nothing but expressions of *structural* variations in contemporary agriculture.

Methodologically, this involved an elegant 'attack'. A norm³⁸ was calculated for various input-output relations by way of multiple variate techniques. This norm was supposed to reflect the level of, for example, roughage purchases that can be expected with a given set of structural propositions (such as milk production per hectare, milk yield per cow, etc.) And if the level of roughage purchases is known, a norm for expected levels of concentrate purchases is calculated.

Essentially, this goes back to the question of 'factor endowments' – which are the available production factors and their interrelations? This combination of factors is understood as being structurally determined. In turn, the structurally determined combination of factors determines farm management. What initially seemed impossible to capture, now emerges as the logical expression of structural laws.

The answer was twofold. Of course, 'structural differences' cannot be understood independently from the strategic actions of the farmers involved – that is, independently from farming styles. Intensive farmers will buy primarily quota and no land, and hence they will influence considerably the 'intensity of land use' (quota per hectare). Similar stories can be told about other styles.

In short, a certain farming style cannot be understood as an *a priori* fact, as a particular position on a 'Mont Blanc'. The 'given' structure is partly, if not completely, the outcome of a series of decisions taken by the entrepreneur. This does not alter the fact that this 'structure' (the already created socio-technical network) will create its own immanent ordering or exert its own coercion (as already discussed in Chapter 3).

Is this the end of the story?

The calculation of a norm (such as performed by colleagues from the Agricultural Economics Research Institute) refers to a *ceteris paribus* situation. If all structural characteristics have been taken into account, what should be norm for the farm? Thus operationalised, the farm-

specific norm, can then be compared with the actual results. Furthermore, it is typical of the Cartesian approach to refer to *deviations* from the norm. If empirical reality contains more variation than can be expected on the basis of structuralist approaches, we are dealing, it is said, with deviations from the norm.³⁹ In response to this position, a statistical analysis was conducted on these so-called deviations from the norm. The underlying argument is simple, in principle. A farming style influences farm organisation (*factor endowment*) and farm management – that is, the particular use of production factors. By calculating a norm, the first effect of strategic conduct is taken away. Furthermore, a style should be noticeable by a particular use of production factors. Style, if it exists at all, should be relevant and thus demonstrable even beyond the *ceteris paribus* assumptions.

Table 4.2 presents a number of deviations from the norm. The empirical data is drawn from the Agricultural Economics Research Institute database⁴⁰ and covers 259 dairy farms on sandy soils in the Netherlands (particularly in the Frisian Woodlands, and in the provinces of Overijssel, Gelderland, Noord-Brabant, and Limburg). At a conceptual level, ‘the deviation from the norm’ seems to refer to purely accidental and/or sheer individual aberrations. Table 4.2 does imply, however, that these deviations from the norm are highly style specific. Even if economical farmers and intensive farmers operated on completely identical farms (cf. the *ceteris paribus* condition), the former would still realise considerably lower feed costs than the latter. Similarly, even if the farm organisation of cowmen were exactly the same as other farmers’, they would succeed, through their particular way of organising farm management, in realising a higher gross margin per dairy cow and so on and so forth.

In other words, even if production intensity, available farm size, labour input, and all other so-called structural variables remain equal, farming styles will still produce considerable differences in the final results. Farming styles have an effect on not only farm structure and farm organisation (via various long-term decisions), they also affect farm management. More specifically, even if differences in stocking density and milk yield are taken into account, economical farmers will still realise, with lower concentrate levels and lower total feed costs, a relatively higher gross margin per cow than intensive farmers using much higher concentrate levels and having higher total feed costs per cow. Again, this indicates the way in which various partial input-output relations are reordered and reshaped in the concrete labour process.

If we return to the triquadrant diagram (see Figure 4.10), we can observe that contrasting regularities are indeed created in the different styles – or that, following Sauvaut, *multiple response* models have been constructed. The question of course is why? Even though I previously referred to a number of aspects (breeding of different cows, mowing being conducted differently, etc.), it is still important to ask the questions why and how. Why and how are these different patterns or regularities created and reproduced?

Table 4.2 Deviations from the 'norm', for various farming styles (dairy farms on Dutch sandy soils, n=259, year=1994)

	all farms				style			
		economical	economical /cowmen	cowmen	intensive	intensive/ machine	large	large/ economical
number of farms	245	16	26	18	26	5	14	9
feed costs/cow (NLG)	2	-120	-31	-76	67	256	-54	-122
% above standard	19	46	33	62	80	36	33	
concentrates (metabolised energy/cow)	-55	-198	-252	-142	118	439	-196	-306
% above standard	37	35	22	54	80	36	22	
gross margin/cow (NLG)	-68	-107	-63	33	-234	-882	-25	148
% above standard	50	39	72	35	0	43	78	
milk yield/cow (kg)	-53	-150	-88	-27	-55	-253	-34	-8
% above standard		12	27	44	19	0	43	47
gross margin/ha (NLG)	-123	-130	-94	59	-583	-2,442	-114	252
% above standard		50	50	72	35	0	43	89
gross margin/100 kg milk (NLG)	-0.97	-0.31	-0.7	0.59	-3.09	-14.01	-0.47	2.17
% above standard		56	46	72	35	80	43	78
net farm result/100 kg milk (NLG)	5.15	-0.21	-1.23	1.41	4.75	23.24	3.17	8.81
% above standard		44	35	33	39	40	64	78

4.7 The fourth quadrant: strategic and ordering of the labour and production processes

Systems can almost always be unravelled into subsystems. Previously, we unravelled the dairy farming system into three operative subsystems (symbolised by three quadrants). However, subsystems can rarely be combined into a well-working whole (into a system). The presence of a regulatory subsystem is crucial here.

The regulatory subsystem can be equated with the strategy, with the style, of the farmer. Thus, particular objectives and particular indicators apply to every style. This has already been shown in Chapter 3. The activities in different quadrants (fields, the market for feedstuffs, and the shed) are organised in particular ways according to these particular objectives.

The gross margin per dairy cow (output less costs per dairy cow) is a central indicator in the practice of cowmen, which is used to track and evaluate farm developments. The same indicator is also used for scanning the horizon of new farm developments, for sifting the wheat from the chaff, for determining where things worthy of further investigation are happening.

In Figure 4.13, the particular organisation of the operational subsystem (the first, second, and third quadrants) is linked to the regulatory subsystem (included here as the fourth, upper-left quadrant). The central issue for cowmen is to achieve the highest possible gross margin per cow. This is their starting point for organising the various operational systems and their input-output relations.

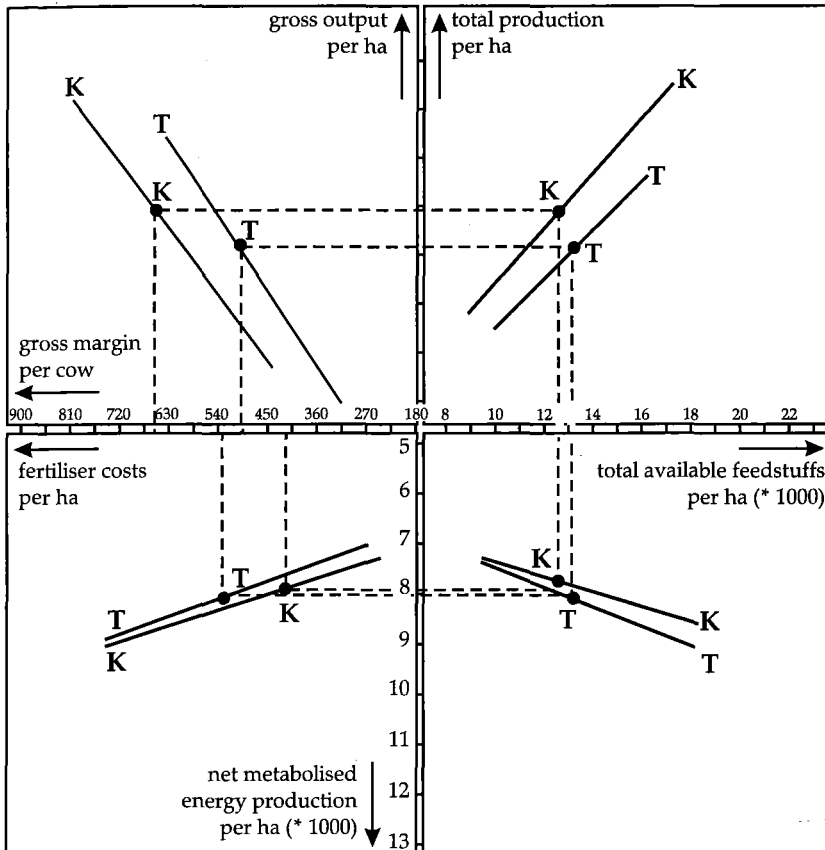
Figure 4.13 demonstrates – at one single glance, as it were – the rationale of this particular organisation. Cowmen are able to achieve a high gross margin per dairy cow through their particular organisation of work in the fields, in the shed, and their activities in the market for feedstuffs. If they organised their work in the fields, the shed, and in the market for feedstuffs like machinemen, they would have to settle for a lower score on this key indicator.

Does this mean that machinemen are ‘inferior’ entrepreneurs? No, of course it does not do so. They do not organise their practice in order to achieve the highest possible gross margin per cow. The deciding factor for them is ‘to achieve as high a volume as possible by using as little labour as possible’. The corresponding indicator is unambiguous: gross output per labour unit.

If we introduce this indicator (gross output per labour unit) into the fourth quadrant, a significant relation between gross output per hectare and gross output per labour unit emerges in the fourth quadrant (see Figure 4.14). This relation is absent for cowmen – they do not map their course with this indicator. Given the orientation of machinemen, their *modus operandi* is highly effective. Taken in isolation, their efficiency of grassland utilisation is less high. Similarly, in an abstract sense the efficiency in the shed is equally less high than the one of the cowmen.

However, the lower efficiency in fields and shed (their aversion to 'wasting time on a postage stamp' and to 'fiddling around with those cows') results precisely in what machinemen want to achieve: a high gross output per labour unit.

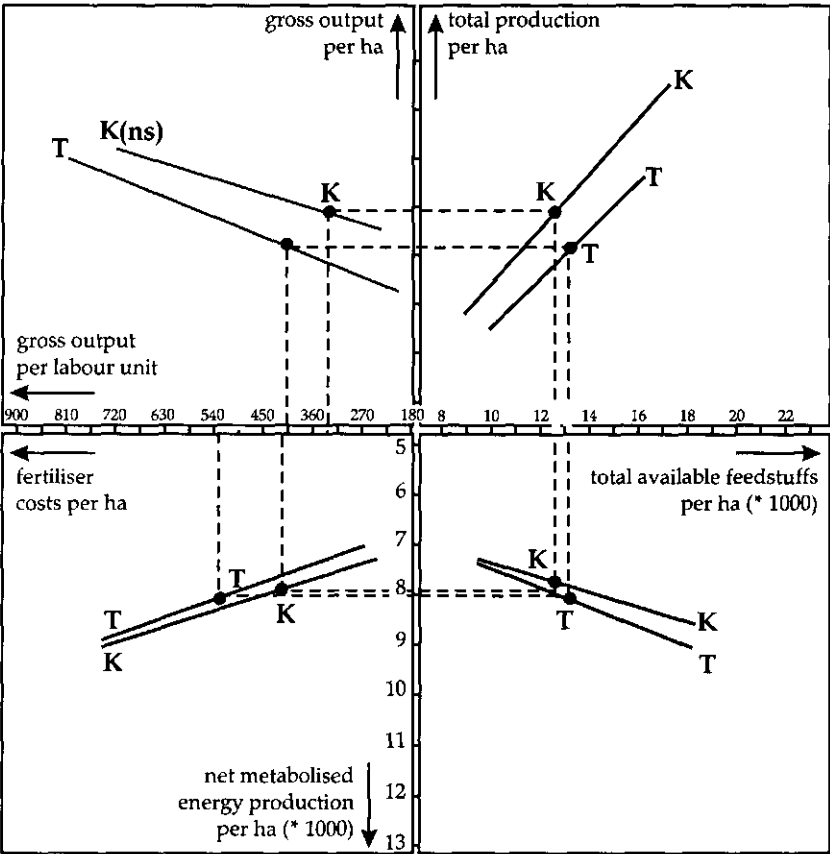
Figure 4.13 Directing the practice of cowmen from the fourth quadrant



From the perspective of their own strategy (their own, particular regulatory system), the approach of machinemen is a rational one. The relatively *low* efficiency in fields and shed (expressed in input-output terms) – in other words, the relatively *low* labour input in these quadrants – is essential in realising *high* gross output per labour unit. The rationale of the regulatory subsystem explains the apparently low level of 'efficiency' in the operating subsystem, for the former implies the latter. The more *rûch* (rough) the machinemen's approaches to field and shed, the better machinemen they are; and their incomes will be higher accordingly. A similar story can be told for all other farming styles. Again and again, the organisation of input-output relations (of operating subsystems) is run strategically. In every style, farmers create practices that correspond with their strategies. The operational subsystems (here represented by fields, shed, and the relationship with the feed merchant)

are ordered in every style by the strategic considerations prevailing in the regulatory subsystem. Styles of farming entail and express multiple response models.

Figure 4.14 Directing the practice of machinemen from the fourth quadrant



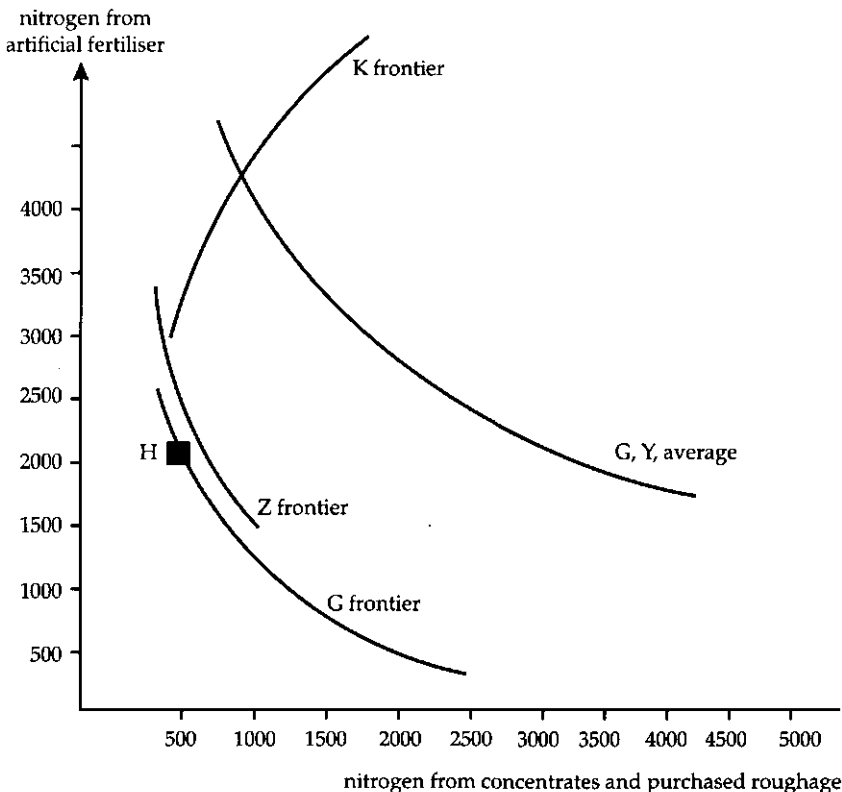
No normative importance should be attributed to the location of a partial input-output relation in isolation from the considerations applying in the fourth quadrant (in other words, applying in the strategy of the actors involved). From a distance, the input-output relations realised by e.g. machinemen in the first and third quadrants appear as 'less efficient' – seen from the perspective of their own strategy, however, it does involve a highly rational way of working. This implies that the solution employed in contemporary agronomy – that is, attribution of extra value to the 'highest' input-output relation (see, for example, WRR 1992) – cannot be maintained, because it ignores the different farming strategies.

4.8 Operating strategically in the first quadrant

Taeke Hoeksma's farm in the northern Frisian Woodlands is characterised by a remarkably high input-output efficiency. By standard parameters (or

'norms'), Hoeksma should have to buy considerable amounts of additional roughage or more concentrates. Through the years this has not happened at all. The farm was, and is, more efficient than the models allow.⁴¹ Hoeksma is a livestock farmer who records extremely accurately the goings-on of the farm over the years.⁴² Data on grassland utilisation, concentrate levels, and so on are available per plot and per animal, often for periods of more than fifteen years. Figure 4.15 emphasises the special position of Hoeksma's farm. It shows the amount of nitrogen from artificial fertilisers and the amount of nitrogen from concentrates and purchased roughage that are needed to produce 100,000 kilos of milk. The different curves refer to the 'frontier functions' inherent in various farming styles (K for cowmen, Z for economical farmers, G for large farmers and Y for intensive farmers). The position of Hoeksma's farm (H) is also indicated. At a single glance, it is notable that his farm is amongst the most efficient farms, in terms of nitrogen use.

Figure 4.15 The interrelations between milk production and total nitrogen use, specified for artificial fertiliser use and the purchase of roughage and concentrates



What are the reasons for this? How is it realised? How are the 'deviations' created that reach beyond the practices included in the available scientific models? My colleague Rudolf van Broekhuizen and I have had lengthy discussions with Hoeksma about this. He emphasised constantly that

there has to be a favourable balance between hectares, cows, quota, and feed. If the necessary balance is missing, costs will suddenly increase somewhere on the farm, and it is clear that you overstep the mark. The real skill is in rediscovering the balance.

Incidentally, Hoeksma substantiates this argument with a number of preconditions. First, such a balance is not static: 'you can't stand still'. At the same time, abrupt changes should not be attempted: 'in those cases, something will definitely get stuck and go wrong, gradual change is necessary'. Second, 'you need some size, you have to have the space'. More specifically, you need to have sufficient home-produced feed.

We have always wanted to be as self-sufficient as possible in terms of feed. But it is related to many things, including the way you use your land, how much of it you use for grazing, whether or not they go indoors for the night, what happens to the youngstock, and so on. Things will also go wrong if you have not enough cows per man.

Hoeksma emphasises that an intensive farmer too will pursue a particular balance, but it will be a very different balance 'from mine', he says.

Generally, the implications of the quota system have been very important.

The superlevy has been very important. Before, we were following the intensification idea slightly. But after '85 it became a matter of looking for and recovering what you had handed in first.

The latter refers to the strategy of farming economically:

After all, I am most of all an economical farmer.

On the way home from one of the discussions with Hoeksma, we suddenly realised that the implicit undercurrent in his explanation is the *uniqueness* of his own resources. Even though Hoeksma does not mention it as such, the particular takes central stage and is also strategic. One's own grassland cannot be exchanged for any other land but is made into something special (a few relevant data in this respect are low levels of artificial fertiliser, the use of 'Euromestmix' – a particular slurry additive – the fodder value of home-produced grass, and the low level of protein in fodder). The same applies to manure. It is handled so as to achieve the best fit with the farm structure and Hoeksma's style of farming. Hence, particular land, particular manure, and particular cattle. Thus, when Hoeksma emphasises 'balance' as an important regulatory principle, this relates not to abstract but to *particularised resources*. For this reason the balance is always a *particular* balance. This also indicates the particularity of the labour factor in this context: it is through labour (and its related knowledge, insights, experiences, capacities, etc.) that one's own cattle, land, fodder, manure, etc. become transformed into something special.

We discuss at length with Hoeksma the material included in Figure 4.15. The uniqueness of his resources and the particular balance constructed with these resources are constantly mentioned in the search for a possible explanation of his position (see H in Figure 4.15). During this search,

Hoeksma appears to be saying, *en passant*, that he does not know why things are related as they are. Ignorance of some issues is not absent from farmers; it is intriguing to see how they deal with it.

The first link that Hoeksma raises in the discussion of Figure 4.15 is the relationship between the production of 100,000 kg milk and the number of cows needed to achieve this. Hoeksma is very definite about this: 'To milk these 100,000 kg with as many cows as possible and at the lowest possible costs. That is the balance you have to find'.

Hoeksma has a Dutch-Friesian (FH) herd. He considers FH cattle to be an essential element within the relationships he has created. Additionally, "in this way you'll get more output and change in volume dairy cattle and you get a nice export price for in-calf heifers, especially at the moment". Hoeksma also explains the logic behind this statement. He systematically uses the variations that exist within the farm. For example, Hoeksma relates concentrate levels to milk yield (see Table 4.3). This relationship is checked per cow (and per group of cows). Thus he learnt that less productive cows (between 4,500 and 5,000 kg p.a.) produce most milk per kg of concentrates and that this results in the highest margin per cow (milk output less concentrates costs). The same applies to the seasons. One kg of concentrates results in more milk in the first and second quarters (7.1 and 6.1 litres respectively) than in the third and fourth quarters (2.5 and 2.4 litres respectively). However, since the milk price is higher in winter, the margin per 1,000 kg milk is roughly the same for all four seasons.

What is important is the low milk yield per cow and the relatively large number of dairy cows used to fill those 100,000 litres. The milk yield is now in the lower 6,000s. Thus, the choice to continue breeding with the 'old' Dutch-Friesian (FH) cows becomes an obvious one:

Personally, I think that those FHs are very efficient. They want to grow. They do well at both milk and meat. I think that you have to feed those Americans much more and they produce more shit.

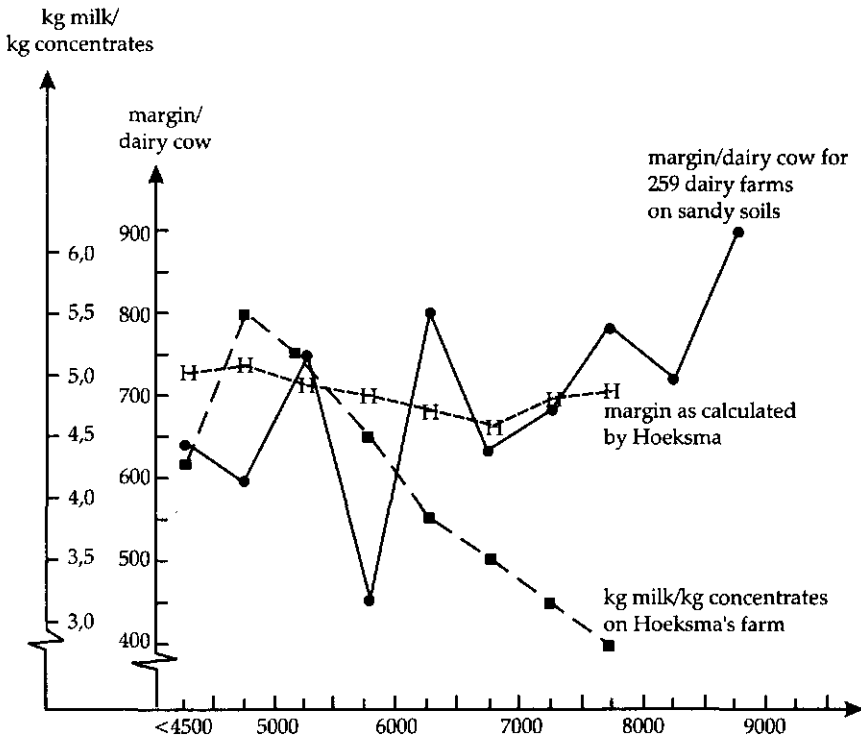
Here I would like to interrupt Hoeksma's explanation once again, to point to the importance of knowledge, the organisation of knowledge, and the *relevance horizon*. Hoeksma organises knowledge on the basis of his own farm. Experiences gained elsewhere are certainly not irrelevant. But as far as directing his own farm is concerned (the organisation of relations such as stocking density, milk yield per cow, concentrates levels), it spans, as it were, the horizon within which his experiences are relevant.

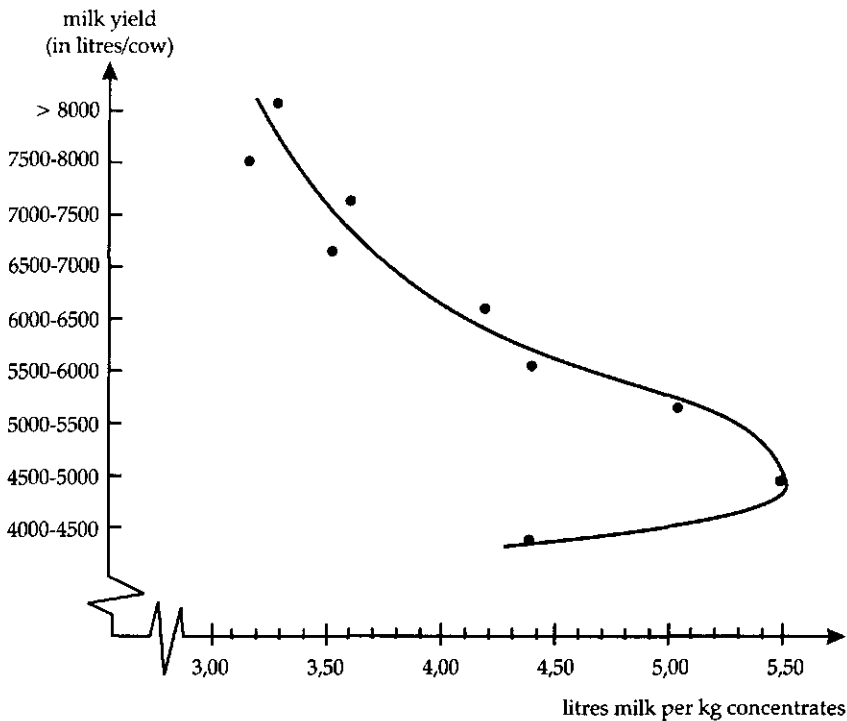
It appears from Hoeksma's records (see Table 4.3) that he starts from the variation within his own farm in order to determine the relations that he wants to develop. On the basis of this he sets out the course to follow. All this might seem obvious – its importance arises as soon as we address another alternative for comparison. That is, the one in which attention is mainly focused on the variation *between* farms, when every farm presents one unit of observation (that is, when is abstracted from the variation *within* the farm).

Farm comparison is one of the most important methods used in advisory services and in management support. Following this view, the first graph included in Table 4.3 contains a line representing the margin per dairy cow at various levels of average milk yield per farm. Thus a completely different image appears: high-yielding cows generate (on average) the highest margin per cow. If Hoeksma based his calculations on such a representation of data, he would organise the internal relations on his farm completely differently. However, based on his own perspective (variation within the farm as the most relevant aspect) and his own norm (kg milk per kg concentrates), Hoeksma concludes that a low milk yield and a large number of cows to milk the quota is the optimal solution.

Table 4.3 Hoeksma's notes (including two additional graphs)

Production level	Number	Litres milk per kg concentrate	kg concentrates per 1,000 kg milk	Concentrate costs	milk price	Margin per 1,000 kg milk
> 7,500	10	3.27	306	132	80.40	672
7,500-7,000	15	3.40	294	126	80.40	678
7,000-6,500	8	3.60	277	119	80.40	685
6,500-6,000	18	3.94	254	109	80.40	695
6,000-5,500	18	4.45	224	97	80.40	707
5,500-5,000	9	5.11	196	84	80.40	720
5,000-4,500	6	5.47	183	78	80.40	726
4,500-4,000	3	4.35	230	99	80.40	705





The relevance horizon used in combination with one's own particular norm (in short, the particular structure of knowledge and the ignorance defined by it) are decisive factors in the organisation of a particular practice. These are the structuring elements *par excellence*.

A study by Leeuwis (1993) emphasises that this is not an exceptional case. He related various methods for the organisation of knowledge (i.e. internal farm comparisons; comparisons between farms; and comparisons between one's own farm and the norms) to various farming styles in the Achterhoek region.

Table 4.4 summarises the results. It can be concluded that every style contains its own *relevance horizon*. 'Fanatical farmers' (a traditional term in the Achterhoek referring to rapidly expanding, intensive, large-scale farms), for instance, regard comparison with previous years as relatively irrelevant – for farm development is a constant break with the past. They also regard comparison with other farms as completely irrelevant. They do not learn anything from it at all – for the farm of a 'fanatical farmer' is by definition better than other farms. Only the norms constitute a relevant point of reference.

Table 4.4 The relative importance attached to various possibilities for comparison in DELAR*

Compared with	<i>double-goalers</i>	<i>economical farmers</i>	<i>practical farmers</i>	<i>cowmen</i>	<i>machine men</i>	<i>fanatical farmers</i>
Previous years	+	-	+	++	-	0
Other farms	0	+	+	-	+	-
The norm	-/+	0	-	0	0	++

Notes: — relatively much less important; - relatively less important; + relatively important; ++ relatively very important; +/- large range compared to others; 0 average compared to others.

* DELAR is a farm accountancy system for the dairy sector

Important for fanatical farmers are the aforementioned norms indicating the production potential in case the farm would be farmed optimally. These are points of reference derived from scientific models. On the other hand, cowmen have a completely different point of reference: above all they compare their performance with the one of previous years.⁴³

Let us return to Hoeksma's story. He has kept accounts of dry matter production per plot over many years. He combines this with the results of soil samples and with the data on fertilisation. Every time at mowing or ensilaging the amount of dry matter (dm) is estimated. 'We can do that by now.' The same applies to grazing. 'I assume that a cow eats about 15.5 kg dry matter per day (sometimes a bit more, a bit less at other times, but that should be it approximately).' Multiplication by the number of days will result in the dm output. For a whole year, this will result in the total dry matter production of the plot.

The dry matter output per hectare is unusually high: more than 11,000 kg dm/ha. Calculations conducted by the Agricultural Economics Research Institute (LEI) confirmed this although they didn't understand why.

It is interesting that the LEI couldn't get it 'right' initially. The LEI always calculated a feed shortage on this farm. Two of their people have been here, we went through the whole lot, but they couldn't work it out . . . They solved it by adding 10 per cent in our case.

Why does his own grassland produce so much? Hoeksma (without being completely certain) makes a connection with, *inter alia*, the use of Euromestmix (a slurry additive). He started using the additive 'because we saw that the quality of the soil and the turf declined rapidly, the pastures became more hollow'. After applying Euromestmix, the amount of humus in the soil increased and the turf became denser.

There's quite a lot of poison⁴⁴ in slurry, which doesn't help the rooting, and maybe this Euromestmix does neutralise the poison . . . Anyway, there's more dry matter in the manure now and more magnesium too. And we have started to graze a bit more, which probably helps too.

Hoeksma is strongly opposed to grassland improvement:

It has happened here on some corners, but I don't see the results really. You bring the lesser soil to the surface, but it's the topsoil that you need because that's where you find life.

Of course there are differences in dry matter output one year to the next, but that is mostly related to the weather . . . Do I still benefit from the N supply in the soil? No, I don't think that it is that important, the humus content is more important in my opinion, but I admit I cannot rightly explain this.

Our grass is far from optimal in the eyes of many. It is not just rye grass, there's all sorts, some meadow grass too . . . The field in front of the house is a hundred years old . . .

We move on to the next relation: concentrates.

If the quality of home-produced roughage is not as good, for example because it's been wet weather and you have to mow later, you'll have to use a few more concentrates. That's what happened last year. You have to do that because you want to fill your quota. If we didn't have the quota, I would readily milk a bit less. Up until 1985 we always used about 230,000 kg concentrates per year. It then went down to 123,000 kg in 1991 and 1992. Then we added a bit more milk (+ 25,000 lit.) and then concentrates rose to 160,000 kg. In fact, I don't like it. In the milking parlour we feed them concentrates individually depending on their milk yield, and then they get more again at the trough, but this is the same amount for all of them. Yes, I do pay attention to the displacement effect, but it depends on so much else. In winter the butterfat is higher with concentrates, but if it is too high you'll have to give up kgs, you always have to look for the balance. At the moment, I think that we feed a few too many concentrates in winter.

Yes, it is possible in principle to replace artificial fertiliser with concentrates . . . But I don't think you should gamble too much on it. No, I don't think in terms of 'a bit less fertiliser and a bit more concentrates'. It doesn't work like that. What I want is to lower the amount of fertiliser while keeping concentrates at the same level. Economics plays a part in all this, and your own line is very important too of course. You can't just give less concentrates, everything would become confused then, the balance would be lost. You can't do that at once, but you can do it gradually . . .

The latter statement illustrates an important point. As discussed previously, it is often assumed by agricultural scientists that farmers move along the presupposed production function in their search for an optimum (especially if they are encouraged by changing market relations). The theme of many discussions about environmental policy was 'what will farmers do if artificial fertiliser becomes much more expensive? Or if taxes on concentrates are raised?'

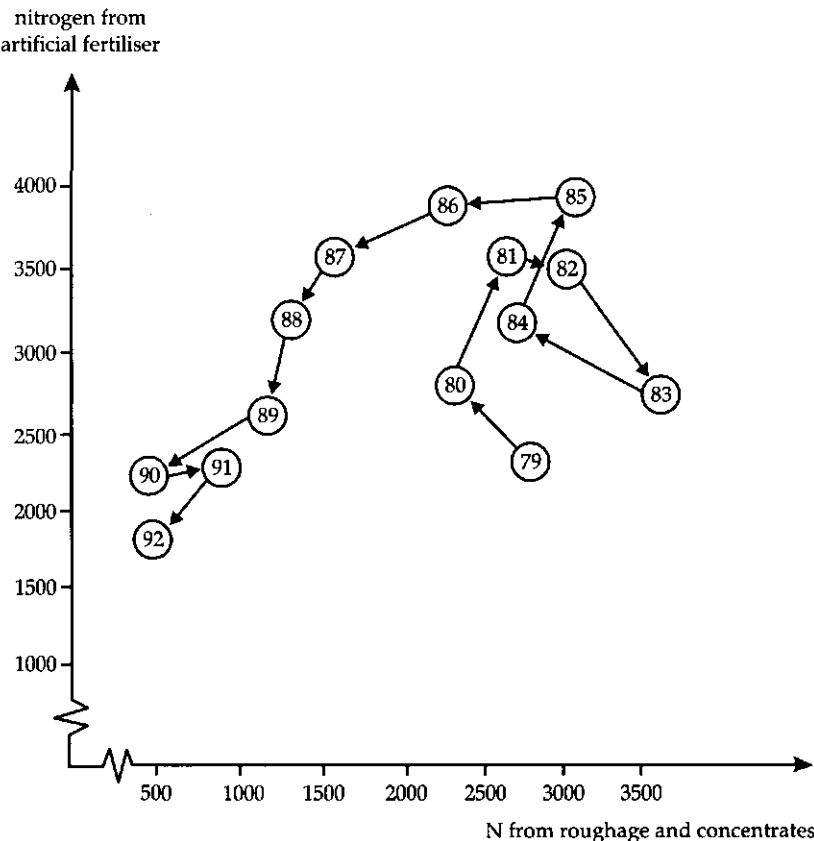
'Moving along the function' is an idea that does not sound very plausible to farmers ears. First, because such a partial modification clashes with the particular balance that they introduce into the farm *as a whole*. Second, it is questionable whether partial relations are ordered and – if necessary – reordered on the basis of economic considerations and calculations. Levels of fertiliser and concentrate use originate more from considerations

about other factors, such as the minimisation of risk. Or they are derived from the dietary needs of one's own cattle.

Perhaps even more important is a third issue. Farmers are not so much interested in moving along a function. They are, instead, constantly involved in creating new functions. We have indicated the position of Hoeksma's farm (on the basis of analyses based on available accounts) for various years in Figure 4.16, based on the same space as defined in Figure 4.15. It can be observed clearly that moving along an imaginary function hardly occurs at all.

What does happen on a farm such as Hoeksma's is a constant process of innovation – both on an annual basis and plot-wise. New connections are established, new regularities created and hence always new, initially invisible horizons are brought within reach as a result of these innovations. That is, Figure 4.16 shows how new regularities (or new 'functions') are actively created.

Figure 4.16 Nitrogen flows required for the production of 100,000 kg milk, specified for various years on Hoeksma's farm



This leaves us with the last link in Hoeksma's farm, concerning the quality of roughage:

I think that there's less indigestible crude protein in our feed, less protein and such matters. That is because we spread less N and so you get different feed, which results in less ammonia emissions (because of the lower levels of indigestible crude protein). Our protein level has also been calculated. It is lower too. Yes, I do like to think about these things. Usually, an ammonia emission of 8.8 kg per cow in the shed is used in calculations in the Netherlands. This would be 4.4 kg in a Green Label shed. The Animal Health Service has measured the ammonia levels here and they are 4.4 and 4.7 for the front and the back of the shed respectively! Even the relation between ammoniacal N and organic N in manure is different here from the Dutch average (2.3 as against 2.8). This implies that ammonia emissions will be lower.

The discussion that brought all this up was held on 2 February 1995. More than one year later, Van Bruchem broke the spell in the world of agricultural scientists by pointing at the, up to then, insufficiently recognised importance of the percentage of crude protein in roughage. The metabolised energy production of a hectare of grassland is increased by high nitrogen levels. Above all, however, the crude protein percentage is increased – to the extent that protein appears of hardly any nutritional value. The proportion of protein to energy inherent in grass no longer corresponds with the nutritional needs of dairy cattle. The protein surplus in grass (partly produced by high nitrogen input) is lost as ammonia or whatever. It can no longer be digested by cows. According to Van Bruchem, a crude protein percentage of between 12 and 14 per cent is optimal.

Subsequently, I rang Hoeksma. I had to wait a moment, but as soon as his papers of the silage analysis are within reach he reads them out to me – measured at the bottom, at the top, in the back and in the front of the silage pit, for more than 5 years. The data always fluctuate between 12 and 14 per cent. I am amazed. I pointed out previously (*inter alia*, in Van der Ploeg 1987, 1993) that institutionalised research is disconnected from the practical laboratory called agriculture. However, I am again disconcerted that this disconnection could lead to such important findings into crucial issues being ignored or excluded. It would disconcert me even more at a later stage when conducting research (together with Van Bruchem, Brussaard, Bouma, and others of the Agricultural University, and with colleagues from the Research Institute for Animal Husbandry in Lelystad) into the novelties hidden in farms such as Hoeksma's is highly frustrated by the expert system.

4.9 Operating strategically in the third quadrant

Just before the summer of 1995, I had a long discussion with Alfred Oostindie. He farms in the north of the Dutch province of Drenthe. Henk Oostindie, a colleague in our research team, accompanies me. Alfred is his brother.

If Taeke Hoeksma operates principally, if not exclusively, in the first quadrant, Alfred Oostindie is a farmer who concerns himself primarily

with the third quadrant, with the conversion of feed into milk. He says about his farm:

I am in a partnership with my cousin on 60 ha of land, 48 ha grassland and 12 ha maize. We milk about 100 cows and have about 200 cattle in total. Our milk quota is about 800,000 kg. We have bought some milk quota over the past years, but I don't know exactly how much. I think we started off with about 750,000 litres. We strive for a milk quota of about a million. It will fill the shed nicely. We have to have the times on our side. The question is of course: what is going to happen to the quota? Opinions differ about this. Two of us work here full time. There are two other guys who help out on a regular basis. Others do some work for us too. Contractors do quite a lot on the farm. I think we can manage a million litres. When you're a cattle farmer you have to concentrate on the cows. You should really farm out all the other work . . . If it is done by the contractor, you might have less control over the way you obtain your roughage. That's the price tag that comes with it. But we can't do the 60 ha on our own . . . Silage, the winter ration, revolves around the first cut, that is what high-yielding cows have to live off. The rest of the silage is really of secondary importance. You try to produce the first cut well, so you can milk well. After that you mow for the benefit of grazing, that way you're more independent of the weather. If you mow in phases, you have a phased pasture. Otherwise you only have a few days of very nice pasture for the cows and soon it'll be too long or still too short. If you mow in phases, you have the same quality all the time. The fact that the roughage is of a lesser quality sometimes is not as important, you can feed it to the yearlings and the old cows. Other farmers might do it differently. Every farm has its own policy, it's hard to compare between farmers. One will do more with their cows, another looks more towards grassland, a third to machines, or they are more engaged with arable agriculture. If you add it all up, you might end up with something similar.⁴⁵

'Every farm has its own policy' – I would like to emphasise this statement.⁴⁶ Oostindie's 'policy' is concerned with the third quadrant. As a cattle breeder par excellence, Alfred is able to explain, if not unravel, a number of the mysteries situated in the third quadrant. That evening we were going to present him with a number of research results that played an important role in current analyses. These involved the essential question of why there are empirical differences in input-output relations. I remember vividly the *aha Erlebnissen* I experienced several times during such discussions.⁴⁷

I will quote Oostindie at length here. This is necessary in a book in which the voices of the past, of Hemmema and Koorn, and imaginary voices, such as of the Nijboer fan Lycklemastate and Daniël fan Kuken have already received so much attention. This is a story about the here and now. Before I present this story, however, I think it is appropriate – as an introduction – to point to a number of essential similarities between the stories of Hoeksma and Oostindie.

Gradualness is a theme emerging from both explanations. If Hoeksma was very clear about this, also Oostindie emphasises that 'things should be

given time'. The same goes for the particular balance that has to be created in every farm. Again, 'every farm has its own policy'. This will be illustrated at length for Oostindie's farm in the following quotations. The *particularity* of one's own resources emerges as a third, uniting element. If in Hoeksma's case this concerns mainly grassland, feed, and manure (and cows too of course), in Oostindie's case it is first and foremost the cows and the related breeding policy. The particularity of one's own cows is emphasised. Also demonstrated is the pillar on which this particularity is based. This is the *knowledge* of bloodlines of the dames and the related capacity to select appropriate blood lines on the sire's side.

These are precisely the types of factors that escape the reach of the sciences. Just as Hoeksma's grassland defies scientific models, the meeting of dame and sire lines defies breeding science; for breeding as a science is based exclusively on the influence of the bull and avails itself to this purpose of the law of large numbers. Thus appears an opportunity for farmers such as Alfred Oostindie, who operate in their own ways.

A fourth issue of similarity is that the particularity of one's own resources is recognised and further developed on the basis of a meticulous estimation and assessment of the *relevant variation*. If the variation among cows (especially in the relation between concentrate levels and milk yield) and the variation among plots was important in Hoeksma's case, in Oostindie's case the importance lies in the variation in bull choice (surpassing the boundaries of his own farm, it is *de facto* a global assessment) and its relevance for those bloodlines present on the farm. A bull is not assessed on general terms. Instead, the discussion deals with 'which bull will do well on *our* farm'. The horizon may be global but the reference point for evaluation remains strictly local (see also Long 1996).

A fifth issue of similarity is the search for relevant variation in order to utilise this as optimally as possible.

A sixth issue concerns the clear identification of *objectives*. Both Hoeksma and Oostindie know extremely well what they are aiming for (although they have very different objectives).

The same applies to the seventh issue that I want to raise here briefly. The course is set out within a sea of *uncertainties*. Even though Hoeksma and Oostindie can well be called masters in grassland production or cattle breeding, both operate in a field determined by numerous uncertainties, question marks and mysteries. Maybe their mastery lies precisely in that they are able to define beacons in a sea of uncertainties and ignorance and from this they are able to set out their real course.

The eighth and final issue is concerned with the *language* in which this 'mastery' results. All kinds of apparently vague and partly overlapping terms are central to Oostindie's story. Collectively they compose an intriguing *art de la localité* (Mendras 1970; Van der Ploeg 1993; for a critical discussion, see Wyrne 1996).

'What is important in breeding is bull selection. You don't just look at INET, but also at bloodlines. There are very many bloodlines . . . The bull that I use for breeding has to project the image of Ixanhoe. There are bulls that only

have about 20 per cent of *Ivanhoe* blood but still pass on the image of *Ivanhoe*. On the other hand, there are bulls that have 80 per cent of *Ivanhoe* blood while *Ivanhoe*'s image does not surface at all. *Ivanhoe*'s bloodline always works well on our farm, at least on average better than other bloodlines. I have used quite a few bulls, as you do when you're young and on the look out. You try bulls that do very well on other farms, but you end up with nothing.

Then I arrived at Starbuck, the best sire at the moment, most of the bulls sold are his. His daughters were said not to be too good, but I didn't believe this, and I used him anyway. Starbuck gave us some very good cows. After that we used him a lot and, without exception, it works out well here, although others complain about it. We breed *lifespan*, which means: a cow that lasts a long time, wants to produce a lot and gives us a high production at the end of the day. You can arrange that in different ways.

AI is based on INET – that is, production during the first lactation. The higher a heifer's milk yield, the higher the INET of the sire. The same heifer might get into problems in her second lactation, she might have given her all. Many farmers use bulls with a high INET, but we think it is very very wrong. A heifer should be able to develop herself, she should not convert all her feed into milk. A heifer should have the chance to develop into a cow. A heifer weighs up to 200 kg less than a mature cow. If a heifer is an incredible milker, it will remain a small animal. The following year you'll get problems. It should be the case that a heifer milks 8,000 litres, as a second calver 9,000, she should only start milking properly as a third calver, 10,000, 11,000, 12,000 litres. Many heifers that start off on 9,000 litre might produce another 9,000 after that, but you'll never hear of her after that. They no longer exist.'

'Ever since INET was adapted in the Netherlands, the average age of cows has gone downhill fast, I'm convinced of that. Cows should develop gradually, they should grow to the top gradually. They have to start out well of course, for if they start at 6,000 you know they'll never get there. Or they had certain problems. Heifers very often have problems. They change teeth at the age of two, at which time most farmers let the heifer calve. A heifer is on average a more difficult calver than an older cow. They can have a lot of trouble with lubrication, with torn vaginas, and so on. And if you have a harsh environment on your farm and cows have to get to the feed at the trough by themselves, a heifer will always end up in the back. If you then select heifers, you might actually sell the wrong one. You have to be patient with a cow, especially if you breed *lifespan* as we do here. We also take the time to wait for that third calver. There are farmers who say they breed *lifespan* but don't allow the heifer to actually live up to this. The way in which you breed and your farm policy should follow parallel lines.'⁴⁸

A beautiful cow to me is a cow that wants to get old and that gives a lot of milk. Wanting to be old is related to exterior. This combined with production, that's what matters; even if the two are mismatched sometimes. I breed a cow that wants to get old with a high production.'

'Yes, we have used different kinds of bloodlines on the farm, and it surprises me every time that the bulls that do best on our farm are the ones that project the image of Ivanhoe. So you pay more and more attention to those bloodlines, and then you're doing well in breeding. We have stood still for a while, because we were looking around. Ever since we have found it, we are prospering; both in terms of exterior and in terms of production.

We're talking about great-grandchildren of Ivanhoe here; Starbuck is Elevation * Ivanhoe, and the mother's father of Astronaut was Hellton Apollo Ivanhoe, who's father was Ivanhoe; Starbuck's father was Elevation, and his mother's father was Ivanhoe too. Therefore, Starbuck is an inbred product of Ivanhoe; while you're already generations down the line, it is possible through inbreeding to get a bull that is close to Ivanhoe and that has preferably improved on certain characteristics, i.e. Starbuck's weak points. So Ivanhoe was the best bull for our farm. Viewed from every possible angle, you have more cow and you have more milk. The cows became heavier, they have better udders, better overall exterior, and milking improved, cows gave easier. That was the bloodline that we wanted to continue.

At a certain point, when we have used up Ivanhoe, that time does of course arrive at some point, you'll have to look for another bloodline. It becomes possible to make another leap then. Of course, you'll have to find your bloodline, although I have already an eye on a bloodline to continue after Starbuck. My parents used to have a cow, Aleida 54, this whole shed originates from her; directly, via the mother line, or indirectly via a son. They all have that blood in them. After that we looked out for new bulls; it seemed that bulls with Astronaut blood were doing well here, especially Tops. We used mainly Tops here at the time. A large part of the shed, maybe even 75 per cent, has Tops blood in them. Tops blood * Aleida 54, that is pure blood in the shed. That is why we have a uniform shed of cows. The cows have all been crossed by one of our own bulls.

Now we enter Starbuck as a bull that fits our farm. In 2 years time, all animals will have Starbuck blood in them. The old cows don't have that yet. We will use Starbuck or sons of Starbuck, nothing else. I don't do double-crossing. I don't do Starbuck son * Starbuck himself. It becomes too much then. That's why I am now looking for a new line with Starbuck blood, and then I arrive at Chairman. Chairman is Middle Betty son, with mother's father Ivanhoe, which brings us back to Ivanhoe. We already have descendants from Chairman, the first ones of those are again the best ones. It gives you the courage to continue.

Chairman is interesting for our shed because we have to move away from Starbuck. Everything is Starbuck. You have to find a new line. Chairman projects mainly an image of Ivanhoe, that's why we go for Chairman. We have tried a few other bulls, but they didn't do as well as Chairman did. He has the image that is closest to Ivanhoe.'

'About one per cent of Dutch farmers focuses their attention to bloodlines just as we do on our farm here. Maybe not even 1 per cent. Maybe one tenth of a per cent work like us. Endedijk in the Veluwe is someone who breeds purely on bloodlines. But the bulls of that farm don't do very well elsewhere.

Because those bloodlines fit in well with his bloodlines, but not with others. Here on our farm Ivanhoe's bloodline fits in with Aleida 54's bloodline, that's what happens here. There are bulls that work well on every other farm but ours. Then again, we are the only farm with that much Aleida 54 blood. Aleida 54 was my father's creation; it was all Knol blood, an inbred product of breeding farm Knol, the best breeding farm in Friesland.⁴⁹ My father used only Knol blood in breeding – Adema 469 and all that lot.'

'I am thoroughly convinced that you can achieve more with what we breeders know than with what scientists say. That is because we also look at the mother line. They only look at the father line and use only averages in their calculations. If there's one thing you cannot do with cows it's use averages. It can't be done.'

We presented research results to Alfred Oostindie. These concern the highly variable nature of input–output relations embodied in cows and were drawn from a study by the Agricultural Economics Research Institute, the Farm Management Group, and the Rural Sociology Group (the latter two are both part of Wageningen University). The research results are summarised in Figure 4.17. We asked Alfred Oostindie for his responses to them.

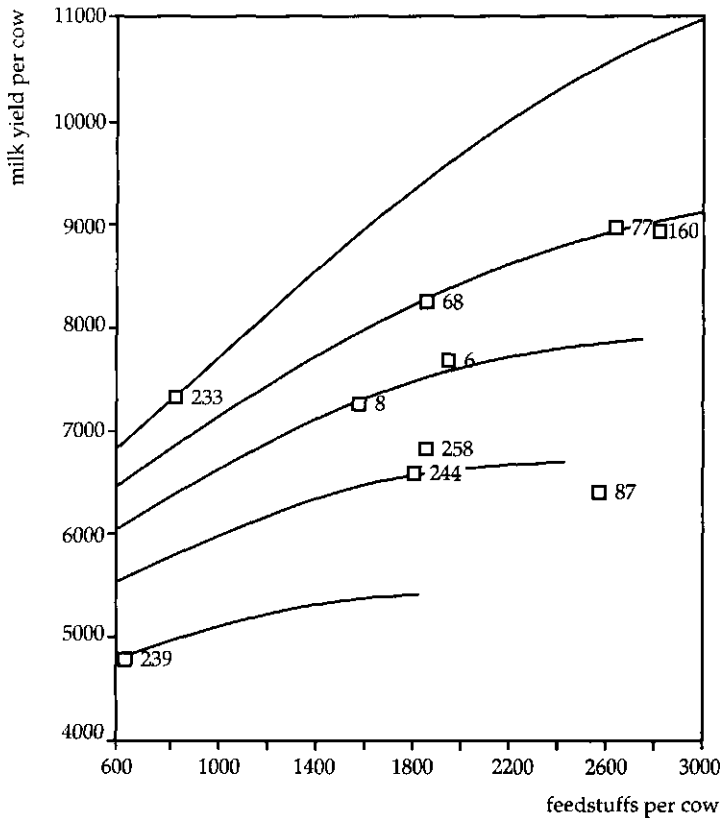
'Which line a cow is on depends on what a cow is able to take up from feed. Then you're talking about genetic capacity. Compare this with pigs. One pig grows faster than the next with the same feed. This has nothing to do with the volume of a cow or whatever, what matters is the amount of milk that cows can produce from the same amount of feed. It has nothing to do with exterior, only with the workings of the gut. I cannot explain it any other way. If that functions optimally, and you can put a lot of feed in her, and the cow can take it all, of course you'll get closer and closer to the optimum. Only if you talk about increasing the amount of feed, then you'll move along one of those lines of yours [ref. Figure 4.17], you'll end up with the cow's exterior, and so with the cow's volume.'

'Why is it that one cow can get more out of feed than another and so is on a higher line? I don't know much about that. That's all to do with feed conversion.⁵⁰ We have cows that are on all of those lines. A cow of heavy build with a lot of room that gives little milk is on one of the lower lines. She has the capacity and she feeds well, but she doesn't produce anything. The Gamblers are on one of the higher lines. They're not much of a cow but there's no stopping them; it's Chairman blood, you see. They are slightly weaker cows, they don't age well. We cross them with Starbuck, to get the volume. You'd want the cow to get her volume from Starbuck and the Gambler's efficiency.'

'But there's something else. The Gambler's have the capacity to produce a lot of milk from little feed, but they are quibblers. They don't have the courage. They could give even more if they were more hardy. There are cows that can do it, but they don't have any appetite. Just one person eats much more than the next. One grows well, while the other does not add one inch. Tops' cows eat all the time. Appetite and character are two important issues. A cow has

to have character and appetite. We had a Tops once, she was the head of the shed, she also produced an incredible amount of milk. Her descendants also give a lot of milk, they have the same character. Those are the cows that, if another cow enters the concentrates box, run in to chase that cow away as soon as the concentrates come down. Those are cows that produce more than a quibble that walks out of the concentrates box, like the Gamblers.'

Figure 4.17 The differential nature of input-output relations in the third quadrant: the relations between concentrate intake and milk production



Appetite and character – these are two key concepts with which Oostindie assesses and judges the regulatory system of his cows. They are also concepts with which he actually *directs*. Through a particular bull selection (more precisely, through the combination of bloodlines) he influences and shapes the RSc in such a way that the desired input-output relation appears. This becomes increasingly clear in the course of the discussion.

'I can name a bull for every line [in Figure 4.17]. Tops, with its enormous volume capacity, appetite, and production, is situated on a high line. For the bottom lines, i.e. a lot of volume and appetite and still little milk, I think, for example, of Berend 4. Cows built like houses that produce little milk. These

cows have everything, they just don't convert it into milk. They shit it all out, so it comes out at the wrong end.'

'Gambler had a low INET, while his efficiency was brilliant. Together with Royalty, they would tower far above all other bulls. Gambler had bad legs, very bad legs, so its capacity never surfaced. Those cows were chased away from the trough, or couldn't even get to the trough, because they didn't get out of the cubicle due to hurtful feet. That's why we have paired that bull with cows with incredibly good legs and a terrible character. We discovered this later, for Gambler was around years ago. Some of the calves are still with us. They have very good legs and character. You can see that straightaway, they are good calves'.

'Everybody always talks about the use of new bulls, because it resembles speed and progress. The adequate complementary pairing for us is progress, and that's why we have used Gambler again. Those Gamblers that we have now are very good cows. His INET might not have been that high, but if you pair him off well he probably has a very high INET. If you pair him with a cow with very good legs, such a bull might have an INET of 1,000. If you pair him with a cow with bad legs, such a descendant might have an INET of 100, or maybe a negative INET, because those cows won't get to the trough.'

'So everybody has cows on higher and lower lines. You can easily identify which lines they're on. This capacity is part of the total package of why you keep a cow on or not. By the way, it is one of the most important issues of cows. If a cow on a high line has bad legs, is unable to milk in the parlour, has a bad character, or it is a quibble of a cow, whether or not she is on a high line doesn't matter, she will go anyway. Cows on a lower line will probably go too, because they're at the bottom. Cows on the middle line, if they're OK otherwise, you should try and get them onto a higher level and take the rest with them. Cows on a higher line have an advantage of course. They'll have to perform a lot less on other aspects before they go out.'

'The capacity to convert feed into milk is strongly related to bloodlines of both father's and mother's side. Every breeder knows this. Someone who really thinks about pairing, who has proved himself in breeding, someone who knows what they're talking about, can name bulls to go with it straightaway. Then you're onto those lines in your figure. And if it's about moving either left or right along such a line, i.e. feeding more, it'll bring you back to the exterior story. You need a cow with volume, a cow that can eat an incredible amount. But it's not as you can say: a cow with a lot of volume, a long lifespan, high production, is on a high line. You'll never find an efficient conversion of feed into milk in the exterior. But the top INET bulls are all on a high line. It has to be like that. They have both the capacity to easily convert feed into milk and volume, thus the capacity to eat, and good legs. They can't have too many daughters that fail on farms, because then their average will tumble.'

'The capacity to convert feed into milk depends on the gut – that is, if feed conversion is indeed determined there, I don't know this for certain. We all breed to improve that capacity, but of course not via the exterior. Those are bulls that produce daughters that give a lot of milk easily. And to give a lot of milk easily means that you don't have to feed them concentrates by the

cartload, but they can milk nicely on roughage. There are cows that don't want to, even if you feed them by hand. And there are cows that you leave alone to get on with it and there's a splash of milk in them. You notice that from the daughters of a certain bull of certain families. We have a mother line and whichever bull you use on them, they'll give milk. They have that capacity strongly. On the other hand, there are mother lines whose descendants do not give any milk, whatever production bull you use on them. If you want to bring such a mother line – which obviously has to have other qualities otherwise it would have long gone out – to a higher line, you'll need at least two pairings with a production bull. The first time, for example, Gambler and the second, as far as I'm concerned, Valliant Royalty. Then you'll be able to remove that. You'll probably be higher in your feed conversion, but you'll take a step back in exterior. As long as that cow has something extra in terms of exterior, it doesn't matter so much. Primarily, of course, it all revolves around the milk.'

'The story relates partly to the level of concentrates. You can always move towards 0 kg concentrates. It makes no difference to the cow. On the other hand, you can't move beyond a certain amount of concentrates. That's when the cow decides, because she'll get ill. The fact that one cow uses more concentrates than the next to produce, for example, a yield of 9,500 is purely breeding. It is genetic disposition, which you can only breed into it. So if you want to achieve a high feed conversion, you have to choose bulls with daughters that milk easier than others, that have volume and enough appetite. The cow needs to want to be at the trough to eat the best bits out of it.'

'There are cows that just don't want to eat, they only want concentrates and as little roughage as possible. Those are fusspots. We have a cow that throws herself at maize until she has to draw breath, or else she dies. Then she starts to chew, and chew, and chew, and then she throws herself back into it again. Her daughters have the same feature. There are also cows that will always go and visit their neighbour to see whether it's nicer there, and keep looking and looking. It is purely a difference in appetite. One cow likes eating better than others. Some cows are really always eating, those are the roughage consumers.'

4.10 Conclusions

I wrote this chapter out of a need to move beyond the technological determinism that largely colours and pervades agricultural science. The core of technological determinism can be defined in terms of the previously discussed definition of Bordewijk. By representing agriculture as an application of scientific laws (laws, *inter alia*, symbolised by production functions) and by 'transforming' these laws into new artefacts and new patterns of action – in short, into new technologies (which are superior, since they contain higher level production functions) – farming appears as a range within which only one option is available: the application of new findings, insights and technologies specified by science. A farmer who refrains from this will be hit mercilessly by cut-throat competition. He (or she) is left with costs and revenues that are

respectively higher and lower than for those who do apply the new technologies adequately. This has been aptly called the 'technological treadmill' (Owen 1966; Marsden 1998a).

I have pointed out in this chapter that the construction of production functions can only take place by ignoring the fact that farm labour is a goal-oriented, multidimensional, and reflexive activity and also by ignoring farming as a highly differentiated activity.

Farming is a strategically controlled practice, which constantly is creating different and new regularities. The conversion process is always folded through the insights and interests of those who are involved in it. It appears impracticable to use only one criteria for ordering the variegated set of practices that emerges. What appears, for example, less efficient from an abstract point of view can be highly desirable within the particular rationale according to which such a practice is developed. The empirical regularities (particularly the empirical input-output relations) provide information *not* so much about underlying natural laws, they refer above all to different ways in which farming as socio-technical practice is conducted and ordered. Thus they refer in part to the extent to which nature is folded and transformed, to the ways in which socio-technical practices are unfolded.

The influence of agricultural science is enormous in a country as the Netherlands. The ecology of the Netherlands has been changed and dramatically standardised as a result of applying the insights of agrarian sciences.⁵¹ Similarly, labour objects and tools are increasingly produced according to scientific designs. Labour too is 'moulded' from the scientific point of view, via an extensive system of training and advisory. The actual labour process is largely driven by prescriptions for action that have arisen from science. The unfortunate notion of 'best farming practice' is an important vehicle in this. Finally, the possibility for 'deviations' to occur – so often the starting point for endogenous development – has been highly reduced, particularly due to the established standardisation. Agricultural science has manifested itself above all as a globalising factor in Dutch agriculture.

Having said that, it should be stated that farming as such cannot be understood but as a meeting place of global and local factors. In this meeting, farmers make a particular selection of global elements to incorporate within a set of relevant local parameters and practices. Such selection and incorporation imply usually a transformation: a deconstruction and recomposition that sometimes involves a dismantlement but often also an enrichment. Van Broekhuizen (1989) has demonstrated this convincingly with respect to the already highly globalised supply of 'bulls'.⁵²

Frequently, added value (also in input-output terms) is realised in the practical application of global notions, artefacts, and procedures surpassing the limits initially anticipated by agricultural scientists. The previous explanations of Oostindie and Hoeksma are, in this respect, illustrations *par excellence*. They particularise (relocalise) their stock of

resources and knowledges to such a degree that new combinations and patterns emerge that should be the starting point and the object of new, multidisciplinary agricultural research.

Incidentally, the same applies to some exceptional agricultural scientists. They too particularise, on the whole, certain resources (such as the 'natural enemies' of Marcel Dicke 1988) and/or develop perspectives through which the particularisation of resources and/or of resource combinations become perceivable, understandable, and developable. Their findings too should provide a starting point for new, multidisciplinary research. However, the newly required links between agricultural research and promising farming practices are rarely established. The same applies within agricultural science: the required links between new insights and the mainstream research agenda hardly emerge.

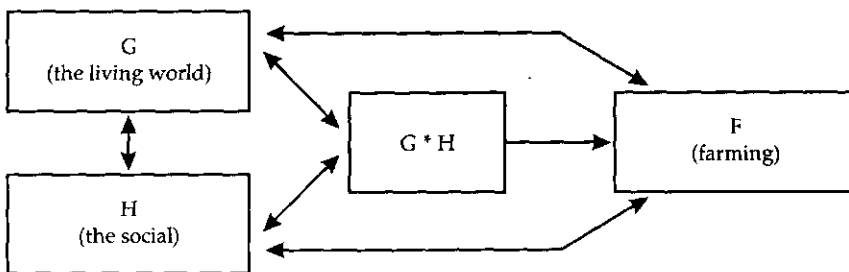
I will conclude this chapter with a few methodological comments. The material expression of technical subsystems is conventionally expressed as:

$$G + E + G * E = F$$

where G (the genotype) stands for nature (the immanent laws to which Bordewijk *e tutti quanti* referred and refer), E (the environment) stands for the objectified set of growth factors, and F (the phenotype) stands for the end result: cows and fields and their inherent production functions.

This chapter suggests that several changes to this formula need to be made in order to understand the nature and functioning of technical subsystems (see Figure 4.18).

Figure 4.18 The core of co-production



First, E should be replaced by H (for 'human agency') in order to (a) emphasise that agriculture is essentially co-production – that is, the interaction between and interweaving and mutual transformation of the natural and the social (Van der Ploeg 1997; NRLO 1997b) – and (b) to make clear that E is not a static (or unilinearly optimisable) category but one that is dynamic and open to differentiation.

Furthermore, it is essential to understand that G (the living world) as a whole can be constantly unfolded (but can also be degraded) by human intervention: hence the arrow (in Figure 4.18) that runs directly from H to G. The stories of Hoeksma and Oostindie speak volumes in this respect.

The direct effect of H on G implies, just like the indirect effect of the interactive term $G * H$, that the end result F (farming, cows, fields, and hence landscapes, ecological values, food, etc.) cannot be imagined *outside* of the normative order of H (including, explicitly, the interaction with G, see the notion of *kreas buorkje* (farming gently) in Chapter 2).

Both co-production and its outcomes fall explicitly *within* this normative order – simply because they are part of the social praxis, of civilisation. Current thinking within agricultural science ($G + E + G * H = F$) fails to acknowledge the social praxis. It is reintroduced in the approach summarised in Figure 4.18. I will return to this in Chapter 9.

The result of co-production (farming in all its diversity confined in time and space) is also explicitly included within any given normative order. This implies that feedback will occur from F towards G, H, and $G * H$. Hence the double-headed arrows, which refer to both the occurrence and the nature of multiple responses.

Several conclusions logically emerge from the model presented in Figure 4.18. Since H includes those directly involved in the farming process (farmers, agricultural labourers, contractors, shepherds, and whoever else), the centrality and importance of endogenous dynamics, of *innovatività contadina* (Osti 1991), is emphasised from the outset. Agricultural research appears as a particular (although therefore not less important) type of the production of innovations.

If one accepts the centrality of the innovative capacity of farmers, then several essential axes can be constructed between farming practices and institutionalised research. First, great importance should always be attributed in institutionalised research to the discovery of relevant heterogeneity. Second, heterogeneity (or part of it) can be used as a design principle. Third, and of pivotal importance, is that the unknown (that which is not yet known) is not discarded as non-existent but is rather entered into and explored. Fourth, the development of ‘protected spaces’ (Van Lente and Rip 1998) is of the utmost importance in such an exploration, and above all in the further unfolding of possible ‘novelties’ that are concealed in the unknown. Currently, the predominant technological regime all too often excludes such research.

Notes

1 Farming as practice contains also the interrelations between and the identities of the people involved in farming. Farming as practice also expresses itself in a particular interaction with its ecological surroundings. Particular cultural landscapes (and the ecological values inherent in them) are an expression of this. Entering into relations with others – in short, the interaction with other social practices (for example, of industry, trade and banks, but also of planners, administrators, and so on) – is another important part of farming as social practice.

2 This occurs, *inter alia*, by means of crop rotation, by shifting cultivation, become forms of transhumance, and, above all, by gradually developing fields in a particular way.

3 Types of spatial differentiation arose, for example, from the intention to use certain areas as meadows, which, *inter alia*, resulted in the creation of typical elements such as bluegrass meadows, marsh-marigold meadows, and so on. The spatial transport of nutrients, and hence the combination of deterioration and enrichment, was usually closely related to such types of spatial development. These types of spatial development (think of the relations between heather fields and ash trees) were abundant in Europe. The relation between this type of spatial differentiation and the enlargement of biodiversity is analysed by Gerritsen (2000).

4 Incidentally, this reproduction has become increasingly, though unevenly, externalised. See Van der Ploeg 1990, chaps. 1–2.

5 See Bouma 1993; Droogers and Bouma 1996; Droogers *et al.* 1996; Droogers and Bouma 1997.

6 Groen *et al.* 1993; Groen and Van Bruchem 1995; Ventura 1995; Felius 1996; Van Bruchem and Tamminga 1997

7 Bray 1986; Van Bentum 1995; Van den Dries and Portela 1995; Frouws *et al.* 1998

8 Van Kessel 1990; Van der Ploeg 1993; Murdoch *et al.* 1994; Wynne 1996

9 One of the most fascinating and perhaps also best documented examples is still the genetic dynamics of potato cultivation in the Vasilov centre in the Andes region. See Brush *et al.* 1981; Van Kessel 1990; Salas 1996. For a more economic analysis that makes understandable the reasons behind these practices, see Mayer 1995. Similar dynamics were used widely in Dutch potato cultivation at the time, although they now have been abandoned; see Van der Ploeg 1987.

10 The development of the harvest factor (the relation between used sowing seed and harvested production), documented by Slicher van Bath (1960), is a prime example of the way in which farmers utilise the malleability of the production process to achieve progress.

11 Hayami and Ruttan (1985) provide a striking description derived from Japanese history: communication between farmers over longer distances (and hence the communication of innovations) was almost completely impossible due to tight feudal relations. A relaxation of these relations resulted instantly in a fast boom in agricultural growth: the development potential, blocked until then, was suddenly be freed up and tapped into. Similar examples (but of a much more recent date) can be found in the pre- and post-war *mezzadri* in northern and mid-Italy. Even the mode of ploughing changed almost overnight after the *liberazione* of these share-cropping farmers. Incidentally, Hofstee also relates the early flourishing of agriculture in the northern Netherlands to its peripheral position within the then feudal state.

12 Perhaps one of the most intriguing episodes occurred in the late 1960s. It was widely considered, then, that large farms were still the most extensive. Elimination of small ('too intensive') farms and a simultaneous expansion of large, extensive farms would imply a hindrance to overproduction. The Mansholt Plan was largely based on this assumption, which later turned out to be wrong. The vanguard farm (see Van der Ploeg 1987) – that is, the large-scale and highly intensive farm – was already an incipient reality by the late 1960s–early 1970s, consolidated in the subsequent 'structural policy'. Consequently, a policy

directed at control of overproduction resulted in an incredible acceleration of overproduction.

13 Sustainable agriculture, to summarize a long debate, can only be realised by an adequate adaptation of farm management – that is, within the extremely decentralised practice of over 100,000 farms, whereby the opinions and decisions of 10,000s of actors are somehow decisive. The one size fits all, generic prescription approach is hardly compatible with the aims of sustainable agriculture. Intervention in farm management, however, raises the huge problem of the ‘uncaptured peasantry’.

14 Especially in the Netherlands, it was thought that the ‘agrarian question’, which is largely a question of control (see Van der Ploeg 1991, chap. 4), had been overcome.

15 This term refers to a highly mechanistic world, a world functioning like a machine. Every movement, every change in this world goes back unilinearly to definable causes. The Cartesian theatre stands for a world ruled by natural laws. The human factor, i.e. agency, is absent, is irrelevant, or goes back, at the most, to an understanding and the utilisation of these laws.

16 I am greatly indebted to Harm Wieling of the National Reference Centre for Agriculture and to Ton van Scheppingen and Fritz Mandersloot of the Research Institute for Animal Husbandry for the patient ways in which they have tried to make me familiar with a number of details of grassland utilisation. However, mistakes in the text are my own.

17 In addition, I could refer to water management, the selection of grass varieties, weed control, the timing of fertilisation, whether or not to control losses, the ways of mowing and shaking, whether or not to avoid seasonal losses, the frequency of rolling and towing, etc.

18 By varying the organisation of time, various relations would appear. If the influence of other variables would be imputed (soil humidity, fertilisation, relation between mowing and grazing, grassland varieties, weed avoidance, etc.), a sheer unforeseeable playing field emerges in which an impressive number of interrelations and interactions enables numerous solutions.

19 Theoretically, because a number of solutions will be internally contradictory.

20 ‘Well-ripened manure’ is an actor-dependent definition. Is cannot be defined exactly. The concept is highly context dependent. In northern Portugal (see Portela 1994; Cristovão *et al.* 1994) it means something different from on the sandy soils in the Dutch province of Drenthe where Harm Tiesing farmed (see Edelman 1918). In consequence, the use of ‘well-ripened manure’ cannot be prescribed precisely, nor controlled. Incidentally, the same issue applies to artificial fertilizer. ‘Good use of artificial fertiliser’ too is, for example, pre-eminently context dependent (it is even highly dependent upon variations within a plot; later on, this will become the starting point for precision agriculture).

21 It should be noted that much of this research, both nationally and internationally, is conducted by the artificial fertiliser industry (in the Netherlands in the past decades by the Nederlandse Meststoffen Instituut – Dutch Institute for Fertilizers). However, this does not make the reference to the agricultural sciences less relevant here. The artificial fertiliser industry used agricultural science models and representations and hired or commissioned agricultural scientists for this purpose. Agricultural science as an independent institution did not operate as ‘countervailing power’ in this regard.

22 However ironic this may sound, by giving them a particular instrument/tool for grassland management, farmers could in turn be managed by the expert system.

23 Viewed from this perspective, it becomes understandable that the issue of knowledge development – that is, the agenda of agricultural research – becomes increasingly the object of a socio-political struggle in and around the sector. Think about the debate in Dutch horticulture about whether or not to conduct research that benefits cultivation in the soil instead of production on substrate. Reference can also be made to the debate about biotechnology, the debate about Herman the genetically modified bull, etc.

24 Especially since knowledge transference (agricultural colleges, courses, advisory-services, etc.) have become a tightly anchored, well-functioning and ubiquitous set of institutions.

25 Sauvant adds: ‘Conceptually live organisms are largely similar to other tightly controlled systems in which OS and RS can be distinguished and where structures, functions and

possibilities of control are more or less segregated between the short term adaptation to environmental perturbations (tactics=homeostasis) and the achievement of longer term targets (strategy = homeorhesis)'.

26 This is a phenomenon that is very well known within tropical livestock systems, for example South Africa's 'bush fields'.

27 A more extensive analysis can be found in Van der Ploeg *et al.* (1994, particularly chap. 3).

28 Such calculations are far from simple. Apart from technical complications, the largest problem confronting researchers is the 'many unknown quantities and several equations' (see NRLO 1994). Metabolised energy production of one's own grassland can usually be estimated, since it can be deduced from the estimated feed requirements of cattle. This results usually in the *automatic* attribution to the 'field' of differences in efficiency in the shed or between shed and field. I have demonstrated in Van der Ploeg *et al.* (1996) how this apparently Gordian knot can be disentangled.

29 As demonstrated in other empirical studies (ref. Roep *et al.* 1991), the practice of zero grazing was, until recently, mostly confined to the farms of machinemen. However, a change took place because of the quota system. Environmental policy too has resulted in important changes in the 1990s. Machinemen in particular are the ones who have bought most land without quota (see Roep and Roex 1992).

30 This includes machinemen even feeding concentrates 'above the norm' in summertime. They mow and ensilage so much grazing seems to suffer in summer.

31 The cows in this study were on farms that had been previously the object of research into farming styles.

32 Organic farmers are also interesting in this respect. A more recent study has shown that organic farmers create cows, and a farming system around these cows, that realise a very high input-output efficiency in the shed (even higher than that of cowmen). See Van der Ploeg *et al.* 1993.

33 That is, they do not 'exist' as an objective reality in nature, independent of human intervention.

34 Of course, more can be said about this on the basis of theoretical considerations. Mont Blanc is a given; it is, simply said, given with 'Genesis'. Human industry has had remarkably little effect on it. It is hard to imagine that Mont Blanc becoming higher or developing radically different slopes as a result of purposeful human intervention. Over the course of a few decades we may slightly raise sea levels, as a result of which Mont Blanc becomes somewhat lower. Input-output relations are of course completely different. They are object of goal-oriented human actions and their level, position, and slope appears to be actually dependent on this. By climbing the Mont Blanc, we do not create (and/or reorder) it. But farming reorders agriculture all the time.

35 More precisely, the average input varies often with each farming style (irrespective of the input-output relation concerned). The question is whether additional input-output relations are involved.

36 A path model is based upon a number of causal partial relations (for an excellent description of its theoretical assumptions, see Nooy 1982). Various relations, expressed as β s, are calculated through a series of stepwise regression procedures.

37 Again, the calculations are based upon 300 Frisian dairy farms, from the database of AVM/CCLB. A more detailed description can be found in Van der Ploeg *et al.* 1994; NRLO 1994. An English summary of some of the results can be found in Van der Ploeg 1994a, 1996b.

38 In the practice of extension and farm management support schemes similar 'norms' are calculated and used in order to inform farmers about the 'optimal resource use' – see e.g. Leeuwis 1993.

39 The danger is of course that such a 'norm' becomes a prescription and hence the future norm. Already, this can be identified in the notion of 'best agricultural practice', which can be enforced on farmers through cross-compliance. This is the reason why I discuss this at length here.

40 An important methodological innovation was realised by Wil Hennen. We had identified farming styles – in quantitative terms at least – mainly by means of principal components analysis, after which certain ‘groups’ were defined by means of factor scores. This is unsatisfactory in as much as that sharp and arbitrary boundaries have to be imposed. Wil Hennen developed a ‘fuzzy model’, which centralised the probability that a certain farm could be included in a farming style. The following Table 4.2 is partly based on this approach (see Hennen 1995). An interesting sideline of this method is that the combination of various strategical elements (or rather the possibility of ‘hybrids’) emerge more clearly. These hybrids (such as economical cowmen, etc.) are included in the table.

41 ‘Breaking into models’ is a rather common procedure in research. I remember, for example, that we had to ‘increase’ considerably the percentage of weeds in the grassland of machinemen in order to ‘approach’ their less efficient grassland utilisation. This happens frequently on experimental farms too. In order to realize a more adequate concentrate level, the concentrate computer is, for example, misled on purpose. The big question is of course whether such use is possible without specialists. Thus, the (as yet clumsy) models will probably produce a much more directive and normative effect – especially since the knowledge about the real parameters, and thus the possibility to ‘break into’ and adjust, are less present in practice.

42 ‘Farmers don’t write enough, and there are too few farmers who write’, according to Hoeksma. He has kept an amazing collection of data since 1958. He refers to it regularly. He also claims that ‘whenever I think up something new, I will first go back and see how I did it in the past’. His own farm management over the years, including its well-documented variation, is a treasure trove, which he draws from, and returns to, in order to assess the potential value.

43 Comparison with others suits cowmen less well, they are convinced of the uniqueness of their own resources. They distrust comparison with the norm. However, comparison with data from their own farm over previous years is regarded as very significant: they point to the degree of progress they made themselves.

44 This is related to the rotting processes in manure, as well as to biogene amino acids and the shortage of antioxidants. The challenge is to let manure compost instead of rot.

45 Oostindie adds: ‘The difference between a good farmer and a bad farmer is that a good farmer has a fuller wallet. A good farmer takes good care of his cattle. Taking care of your cattle is number 1. Whether the bigger the better matters I don’t know. It is hard to say what a good farmer is. If a farmer is satisfied, it is a good farmer. I think that I could have as much fun in my work if I had 3 tonnes milk on my own. I have most fun in breeding. I like the rest too, but breeding is the best. I also think that I could earn about the same amount on a 3 tonnes farm. Of course you’d have to have the same proportions in the bank. That is important of course, but if that’s the case I think I could make it. I am not a person who wants to buy milk quota at all cost. Farmers who do that are caught in a vicious circle. The purchase of milk quota is a purely fiscal technical issue. If you buy quota and you have everything else in place, you’ll earn more again. The more you earn, the more tax you have to pay, so you’ll have to buy more quota. If you’re caught in that, you won’t be able to get out. It is a kind of addiction for farmers. Anyway, those farmers are not well informed. There is more than one way of investing your money.’

46 Here I was struck by the resemblance to a similar saying from the Po plain: *ogni contadino a la sua linea* (each peasant follows his own course). See Bolhuis and Van der Ploeg 1981.

47 Incidentally, I would like to state here that this is precisely what is so enjoyable about my profession: one is endlessly looking for an understanding of essential differences, and then suddenly, usually at completely unexpected moments, the key is thrown into your lap.

48 A beautiful expression relating to the construction of congruence (see Chapters 1, 3 of this book).

49 For a description of the rich history of the Knol breeding farm, see Bottenburg 1965.

50 Later in the discussion, our partner returns to feed conversion: ‘A different description of feed conversion is “what does a cow take up from feed”. How much of its feed does it use. One cow just shits out a lot of useful materials, while another cow would be able to produce another couple of litres milk from it. If more milk can be made from it, it must still contain

nitrogen, for nitrogen is protein. A cow's shit tells you everything, about its health and its production. If a cow shits thin with much corn, it receives too little protein. If a cow shits thin without corn, either it receives too little protein or its feeding speed is too low, there is too much cellulose in the feed. In that case you also have to supplement protein. Protein is partly used for bacteria that have to convert feed. Thus it contributes indirectly to milk. Feeding is a story in itself. If the feed specialist comes round here and they want to calculate it, they need about 4 sheets of A4 for my explanation – about speed, digestible and indigestible protein, digestible and indigestible fats. Nowadays, they even talk about of a feed's speed. They work towards that. That's why you have your roughage tested and you see what your feed is made up of. You'll look for a cake to go with that. If your roughage is slow, you'll supplement it with a fast cake. If your roughage is fast, you'll have to feed a slow cake. If your roughage is rich in protein, you don't have to feed as expensive a cake. For protein is expensive. If roughage is poor in protein, you do need a protein-rich cake. Various combinations of these exist. And I didn't even start about carbohydrates and starch. They too have a certain influence on the protein percentage and on the milk. So it comes down to trying to produce as much milk from roughage supplemented by concentrates. This implies automatically that you try and keep losses as low as possible, whether ammonia or whatever. Of course you want to use your feed as optimally as possible. It's all profit.'

51 At the start of this chapter, I discussed five mechanisms with which farming has been unfolded over time into what it is now. Of course, there is no getting away from referring to a 'sixth mechanism'. It is the malleability *tout court* as increasingly claimed by the agricultural sciences. From the perspective that a large number of growth factors can already be controlled (and that farming could be eliminated where this is not the case), various types of 'optimal agriculture' can be defined at different levels. This could be called 'megamalleability', based upon global parameters and resulting in the radical criss-crossing of that which farming has been up until now: a combination of global and *local* relations and points of reference. Under which local conditions such a 'globalised' (or 'optimised') agriculture should be conducted is as yet an unanswered question. All things considered, the question is not asked at all. Perhaps this is not even surprising.

52 I put 'bulls' in quotation marks here, because for a long time it did not involve bulls, of course, but rather artefacts and symbols – that is, 'straws' and notions that define why a certain 'bull' is better than others.

5 The Economy as a Set of Differentiable Relations

In this chapter I will discuss at some length the economic aspects of contemporary agriculture. The objective is twofold. First, I will try to demonstrate that the determinism that permeates the discipline of conventional agricultural economics is not only untenable but also hinders the prospects of new issues and new solutions. Second, I would like to develop further the theoretical framework needed to adequately support farming styles as development opportunities and as socio-technical networks. The malleability of grassland production and animal husbandry was discussed in the previous chapter. Here, I would like to extend that discussion into the sphere of economic relations, since they are also highly malleable.

The economist Yotopoulos has aptly summarised the core of economic determinism:

'It is well known that all firms would have the same quantities of inputs and outputs (and as a result only one point would be observable on the production surface) if a. all firms had the same production function [. . .], b. all firms faced the same prices [. . .] and c. all firms would maximise profits perfectly and instantaneously' (1974, pp. 265–266).

The existence of only one (technologically determined) production function within agricultural systems has been rejected in Chapter 4. Just as the producers in Yotopoulos' explanations are constantly creating new functions (including new frontier functions characterised by the highest technical efficiency), farmers create different and always new production functions. More to the point, there are no production functions that determine the practice of farm labour. On the contrary, farmers create, in and through their labour, certain regularities and connections – in short, certain input–output relations. (In their practice H they develop G , and they particularise G via co-production ($G * H$) into a heterogeneous and dynamic F) For this very reason, there is indeed not just 'one point on the production surface'; we encounter enormous variation.

Similarly, no economic laws exist independently of particular practices. These practices are not determined by exogenous laws. Of course, it is possible to identify numerous regularities in the sphere of (agricultural) economics. However, these regularities are no more than a reflection of the (heterogeneous and constantly changing) practices and socio-technical networks, and of the level of abstraction chosen to represent these practices. If stripped of its determinist perspective, agricultural economics

can provide numerous useful instruments and concepts to dissect and better understand the heterogeneous and dynamic practices. I will gratefully use a number of those instruments in this chapter.

Farming can be analysed from various angles. Different sociological theories can be used; or farming can be understood through 'technical' disciplines such as agronomy and animal science. It can also be viewed from an economic perspective. From each angle, a particular aspect of the actual object, farming, is observed and represented. However, every 'image', every representation is, almost by definition, partial. It shows certain aspects and leaves others undiscussed. It produces both knowledge and ignorance. Every point of view creates its own preferred facts and therefore also its 'black swans'.

Furthermore, various domains of farming can be identified. For example, agronomic and zootechnical regularities apply to the domain of production (the conversion of inputs into outputs). Economic regularities apply principally to the domain of economic relations (entering into economic relationships, conducting transactions, checking the relations between monetary revenues and monetary costs). Social and cultural relations, usually institutionalised into regularities, apply to the domain of family and community. The point is here that in farming these domains can be distinguished analytically, but they cannot be separated. The essence of farming is the *overlap* between these domains.

The animal husbandry practices of farmers (such as Oostindie's breeding practices) can be analysed very well (although not exhaustively) from an economic angle. Similarly, parts of the economic actions can only be understood through a grasp of the principles of animal husbandry: a promising cow will not be sold, despite her estimated monetary value; except in the case of a poor farmer in early twentieth century (Van Welderen 1912b). An understanding of this requires political economics and an insight into different *calculi*.

The transfer of meanings always occurs in the practice of overlapping domains: the social is translated in terms of the technical, the technical in terms of the economic, the economic subsequently in terms of the social, and so on. The aforementioned pig farmer who has no intention of 'working himself into stress' translates this statement into the technical domain. It leads to apparently suboptimal technical results (less piglets per sow per year). However, these are definitely not 'suboptimal results' to the pig farmer concerned. They are results that are in accordance with his objectives and that can be justified very well from the perspective of those objectives (see Commandeur 1998; and the discussion in Chapter 4 regarding the fourth quadrant). In addition, perhaps, the costs of this course of action will also be lower (with which we arrive at the domain of the economic).

The various domains interweave and intertwine with one another in the practice of farming. Even though the main points will vary between styles, the transfer of meaning and the search for and creation of coherence will always constitute the central axis.

Whereas this process of integration is central to the practice of farming, contemporary agricultural sciences tend towards the opposite: the object of study becomes systematically segmented, and becomes considered from the point of view of the laws that would apply to the *individual segments*.¹ This alone makes both multidisciplinary research and the introduction of the concept of 'applicability' extremely difficult, although not impossible.

The real difficulty appears only at, and as a result of, the next step, which is taken in an almost Bordewijkian manner by more or less every discipline. Its own preferential segment or domain is understood as a regulatory system (see Chapter 4), as a mode of ordering enabling the signification of the state of affairs in agriculture, its problems, and possible solutions.

For a long time now, agronomy is no longer representing the knowledge of farming in all its diversity. Through the discipline of theoretical production ecology, it has been transformed into a regulatory system, from which it would be possible to specify the ideal ordering of a future agriculture. The well-known study *Grond voor keuzen* (Ground for Choices) by the Netherlands Scientific Council for Government Policy is a remarkable expression of this (WRR 1992).

The same applies to agricultural economics. For a long time now, this discipline has not been concerned with the analysis and understanding of what is *actually* happening in agriculture. With a few exceptions, agricultural economics involves above all the claim that the set of economic relations in which agriculture is embedded should be regarded as the dominant regulatory system. In so far as this is not the case, the existing 'distortions and imbalances' should be adjusted as soon as possible. The superior solution in this approach is represented by the reorganisation of farming according to relations and rationalities inherent in the set of (undisturbed) markets.²

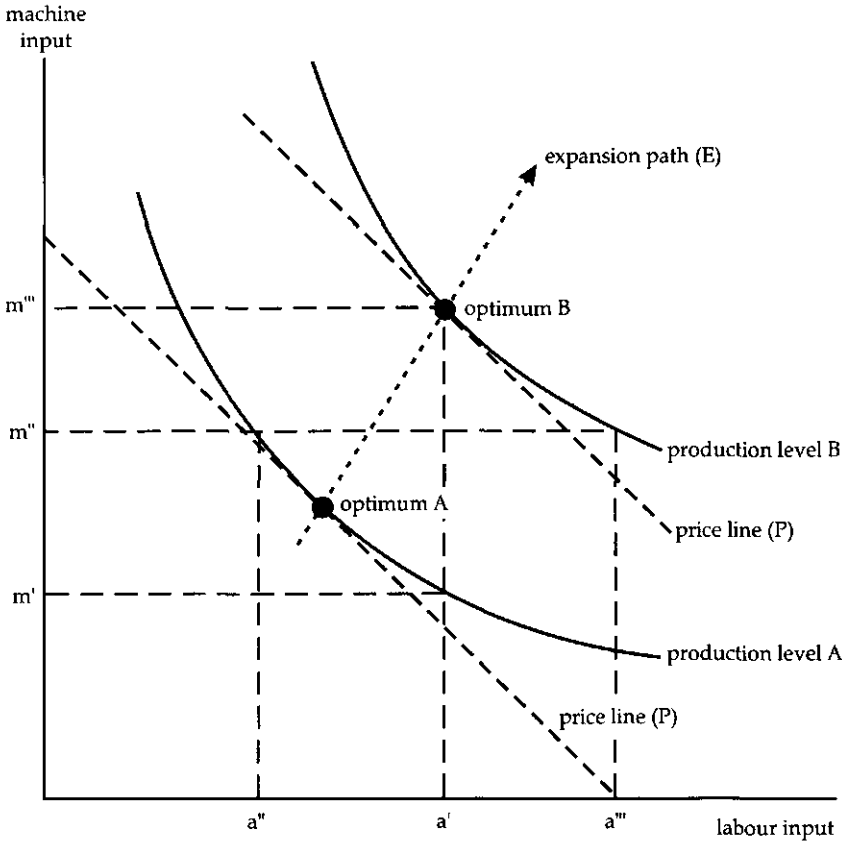
I would like to stress from the outset that the set of economic relations in and around agriculture is very important. However, this does not imply that economics (the set of markets, and the relations, institutions, and expectations contained therein) can be understood as a regulatory system, as a set of relations that coercively determine the development of agriculture. I would like to demonstrate this through drawing upon one of the central themes of agricultural economics.

5.1 Substitution curves, expansion paths, and farming styles

Different resources (land, labour, machines, buildings, animal feedstuffs, fertilisers, knowledge, water, etc.) have to be combined in the agricultural production process in order to let the labour and production processes run a desirable course.³ The interrelations between mobilisable resources will often be subject to changes; for example, if labour becomes more expensive and land becomes cheaper (Hayami and Ruttan 1985), if energy (one of the so-called non-factor inputs)⁴ becomes more expensive relative to labour (De Wit 1975, 1977),⁵ and/or in the case of mechanisation (when

capital replaces labour). Such changes are presented in agricultural economics by way of so-called substitution curves (see Figure 5.1). It is usually assumed that the resources in question (labour and machines in the example in Figure 5.1) can be substituted according to static relations, determined by technology.

Figure 5.1 Substitution curve, price line, and expansion path, an example



If one wants to realise, for example, a level of production A, then an amount of labour a' and a degree of mechanisation m' will be sufficient. It is also possible to substitute labour by increased mechanical input 'along' curve A: we will thus move to a'' and m'' (see Figure 5.1). Farms that are situated 'above' this curve (mobilising, for example, a' labour and m'' machines) are technically inefficient. They mobilise too many resources (labour and/or machines) to realise a level of production that could be based upon a much more efficient use (such as represented by curve A). Realising a higher level of production (such as indicated by curve B) requires using more resources, of course.

Finally, we can introduce the economic side of the equation. If curves A and B represent the technical interrelations (and possibilities) in the production process, the question remains as to what the 'optimal' point

on these curves will be. The answer is simple (at least in neoclassical analysis). This 'optimum' is defined by price relations (in this case the relation between labour costs and mechanisation costs) – for, according to the canonical variety of economics, agricultural production is 'determined' by markets and technology.⁶

The price relation can be introduced into Figure 5.1 by way of line P. Economic efficiency exists at the point where line P touches the substitution curve. Therefore, a'/m'' would be an economically efficient combination (at production level B) in Figure 5.1, while the combination of m'' and a''' would be economically inefficient.

The so-called 'expansion path' (line E) is also shown in Figure 5.1. If, on a certain farm, production increases from level A to level B, a new optimum has to be found. The expansion path (see Dosi *et al.* 1993) is the route connecting the various optima.

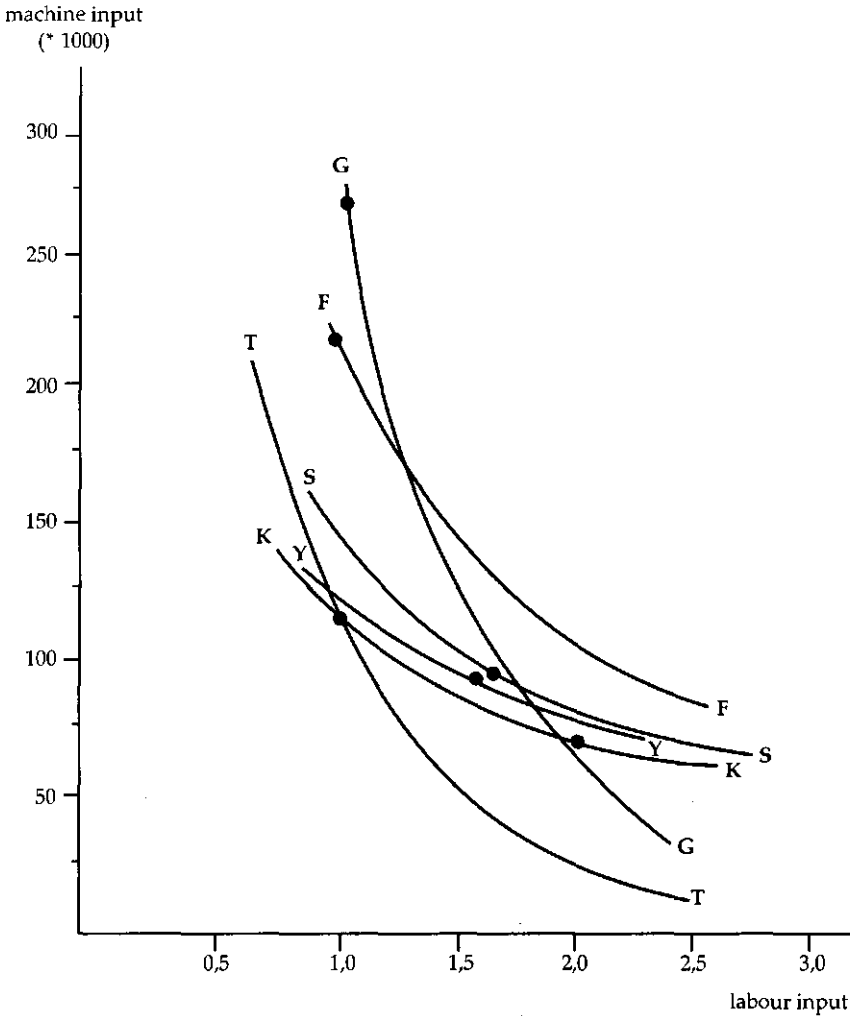
In principle, the neoclassical model (summarised in Figure 5.1) provides the possibility of a number of adjustments, particularisations, and refinements, collectively enabling a certain range around the exclusive optimum inherent in the previous argument. First, subjective valuations can be introduced: it is possible to valorise – for whatever reason – labour and mechanisation in a way that deviates from the so-called objective price relation. If this is the case, those prices are called shadow prices. Mechanisation can be considered, for whatever reason, as 'more expensive' and labour as 'cheaper': in that case, the priceline P 'flips', as it were, and another position is taken up. Second, the position of substitution curves (of A and B) can vary; they can change as a result of learning processes ('disembodied technical change', according to Salter 1967; and 'learning by doing', following Dosi 1988; see also Röling and Somers 1993): the substitution curve can change in the direction of higher efficiency as a result of better control of the production process. It is also possible to imagine the substitution curve moving towards the upper right-hand corner – that is, in the direction of (partial) inefficiency. Hence, counterproductivity occurs. Similarly, expansion paths can be imagined that are subject to a particular dynamic (particular limitations).⁷

These considerations guide me to the following hypotheses:

- 1 Where there are systematic differences in social regulation (where there are different farming styles) one will encounter different substitution curves.
- 2 The subjective valuation of price relations is not distributed capriciously (not at random). Every social regulatory practice – that is, every farming style – contains a systematic pattern of style-specific valuations of scarcity and price relations. All the more since every particular practice (or style) contains a particular ordering of relations *vis-à-vis* the market. That is why there will be systematically different positions on different substitution curves.
- 3 Finally, every socially regulated practice contains a particular learning process – that is, a particular accumulation of knowledge. This implies that different empirical expansion paths will manifest themselves over

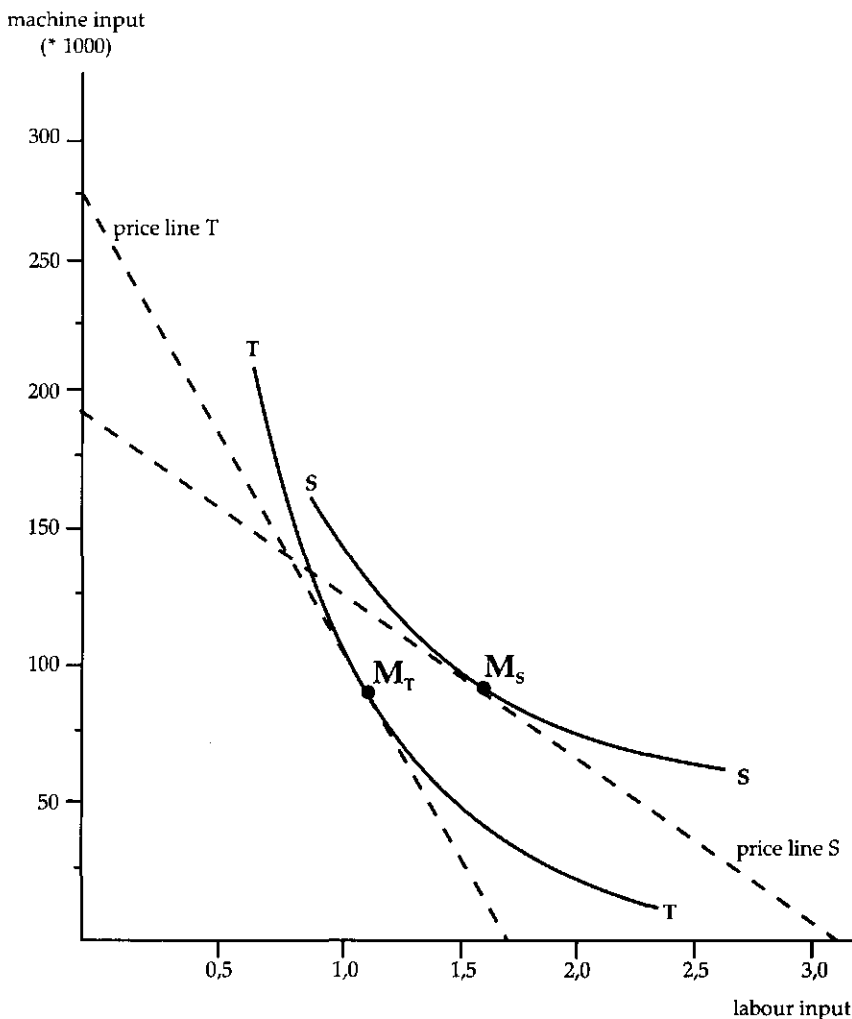
time. This should be recognisable in a cross-sectional analysis as different interrelations between various production factors and non-factor inputs at different production volumes.

Figure 5.2 Style-specific substitution curves for a quota of 500,000 kg of milk



The interrelations between, and mutual substitution possibilities of, labour, inputs, mechanisation⁸ and land collectively compose a multidimensional space that can be unfolded in various ways.⁹ The style-specific substitution relations between labour and machines have been represented in Figure 5.2 for a production volume of 500,000 kg of milk. These are relations that differ significantly,¹⁰ with a striking difference in slope: at decreasing labour input, the degree of mechanisation increases much faster for *grutte boeren* (large farmers) and *trekkerboeren* (machinemmen) than for the other styles.

Figure 5.3 Substitution curves and price-relations lines for economical farmers (S) and machinemen (T)



Price-relation lines are described in Figure 5.3, which, for the sake of clarity, is confined to two styles. It can be noticed that labour and machines are valued very differently from each other within these two different styles. In the style of the *sunige boeren* (economical farmers) one labour unit represents a 'mechanisation value' of NLG 58,500 per year, while for machinemen this amounts to NLG 155,000. This corresponds exactly with the rationalities of both styles. It also provides a reasonable explanation for why (other conditions being equal) machinemen reduce their labour input much further than economical farmers – or why, at a more or less equal level of mechanisation, the latter employ more labour than the former.

Figure 5.4 shows a few expansion paths (for *koweminsken* – cowmen – and large farmers). Incidentally, it is remarkable that at high production

volumes (a quota of 1 million kg milk/farm) the substitution curve for large farmers lies below the one for cowmen (at least within the more conventional range – that is, more than 2 labour units). This clearly demonstrates the particular efficiency of the large-scale approach. With respect to the expansion paths, cowmen explicitly try to stay within the limits of the family farm (that is, they try to avoid the input of external labour by mechanising relatively faster and more). Large farmers find it much easier to use external labour. All this can be found in the expansion paths. Moving from a production of 500,000 to 1 million kg, large farmers increase the degree of mechanisation by 106 per cent, cowmen by 171 per cent.

In conclusion, Figure 5.5 offers a summary of the mobilisation of labour, inputs, machines, and land in order to realise a production of 500,000 kg milk. For convenience of comparison, the graph is again restricted to two styles. Assuming a farm area of 50 ha, cowmen will use inputs (purchased feed and fertilisers) costing NLG 70,000 per year but large farmers will buy NLG 130,000 worth of inputs. Cowmen will use more labour (2.0 labour units as opposed to 1.5 for large farmers). Large farmers will spend NLG 120,000 on mechanisation against NLG 70,000 for cowmen. Considerable and significant differences can be identified in each quadrant.

Particular substitution curves are created in every style – that is, in every particular organisational form in dairying. Furthermore, the various curves are related to each other in a coherent way. These are not *a priori* (technologically determined) connections but socially constructed and reproduced relations.

Already in the 1970s (in the days after the first oil crisis), De Wit (1975) pointed to the substitution relations between, let's say, 'external energy' (related to use of inputs, mechanisation, etc.) and 'internal energy' (labour in particular). It goes without saying that this relationship is decisive in the sustainability question. With some imagination, Figure 5.5 can be read in those terms. The upper-left and lower-left quadrants represent the way in which 'internal energy' (labour) is related to the two most common types that embody 'external energy': input use and mechanisation. This shows that the relationship between the two types of energy is not fixed, but is malleable because it is, at least partly, created in the concrete organisation of the labour process.

By way of an interim conclusion

In the previous analysis, I have used a number of methods from the neo-classical approach to show that a number of assumptions upon which neo-classical theory is based are inadequate, since they cannot be reconciled with the diversity encountered in empirical reality. The assumption of an "optimal" type of farming – in which both the highest possible technical efficiency and highest possible economic efficiency are realised at the same time, in order to obtain *sui generis* the highest incomes and therefore the best conditions for competition – is not tenable either.

Figure 5.4 Substitution curves and expansion paths for cowmen (K) and large farmers (G)

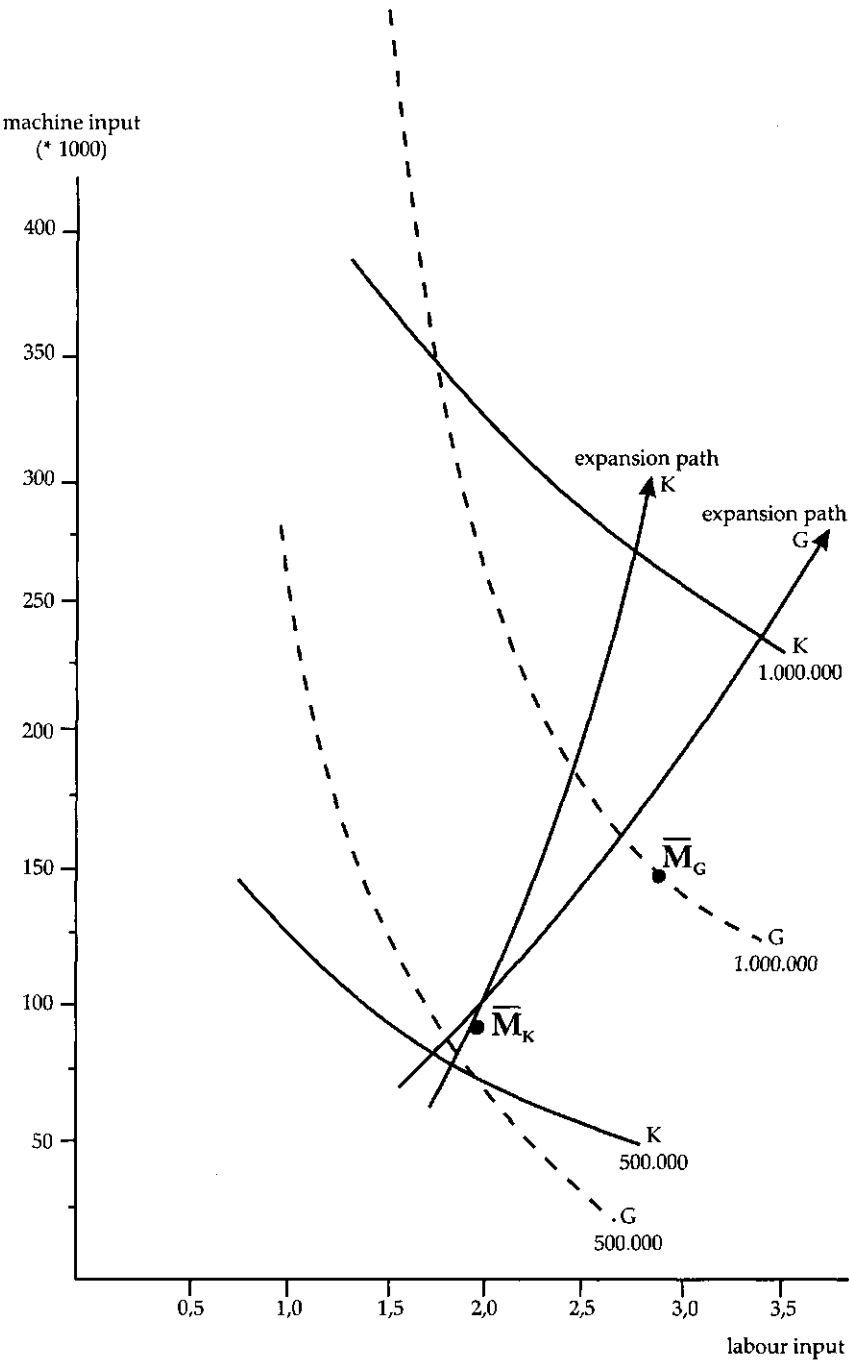
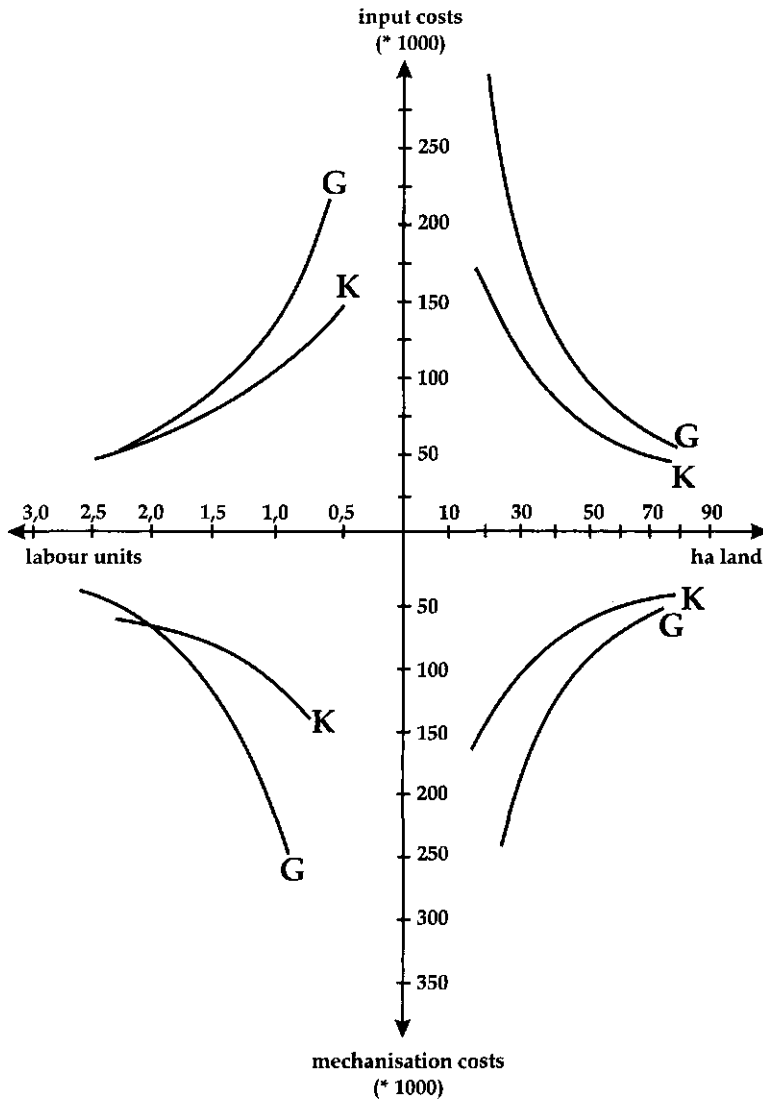


Figure 5.5 Summary (for a production of 500,000 kg) for cowmen (K) and large farmers (G)



Farming is a socially regulated practice; different farming styles manifest themselves. Every farming style is characterised by:

- a particular substitution relations;
- b a particular set of non-incidental shadow prices;
- c complex interrelations between economic and technical efficiency (for an example of how the two do not necessarily follow on from each other, see Rougoor 1999); and
- d a particular development through time.

All this is supported and reconfirmed by particular relations with markets, technology supply, and policy.

This multiformity implies that neoclassical analysis produces a persistent distortion of the actual dynamics of the agricultural sector. This raises a great intellectual challenge: how to develop more accurate 'middle-range' models that better describe the particular dynamics, possibilities, and constraints of the different farming styles (Renkema 1998).

5.2 Again, dancing through time or the indefinable nature of farm development

Chapter 3 contains an example of an analysis of farming styles based upon data from 1990-1991 that relate to 300 specialised dairy farms in Friesland. The 1997-1998 farm accounts of 200 of these farms were subsequently collected with the help of AVM/CCLB.¹¹ With these two data sets, a *constant sample* can be constructed, enabling an analysis of differential farm development patterns in the medium term.

It is not my intention to repeat, in the following analysis, the conclusions contained in Chapter 3. In summary, the argument was presented that various farming styles usually react in highly different ways to general changes in markets, society, and technology. What matters here is something different. First, farm development represents a constant adventure: a movement forward towards a generally uncertain future. Future conditions, regardless of their nature (economic, cultural, ecological, technological, etc.), can and will be decisive in the ongoing process of variation and selection. Conditions that are highly limiting, if not prohibitive, to one style have little effect or maybe in favour to another style.

In this sense, farm development (or more generally, the unfolding of future projects) can be seen as a form of 'gambling' on the future. This can occur deliberately, carefully, provocatively, or *sljuchtwei* (with eyes half closed). Ready-made answers to uncertainty and turbulence cannot be developed anywhere in advance. Only time will tell which decisions were good ones at the time. In other words, every farming style is a development opportunity confronted with constantly changing, partly unknown conditions.

However, not *every* farming style faces the future's uncertainties in the same way. Further development is largely supported historically in some styles. The resources employed, and on which the future is founded, are *one's own*: no future liabilities press on them. Both agenda and calendar are open and flexible. In contrast, further development in other styles is pre-eminently future dependent. Resources have been mobilised through markets, and they will have to be valorised in the future. Where the future can be faced unencumbered in the previous example, it is to some extent mortgaged in the latter.

It goes without saying that in this latter situation an encounter between any given project and future conditions will be much more inflexible and will contain less degrees of freedom and possibilities for adjustment. In other words, internal relations are just as important as external

considerations in the process of variation and selection, and in the way one is prepared and covered for future *malheur*.

Even though every farming style represents a particular development opportunity, these opportunities vary widely among styles – especially regarding resistance capacity, when adverse and/or unforeseen circumstances are to be faced. The extent to which farms are market dependent or self-sufficient, in terms of both the most important resources and financing, is decisive in this. In this respect, the old farmers' wisdoms of Chapter 2 merge seamlessly with the latest insights from neo-institutional economics (Saccomandi 1998).

Conventional agricultural economists express the view, with an almost Archimedean certainty, that continuous farm enlargement is necessary. Closer examination shows that this view is rooted in the following assumptions: The expected future conditions are considered to be fixed and unmediated points of reference. Further, the crucial balance between one's own and external resources is ignored. Finally, only one development opportunity is usually involved in the analysis: growth. Hence it is not surprising that more growth excels over less growth – particularly if the costs related to growth (for example, rapidly increasing financial costs) are obscured.

This does not alter the fact that some in the sector blindly follow such analyses and the predictions (or 'promises') inherent in them. I will return to this issue in the following chapters, particularly in the discussion of institutional reliability of the expert system. That story will result in a discussion of growing distrust – that is, the deep-rooted suspicion that spreads when it becomes apparent that future conditions, presumed and therefore predicted by the expert system, cannot be fulfilled.

The dance towards the future is not easy (and sometimes far from aesthetic), and not in the least unilinear. In the following analysis, I will address the issue of composition and change in the cost price of 100 kg of milk. Normally this is assumed to be a non-issue. It is taken for granted that the largest and rapidly expanding farms achieve the lowest cost prices. Table 5.1 presents a number of important indicators in this respect. The data differentiate between the different farming styles discussed in Chapter 3.

Table 5.1 Total output, variable costs, and margins per 100 kg milk, 1990 (in Dutch guilders)

Farming style	Total output	Variable costs	gross margin	overhead costs	net margin
Ordinary farmers	87.3	28.0	59.3	41.8	17.5
Large farmers	88.1	25.7	62.4	37.9	24.5
Intensive farmers	86.3	33.7	52.6	41.1	11.6
Machinemen	87.2	28.6	58.6	42.7	15.9
Economical farmers	92.4	27.9	64.5	43.1	21.4
Cowmen	87.8	30.4	57.4	40.7	16.7
Breeders	93.6	31.5	62.1	46.5	15.6

There are striking differences in total outputs realised per 100 kg milk. Total output per 100 kg milk comprises the revenues from milk (partly dependent on butterfat and protein content and the distribution of milk production over summer and winter), output and volume change dairy cattle, and a few minute entries. Economical farmers and breeders realise the highest output per 100 kg milk, which relates directly to a higher output and volume change dairy cattle, to higher percentages of protein and fat, and a higher proportion of winter milk. These are not incidental features.¹² They are anchored in the particular organisation of the production process. For the economical farmers this is due to a combination of a slightly lower milk yield per cow, a slightly longer productive lifespan and slightly more protein-poor feed rations. Breeders in turn achieve this higher output by keeping a lot of youngstock. The cows, such as they have been 'constructed' within the two styles, are slightly different from those encountered in the other styles (a bit more Dutch-Friesian instead of Holstein-Frisian, slightly lighter in weight, slightly smaller, slightly better roughage eaters, etc.).

Of course, the slightly higher outputs per 100 kg milk represent a certain fragility. No one can predict the development of the markets for in-calf heifers and sturdy export cattle. On the other hand, farm management of large farmers (and hence the economics of their farms) partly revolves around a different issue: bulk bonuses awarded by the dairy industry to the larger producers. On average, large farmers will receive about NLG 0.02 cents more per kg milk than economical farmers.

Interesting differences can also be encountered in the variable costs (here, the sum of purchased roughage and concentrates, purchased fertilisers, contractors, and other costs). Although they seem to involve minimal gradations at first glance, there are significant differences here. Intensive farmers realise the highest costs (which is not surprising, it is logically related to their style), while large farmers and economical farmers achieve the lowest cost levels.

In the case of large farmers, this is related to, *inter alia*, relatively low expenditures on contractors and to bulk discounts on the purchase of concentrates and fertilisers, while general costs can be spread over a much larger production volume. In the case of economical farmers, low costs are a result of relatively low expenditure on feed and fertiliser.

Collectively, total output and variable costs result in the gross margin. In practice, this is what is left per 100 kg milk in order to remunerate the mobilised production factors (labour, capital, and land). The gross margin is that which gives farmers 'scope' for action. Table 5.1 demonstrates that systematic (and, according to standard deviation analysis, also significant) style differences exist in this respect.

Moving from the economical farmers to the intensive farmers, a difference of almost NLG 12 occurs per 100 kg milk (it is similar to the famous '10 cents difference in the milk' of which farmers like to talk). The highest margins are generated by large farmers and economical farmers. In the remainder of this discussion, I will concentrate on these two styles.

Table 5.1 also summarises a number of overhead and general costs – in this case, those costs relating to plant and machinery, costs connected with the purchase of additional quotas (in the previous period), costs related to land and buildings¹³ and (as far as general costs are concerned) expenditure for electricity, soil surveys, accountancy, transport, and so on. Large farmers excel in keeping these costs to a minimum: they realise the lowest overhead costs per 100 kg milk, largely as a result of their much higher production volume. In 1990, large farmers milked on average a quota of 972,840 kg, almost twice that of economical farmers: 507,880 kg milk. Incidentally, it should be mentioned here that it is possible that a distortion exists in the ‘overhead costs’ presented in Table 5.1, since the calculations of the norms upon which the presented figures are based assume equal depreciation terms. As we have seen economic farmers tend to buy second hand machinery keeping it for longer – thus, their real depreciation costs are likely to be lower. Furthermore, a calculated interest is included in the calculations as a matter of course. In other words, an abstraction has taken place from the possible differences in assets (that is, possible differences in the proportion of liabilities to net worth are ignored). I will return to this issue later.

Subtracting the expenditure involved in the ‘overhead costs’ from the gross margin in Table 5.1 results in the net margin. In overall terms, this is the amount available to reward labour and other assets and to further develop the farm.

Table 5.2 represents the development in the medium term (from 1990–1991 until 1997–1998).

Notice, first, that highly unequal developments have taken place in the total output per 100 kg milk. There is a sharp decrease, particularly for economical farmers and breeders, which goes back to the outbreak of BSE (bovine *spongiform encephalopathy* or ‘mad cow disease’) in the Netherlands and, later, to the collapse of the Russian market. Both developments had dramatic consequences for the price of export cattle and for meat prices. That is why the ‘output and volume change dairy cattle’ per 100 kg milk decreased most in those styles that were more attuned to these markets.

It is, at the same time, remarkable that the styles in question could react most flexibly to these setbacks. According to Table 5.2, breeders and economical farmers were able to reduce variable costs more than the other styles. It is perhaps even more remarkable that they were also able to reduce their overhead costs (by NLG 3.10 and NLG 4.70 per 100 kg milk, respectively). Economical farmers were able to reduce overhead and variable costs by NLG 6.80 per 100 kg milk in total, whereas large farmers reduced them only by NLG 2.20. Again, this illustrates an important difference in the capacity to react to adverse circumstances (note that during this period everyone knew that price cuts would occur; it did really happen by the late 1990s – I will discuss this further below).

Table 5.2 Development of output, costs, and margins per 100 kg between 1990 and 1997

Farming style	Output			variable costs			gross margin		
	1990	1997	Δ	1990	1997	Δ	1990	1997	Δ
Ordinary farmers	87.3	83.0	-4.3	28.0	26.2	-1.8	59.3	56.8	-2.5
Large farmers	88.1	84.0	-4.1	25.7	24.1	-1.6	62.4	60.0	-2.4
Intensive farmers	86.3	83.3	-3.0	33.7	30.9	-2.8	52.6	52.3	-0.3
Machinemen	87.2	81.6	-5.6	28.6	26.2	-2.4	58.6	55.5	-3.1
Economical farmers	92.4	83.6	-8.8	27.9	24.8	-3.1	64.5	58.5	-5.7
Cowmen	87.8	83.7	-4.1	30.4	27.8	-2.6	57.4	55.9	-1.5
Breeders	93.6	85.5	-8.1	31.5	26.8	-4.7	62.1	58.7	-3.4
Farming style	Output			overhead costs			net margin		
	1990	1997	Δ	1990	1997	Δ	1990	1997	Δ
Ordinary farmers	87.3	83.0	-4.3	41.8	41.0	-0.8	17.5	15.8	-1.7
Large farmers	88.1	84.0	-4.1	37.9	37.3	-0.6	24.5	22.7	-1.8
Intensive farmers	86.3	83.3	-3.0	41.1	39.7	-2.4	11.6	13.7	-1.9
Machinemen	87.2	81.6	-5.6	42.7	41.0	-1.7	15.9	14.5	-1.4
Economical farmers	92.4	83.6	-8.8	43.1	39.4	-3.7	21.4	19.4	-2.0
Cowmen	87.8	83.7	-4.1	40.7	39.6	-1.1	16.7	16.4	-0.3
Breeders	93.6	85.5	-8.1	46.5	43.4	-3.1	15.6	15.3	-0.3

Large farmers and economical farmers generated the highest net margins in both 1990 and 1997, with the large farmers always doing slightly better than the economical ones. The net margin can be regarded as the ultimate 'scope' for action at the farmer's disposal – at least assuming that the overhead costs in the calculations are really 'inevitable' (or 'inflexible') ones. In general, however, this assumption does not hold.

Large farmers rely upon borrowed capital much more than economical farmers. Therefore, permanent financial burdens (interest payments and depreciations) are pressing on them (see Table 5.3)

Table 5.3 Liabilities per farm, specified for various farming styles, 1990 (in Dutch guilders)

Farming style	Long-term liabilities	short-term liabilities	quota	interest costs per 100 kg
Ordinary farmers	643,200	75,600	464,050	9.00
Large farmers	1,473,000	164,100	972,840	10.40
Intensive farmers	737,200	95,500	517,370	10.00
Machinemen	732,800	188,400	561,920	10.50
Economical farmers	598,500	72,700	507,880	8.00
Cowmen	885,000	68,100	583,170	10.10
Breeders	707,400	88,900	386,700	12.80

If the difference in interest paid is included in the previously calculated net margin, the differences between large farmers and economical farmers become minimal. This would certainly be the case if redemptions were included in the calculations. The same holds true when we follow another

route – to calculate the sum of all actual monetary payments over one year and to add to this the interest paid. This results in an amount of NLG $41.80 + \text{NLG } 10.40 = \text{NLG } 52.20$ per 100 kg milk for large farmers, which leaves (at an output level of NLG 88.10 per 100 kg) an amount of NLG 35.90 per 100 kg for redemption, payment of family labour, and reinvestments. In the case of economical farmers, those figures are NLG $43.60 + \text{NLG } 8.00 = \text{NLG } 51.60$, which (at 1990 output levels of NLG 92.40) amounts to NLG 40.80 per 100 kg for labour, redemption, and reinvestments. This is more than remains for large farmers.

What I have done in the previous paragraphs is simply moving *from* a conventional neo-classical analysis (in which farms are regarded as the meeting place of markets and in which, therefore, net worth and liabilities are subjected to the same interest rates; LEI 1992) *towards* what is regarded internationally as the ‘Chayanovian approach’ (Chayanov 1966; Van der Broek 1988a; for a summary of a contemporary application in farm accountancy, see, *inter alia*, De Bruin *et al.* 1997, pp. 108ff.). Thus, the change in perspective (to one which fits better with the viewpoint of farmers and also with the notion of the *suyvere deel* used in the past) dramatically alters the outcomes of these calculations.

However, it is not my intention here to compare the styles of large farmers and economical farmers in terms of better or worse. I want to make a different point. The unfolding of a farming style (its development along style-specific lines) implies repeated encounters with initially unexpected but definitely uncertain conditions: the market for export cattle could collapse, interest rates could rise (or fall) unexpectedly, the milk price could develop in perhaps a not completely unexpected but certainly unfavourable way, the prices of means of production could vary, *et cetera*. These changes have *differential effects*. The collapse of export markets for cattle (the borders were closed at the time of the BSE crisis) will hit breeders in particular, and to a lesser extent economical farmers. Large farmers and breeders are particularly vulnerable to a rise in interest rates. A sharp fall in milk price will hit those with high monetary costs and high financial burdens (for example, large farmers) considerably harder than those who, according to the rural vernacular, are ‘less heavy’ (who have a ‘free farm’, such as economical farmers). A sharpening of the environmental policy could hit (depending on its precise form), for example, intensive farmers or economical farmers and breeders.¹⁴

This is not the end of the story. For, even though every farm is involved in its own ‘dance through time’, some farmers are more successful than others in handling unexpected circumstances on the dance floor. The threat of increases in interest rates and/or reductions in milk price can be anticipated and offset through a number of ways; by accelerated redemption of loans, by diversifying the output (that is, by producing other products and services alongside milk, meat, and cattle), by increasing the *technical efficiency* (Yotopoulos 1974), by enlarging the farm, or by utilising substitution possibilities contained within one’s own style. Similarly, it will matter whether the loans in question have been entered

into mainly within the family or at a bank, and whether the diversification of output occurs via institutional associations or via anonymous markets. In short, every farming style will contain a particular range of possibilities for anticipating difficulties (not all of the above-mentioned options can be applied simultaneously, since one excludes to a certain extent an other) and every socio-technical network (the set of concrete connections between a farming style and other actors, institutions, and artefacts) will contain particular opportunities and constraints. This also implies that an *a priori* definition of the most desired (or 'superior') dance is impossible. It is only possible a) by abstracting from the broad diversity of styles and the differential possibilities for reaction inherent within them; b) by ignoring the playing field constituted by the relation between internal and external resources; and, finally, c) by making a number of assumptions within the sea of uncertainties about future conditions, which are subsequently introduced into the analysis as fixed beacons.

Yet, an *a priori* definition of the superior farming style is routine in the expert system that seeks to guide Dutch agriculture. By way of this routine, virtual patterns are described (for example, the only way forward is via accelerated farm enlargement) over which it is very easy to fall on the real dance floor. What really matters outside of such virtual images is always the strategic anticipation of, and the reaction to, actual and expected developments in markets, technology, and policy. Relations and developments in these areas do not determine the state of affairs in agriculture. It is the combination of these relationships and developments, together with the strategic actions of farmers and other rural actors, that constitute the (always changing) nature of agriculture.

5.3 From malleability to disciplining

In both this chapter and the previous one, I have described the degree of malleability of various internal farm relations (both technical and economic). I have emphasised time and again that 'external' relations can be moulded and particularised too. All the more since, as argued in Chapter 2 and 3, the essential balance between external and internal resources can be changed both in the short and the long run.

In these terms, a number of remarkable processes occurred in the second half of the twentieth century. Initially, an all-inclusive macro-project was presented: the modernisation project in agriculture. Here, the expert system oriented agricultural and horticultural enterprises towards new goals: towards expected developments in various markets and towards new technological (and professional) models. Multiple malleability was, in a way, substituted by a single, new development opportunity, proclaimed by the expert system as the preferred one.

Critical to this endeavour is the assumption that institutional reliability (North 1990; see also De Hoogh 1987) can actually be achieved. Those future conditions that are presumed initially and also held out to farmers are created through market ordering (De Hoogh and Silvis 1988), corporatist arrangements (Frouws 1993), and a particular technology

development (Van der Ploeg 1987; Frouws and Van der Ploeg 1988). I will discuss this further in Chapter 6, where I argue that the expert system did not achieve this reliability despite promises to the contrary.

The limits to the modernisation project become apparent by the end of the twentieth century. If the required institutional reliability could initially be produced, the turbulence in and around agriculture considerably undermined it from the 1980s onwards. First, the environmental pollution required drastic measures to offset the practices advocated by the expert system. Furthermore, a process of liberalisation gradually occurred, starting out from the first Uruguay Round of negotiations under the General Agreements of Tariffs and Trade and continuing at the next round of talks of the World Trade Organisation. Its effect has been twofold: prices came under pressure and, above all, the initial long-term security in prices eroded. Price fluctuations became an increasingly frequent phenomena.

During the modernisation project, Dutch agriculture was highly oriented towards export to the world market. Hence, it became susceptible to economic developments that took place elsewhere (in e.g. Russia, the Far East and Latin America). Unexpected price fluctuations emerged and a dramatic fall in the milk price occurred in 1999.

Turbulence also increased as a result of the *modus operandi* of the food industry (Van der Ploeg and Ettema 1990). The longer and more dramatic the string of food scares, the larger the shock waves onto consumer markets and the more turbulence for farmers. At the 'cost side' of the farm there was also an increase in turbulence. The almost unpredictable developments of the land market (and hence the fast increasing land prices), the introduction of tradable quotas, and the associated price increases resulted in considerable and often unexpected cost increases.

As a result, a new contradiction emerged at the end of the twentieth century. On the one hand, turbulence increased everywhere; on the other hand, farmers were advised more and more to ground their projects in those very commodity markets which are subject to the greatest turbulence. Thus, a contradiction emerged that will appear impossible to hold in the long run; as a result, agriculture might explode both literally and figuratively.

Meanwhile, the reaction to this is threefold. Some farmers who faced problems from the increased turbulence react by demanding a recovery of the former institutional reliability, expressing a lot of resentment, hurt, and sometimes violence. A manifest expression of this is formed by the union of pig farmers (NVV) and to a lesser extent by the union of dairy farmers (NVM). A similar reaction can be encountered elsewhere. The *guerra da latte*, the milk war in the north of Italy is a striking expression of this (Bussi forthcoming). Alongside such convulsions, a second and more widespread reaction can be noted. A large number of farmers orient their farms toward new beacons, reaching beyond the large commodity markets: they (again!) distantiate farm management and development

from the prevailing market and price relations and the turbulence contained therein. Hence, a new current emerges, one of rural development, which I will discuss in Chapter 9. A third and final reaction exists: a relatively small portion of agricultural producers are able to successfully orient to the world market. However, this is not occurring in the historically large production branches, but more in the niches formed by fresh flower production, the growth of plant propagation material, and so on.

One concluding remark concerns effects on farm economics of the change from institutional reliability to turbulence. To illustrate this point, I return once more to the comparison between the style of *sunig buorkjen* (farming economically) and the style of the large farmers. If the latter was seen as the promise for the future in the early 1990s, while the former was generally assessed as 'too small' and 'not modern enough',¹⁵ by 1997–1998 the gap between the two was closing, according to Table 5.4.

Table 5.4 Calculated income situation for large farmers and economical farmers in 1997

Indicators	Farming style	
	large farmers	economical farmers
Gross margin 1997–1998 / 100 kg	60.00	58.80
Minus paid interest / 100 kg ^a	10.40	8.00
Minus differentiated depreciation / 100 kg ^b	21.80	13.50
Available for labour, general costs, and growth/100 kg	27.80	37.30
Total farm result	270,400	189,500
Labour units	2.34	1.63
Total farm result/labour unit	115,556	116,258
Calculated remuneration for labour (labour units * 80,000)	187,200	130,400
Remaining for general costs and growth	83,200	69,100

Notes:

^a It is assumed that the financial position in 1997–1998 is identical to 1990–1991.

^b The exact depreciations are known. With an eye to the different time horizons, the annual depreciations have been increased by 25 per cent for large farmers, those for economical farmers have been decreased by 25 per cent. By implication, the depreciation period used by economical farmers in their calculations is 50 per cent longer than the one used by large farmers.

Table 5.5 Results for large farmers and economical farmers after a dramatic drop in the milk price

Indicators	farming style	
	large farmers	Economical farmers
Variable costs/100 kg	24.10	24.80
Interest/100 kg	10.40	8.00
Depreciation/100 kg	21.80	13.50
Total costs/100 kg	56.30	46.30
Output/100 kg milk	60.00	60.00
Result /100 kg milk	3.70	13.70
Total farm result	36,000	70,000

If the analysis is extended to 1999, the year in which milk prices suffered a severe drop (see Table 5.5), it shows that a radical turnover of interrelations is not to be excluded: in a situation of crisis economical farmers perform relatively better than large farmers. That is, at the interface of former security and new turbulence, the virtual guarantees that supported the ambitions of large farmers, are dwindling away quite quickly.

Notes

1 By way of this segmentation, H is imagined out of existence, as it were (see Figure 4.18), positioning only the immanent 'laws' of G (regardless of whether this is cows, crops, soils, farmers, markets, or whatever else) at the centre of attention.

2 The chronic misunderstandings between agricultural economics and theoretical agronomy are not only rooted in conceptual and/or methodological details and difficulties. The shoe really pinches because two different claims to hegemony are presented. The question at the end of the day is whether the agronomic production potential or the set of (liberalized) market relations should be regarded as the regulatory system. This does not alter the fact that for conjunctural reasons coalitions can exist every now and again. These always revolve around the issue of cost price reductions. They are, according to theoretical agronomists, highly possible, whereas economists regard them as necessary. *Viola*, the temporary congruence between the two.

3 The central resource is labour, of course. Labour plays a crucial role in the agricultural production process. At the same time, the mobilisation of labour and its importance are both subject to complex processes. Labour is required to convert natural resources into end products. It is an essential production factor. Moreover, labour is, in the modern family farm, the 'carrier' of knowledge (with entrepreneurship and craftsmanship constituting essential aspects). Finally, the remuneration of the farmer, and perhaps others, occurs mainly via the same factor labour.

4 Analyses of the interrelations between utilised and/or utilisable resources are usually restricted to the difference between the three most important production factors (labour, capital, and land) and the so-called non-factor inputs (such as animal feed, fertilizers, energy, seeds, etc.). Non-factor inputs are those resources that cannot be regarded as part of the so-called production factors; these are resources that are fully consumed within one cycle and that, therefore, will always have to be mobilised somehow at the start of every new cycle (via markets or through home production).

5 This type of substitution has been analysed in various studies as part of a general process of externalisation. That is, various particular tasks (geared towards the production of certain goods and services within the farm itself) are externalised to (i.e. are taken over by) external institutions. Primary production, as it were, becomes interwoven within an expanding division of labour. It is important to note that the degree of externalisation is also highly variable at present (Long *et al.* 1986; Leeuwis 1989; Van der Ploeg 1990).

6 Those who produce at a level outside of the optimum as defined by markets and technology are viewed as inefficient technically and/or economically. This implies that the 'whiplash of competition' will lead to lower incomes and eventually to farm closures.

7 This is precluded more generally in theorisations about 'technological trajectories' (see, *inter alia*, Hodgson 1988; Rutten 1992; Dosi *et al.* 1993).

8 Including costs for custom work.

9 The following calculations and representations are based upon farms as a whole. They have been conducted similarly at the level of input, labour, and machine use per hectare. This resulted in similar figures.

10 This involves the following equations:

cowmen

$$\text{quota} = -3,401,100 + 774,700 \log\text{mach} + 497,300 \log\text{vak} (r^2 = 0.87)$$

std.err. [502,700] [104,300] [119,000]

sign. (0.000) (0.000) (0.000)

economical farmers

$$\text{quota} = -2,160,200 + 445,700 \log\text{vak} + 517,100 \log\text{mach} (r^2 = 0.59)$$

std.err. [849,200] [202,900] [178,500]

sign. (0.016) (0.036) (0.007)

machinemen

$$\text{quota} = -2,245,900 + 1,128,600 \log\text{vak} + 542,600 \log\text{mach} (r^2 = 0.78)$$

std.err. [950,900] [186,700] [191,600]

sign. (0.026) (0.000) (0.009)

intensive farmers

$$\text{quota} = -3,770,900 + 840,400 \log\text{mach} + 562,900 \log\text{vak} (r^2 = 0.74)$$

std.err. [707,900] [147,200] [185,400]

sign. (0.000) (0.000) (0.004)

breeders

$$\text{quota} = -1,868,300 + 444,500 \log\text{mach} + 467,000 \log\text{vak} (r^2 = 0.57)$$

std.err. [646,500] [143,700] [220,600]

sign. (0.011) (0.005) (0.045)

large farmers

$$\text{quota} = -3,678,100 + 1,588,300 \log\text{vak} + 770,100 \log\text{mach} (r^2 = 0.73)$$

std.err. [1,614,600] [410,400] [332,700]

sign. (0.034) (9.001) (0.031)

where $\log\text{vak}$ = logarithmic expression of labour input; $\log\text{mach}$ = logarithmic expression of mechanisation costs.

11 Of the initial 300 farms, 93 ceased maintaining farm accounts in the period in question. In 29 cases this had to do with farm closure (24) or migration (5). In 64 cases, other reasons were involved (other bookkeeping system, other activities, circumstances, economising, other accountancy firm, etc.). Even though no importance can be ascribed to this, it is intriguing that two thirds of the abandoned farms were *sljuchtwei boeren* (ordinary farmers). Generally, farm closures amount to 1 per cent per annum (for the whole of the initial 300 farms). If the data are viewed in more detail, it shows that farm closures are most common among ordinary farmers and breeders. With an eye to the current problems in the market for breeding cattle this is no surprise. Emigration is exclusively located in the styles of intensive farmers and large farmers.

12 That is, a similar level of 'output and volume change cattle' cannot be realised without difficulties in other styles.

13 The analysis is complicated here by the inclusion of calculated interest in this entry and the following ones. Below, I will also present data that refer solely to actual monetary expenditure. Furthermore, I will also discuss the debt position and the actually paid interest.

14 The latter will occur if a livestock unit norm is introduced. The absurd situation will then occur that economical farmers and breeders, who produce sustainably since they realise a low milk yield per cow, are punished by the environmental policy.

15 I am very aware that the economical farmers who I used in calculations in this chapter are still milking 60 per cent more than the average farm does. In Chapter 9, I will further discuss the situation and perspectives of farms that are smaller than average.

Part IV

Disciplining: The Future Dominating the Present

6 Expert System and Modernisation Project: Controlling the Future

In this chapter, I will discuss the role and position of the Ministry of Agriculture and the set of knowledge institutes that form part of this ministry. Throughout most of the post-war period, these institutes (the former Wageningen Agricultural University, the many agricultural research institutes, field research, advisory services, etc.)¹ were all under direct state control. In the 1990s, they were largely privatised and regrouped into new associations. Nevertheless, the Ministry of Agriculture and the knowledge institutes can still be regarded as one organic unit, because, despite all these recent administrative changes, there remains one, commonly shared set of axioms that together define the *virtual farmer*. This generally shared set of axioms makes the ministry (within which divisions such as DWK, BSB, DL, and MKG are operating)² and the different institutes into one organic whole, within which there is one core element: the ministry itself. The ministry is the *cupola* in which relevant knowledge is collected, combined, and converted into policy. Moreover, knowledge production is largely directed from within this 'dome'. In other words, the Ministry of Agriculture is an *obligatory passage point*.

Thus, in this chapter I will analyse the Ministry of Agriculture (and the associated agricultural knowledge network) as an expert system – that is, 'a system of technical accomplishment [and] professional expertise that organises large areas of the material and social environments in which we live today' (Giddens 1990, p. 27). This sizable expert system³ represents a particular practice from which the development of the agricultural sector is directed.

Knowledge plays a crucial role in the Ministry of Agriculture as expert system. However, the knowledge that is produced and applied does not concern so much agriculture as it is now, let alone (recent) agricultural history. The expertise involves agriculture as it is *expected* to look like in the *future*. Furthermore, it defines the trajectory that has to be travelled between now and then, the way in which this needs to happen, and the means by which this has to occur. Finally, this professional expertise also creates the rules that define and authorise 'participants', and which distinguish them from those who are, as it were, in their way. In short, the expert system embodies the knowledge and expertise that imply and define agency: rules, participants and resources – in short, the capacity to make a difference.

Knowledge about agriculture is derived knowledge: it concerns contemporary agriculture in so far as it is relevant to the trajectory to be

covered. Therefore, agriculture is defined in terms of starting points and obstacles. The present is regarded mainly from the demands that can supposedly be derived from the future. The classification system that divides farms into categories such as 'winners' and 'losers' (viable and non-viable farms) is not only a remarkable expression of this (Van der Ploeg 1985), but also the vehicle *par excellence* for the action geared towards controlling the future.

The Ministry of Agriculture as expert system is oriented towards a constant reorganisation of agriculture according to a carefully specified trajectory. The key word here is *structural development*. Through this process of structural development, 'considerable aspects of our material and social environment' are (re)organised.

Of course, the Ministry of Agriculture is much more than an expert system. It is also a system that generates and distributes resources. Moreover, it is an apparatus that generates, implements and adjusts regulations. However, it is expected that the ministry conducts these functions rationally – that is, in a well-founded and purposeful manner. In other words, the expert system is not merely an element fitting into a more comprehensive arrangement. It constitutes the brains and the all-encompassing legitimacy of the ministry. The ministry as a whole is an expert system. The mobilising and (re-)distributing of resources, as well as the design, application and adjustment of regulations (the 'ordering' activities), can only take place if they are part and parcel of and legitimised by the expert system. The ministry as mode of ordering (Law 1994, chap. 1) is therefore an integral part of the ministry as expert system.

An expert system can only function by the grace of *trust* (Giddens 1990, pp. 33ff). An expert system directs not so much its *own* organisation; an expert system relates above all to *others* (Dutch farmers, but also agro-industry, banks, consumers, etc.), who consider the indications, insights, and directions generated by the expert system as guiding, if not normative, for their own actions.⁴ *Trust* is the key word; it provides a particular linkage between, on the one hand, the future project of the Ministry of Agriculture and, on the other hand, the development projects of farmers and others. Trust, the feeling that one can steer a blind course on the given indications, is an indispensable ingredient in this. An expert system does not function according to a command-and-control structure. The many thousands of farmers and growers do not follow the edicts of the ministry but must trust it sufficiently to put its recommendations into practice. Even though the ministry can prescribe certain tasks and even though it controls the allocation of certain resources, its (potential) power and influence lies especially in the capacity to authorise behaviour (of others) – ⁵ to define the behaviour as rational, and therefore as desirable, whereas alternatives will thus appear as less rational, if not irrational, at the same time.

It is probably appropriate to point out, from the outset, the theoretical importance of the analysis to be developed here. In the previous chapters,

I have formulated a critique on the economic and technological determinism that permeates contemporary agricultural sciences. 'Farmers are greatly subject to the powerful forces of nature, the market and the state', according to Shanin in his study of the Russian peasantry (1972, p. 112). In this chapter, I will distance myself from the prevailing structuralist and evolutionary approaches, which equally contain a strong determinist flavour.

This does raise another question, however: how to define and understand the more or less constant associations and especially the mainly unequal nature of the relationships that various actors enter into? How is it possible that certain regularities, and also unequal distributions of power, result from the apparently open and indefinable (or indeterminable) interaction between a large number of actors? Inequalities of power that together seem to indicate a more or less coercive 'structure', i.e. a set of more or less fixed relations, from which the development of the sector could be explained. By way of such an operation, the technological and economic determinism would simply have been replaced by structural determinism (Buttel and Goodman 1989; Buttel 1994). I will try to avoid such a trap.

One of the alternatives for structural determinism revolves around a subdivision of actors in terms of *macro*-actors and *micro*-actors (see Mouzelis 1991). Hierarchical and asymmetrical relations in social constellations are central to Mouzelis' analysis:

'In complex differentiated societies it is impossible to understand how micro-situations are linked with macro-structures and actors, unless the analysis centres on the notion of social hierarchy' (1991, p. 67).

Although I cannot share such a conceptualisation, it undeniably contains a certain charm. If the ministry is imagined as a macro-actor (as a 'powerful force') and farmers as micro-actors, it is clear from the outset why unequal power relations exist in the sector.⁶ It seems that the ministry can enforce whatever it wants. Micro-actors might protest, but they will lose out at the end of the day.⁷

The Ministry of Agriculture occupies a unique position within the power game in and around agriculture. So much so that it sometimes appears as if it is indeed a macro-actor, that, by definition, has more agency at their disposal than other actors. It would indeed be a sign of unpalatable naivety if the Ministry of Agriculture and farmers (and agribusiness and the Landbouwschap and so on) were presented as undifferentiated actors. However, the opposite position – that is, Mouzelis' position – is equally unsatisfactory. By ascribing *a priori* more power or agency to certain actors – that is, macro-actors – it remains completely unclear how they acquire and maintain such power. Furthermore, it becomes almost impossible analytically to provide insights into how micro-actors are able to condition, if not negate, the power of the Ministry of Agriculture every now and again. Examples of the latter phenomenon will be discussed at length in the following chapters.

In the following analysis, I will first of all try to demonstrate that the influential position (the 'power') of the Ministry is created and reproduced by making different projects converge. By making the development projects of farmers, agribusiness, state, farmers organisations, and agricultural science actively converge, and therefore by achieving an important synergy, the Ministry *obtains* capacities for decision-making and mobilisation that not only reach far into the future but also contain an undeniable impact. Second, I will argue that the achievement of trust is crucial to the above-mentioned convergence of interests and perspectives. The ministry as expert system is an essential, but sometimes very weak, link, especially in the creation of trust. Finally, I will discuss a topic that is closely connected to the previous issues; however, it deserves separate treatment because of the theoretical discussion. The issue concerns the reification of the notion of structure. Analytically, structure is no more (but also no less) than a sometimes significant concurrence of circumstances. In and through the expert system, however, structure is made into a determining notion.

All in all, these issues can be united into one thesis: the ministry has been able to manifest itself as macro-actor; not because it occupies inherently (*à la* Mouzelis) this position, but because the ministry has been able to operate as a successful expert system for a long time. This has generated a synergy of different projects: the notion of structural development was actually supported by it. Furthermore, a hierarchy emerged, not *a priori* or structurally determined but as a socially produced phenomenon. Because it seemed as if the ministry as expert system had at its disposal the most adequate perspective on the future, and since the already occurring structural development seemed to support the ministry's perspective, it was able to actually emerge as an institution positioned in a hierarchical, and directive, relation *vis-à-vis* the other institutes and actors.

At the same time, however, this describes the transience of the colossus. From the moment the different projects started to diverge and collide, its foundations appeared to be made of clay.

Box 6.1 Additional methodological notes

I would like to conclude these introductory remarks by pointing explicitly to the limitations of the following analysis. Presenting a comprehensive description of post-war agricultural politics and of the way in which agriculture and state interact is far beyond my capacities. I concentrate on those episodes, on those aspects, that seem relevant for a redefinition of the structure concept. The methodological demand of symmetry, so eloquently phrased by Law (1994), is my guiding principle in this.

Essentially, the demand boils down to three issues: (i) the way in which the relations and developments at the micro-level are explained has to be in accordance with the way in which, for example, the macro-level is analysed; (ii) an explanation of the past cannot be drastically different from the way in which future possibilities are described; (iii) it is not possible to use completely different terms to interpret 'success' from the ones used to explain 'failures'.

I would like to elaborate further on one of these demands. In the previous chapters, the emphasis has, time and again, been on malleability – of both technology and economics as well as the ways in which to farm. At the same

time, we have, in particular since the mid-1950s, witnessed developments ('structural developments') that seem to falsify this malleability. Scale enlargement seems to be an irreversible process. Synchronically a discussion about variation and selection seems acceptable, diachronically (taking into account the long-term processes and 'structural' relations) such an analysis seems futile. The balance seems to be, anyhow, in favour of selection, and the possible space for creating variation appears to decrease 'structurally' (or to be reduced to proverbial niche proportions).

In the many discussions about research into farming styles, we have constantly been confronted by this dilemma. Its accompanying scepticism arose not only from scientist-colleagues but also from the farming sector itself: 'Is variation in farming styles not the result of the relative luxury we have experienced in the period of protected agricultural policy? Will it all disappear when we start to liberalise?'

It is not possible to do justice to this theoretically and practically most relevant question here (nor probably in any scientific study).⁸ My intentions are more modest. I will attempt to retell post-war agricultural history (at least fragments thereof) in the same terms that we used to make the phenomenon of heterogeneity – that is, of different farming styles – plausible.

In short, I will strive for the apparently impossible. I will try to lump together thesis and antithesis, variation and selection, multiformity, malleability, and the unmistakable development trend to larger, more standardised and more specialised farms. Achieving such a synthesis is far from easy, but it is probably obvious that it is necessary to give more consistency to the concept, and hence to the possibilities, of agricultural development processes.

6.1 The need for faith: the importance of local cultural repertoires

Farming is an activity that moves in permanent tension between opportunity and reality. Irrespective of the actual practice of farming, it is always the realisation of one of many possible alternatives. This applies both to the large and to the small. Every time a cow needs to be replaced, there is the question whether this is the right time. Should it have been done earlier? Or would a slight delay (perhaps wait for another calf) be better? An additional complication is that the questions (that is, the choices between many possible alternatives) are interwoven. There are no isolated choices in farming. Every choice moves through the whole farm via a chain of consequences.⁹ What would be the right heifer to replace the cow that needs to be culled? Perhaps a choice needs to be made between various heifers: choosing one implies getting rid of another. With hindsight, was it really appropriate to keep so many calves (today's heifers)? On the other hand, the absence of good heifers can lead to reconsidering the decision to replace the cow. And further reasoning is possible: from back to front, from cows to heifers, from the present to the future, and from the future back to the past (Vincent 1977).

It was emphasised in Chapter 2 that it is important to create consistency. The many choices have to be connected coherently. Consistency needs to be created through the process of choosing. Out of the array of opportunities, one possibility needs to be selected and realised. Preferably the one that fits best with the previous decisions, with decisions still to be

made, and therefore also with the concrete farm structure as the materialised outcome of past and recently made decisions.¹⁰

The next layer of complications arises if we introduce into the analysis the interface between farm and environment. For however simple and uncomplicated culling an animal might seem, the decision is definitely not limited by the farm as an isolated unit in terms of consequences or even in terms of intentions. To illustrate this, I will have to set up a rather uneasy combination: between Lenin, party ideologist of Communists, and Van Aartsen, former Minister for Agriculture in the Netherlands. At the time of the implementation of the first land reforms in the Soviet Union, it was necessary to have a classification in order to distinguish between landless labourers, small farmers, and rich farmers. The latter needed to be expropriated in order to provide access to land for the landless. Small farmers, on the other hand, had to be exempted from expropriation (at that time at least) in order not to endanger the broadly based coalition ('labourers, farmers, and soldiers one front'). A criterion was soon found: no or one cow stood for landless labourers, two cows for a small farmer, three or more for a rich farmer.

Never did so many farmers moan so loud. Particularly those who only had two cows really, but who, for the love of the animal, had never been able to actually cull the third cow, which had not milked for a long time and was no longer getting in calf.¹¹ The proletarian revolution, however, was ruthless (there never has been too much understanding between the radical left and farmers). Dutch farmers use a remarkable expression, the opposite of euphemism, to describe the route of culling. In the rural vernacular, it is called 'she goes out to face death'. Thus, in the Soviet Union the farmers themselves 'went out to face death' – precisely because they had not considered culling the third cow.

Eighty years later, sheds in the Netherlands almost come apart at the seams. Farmers do not cull any cattle at all. At a certain moment, calf prices rose to unimaginable heights – inexplicably, it seemed – since no farmer wanted to get rid of their calves. This is the period when the manure laws are being drafted, and numerous farmers speculate that an across the board cut based on the number of cattle and/or on the total amount of manure produced, will be enforced. With the experience of the super levy (or quota system) in the back of their minds, many increase the number of cattle as much as possible. No cow 'goes out to face death', as it were. Furthermore, farmers stock their land with beef cattle, even though they bring in no money whatsoever. Finally, they also exaggerate numbers at the annual May counts, when every animal is counted (as a result, no one knows exactly how many animals there are in the Netherlands).

In short, the decision whether or not to cull cattle is not an easy one to make and can have far-reaching consequences. And to think that this is only one of thousands of decisions that a farmer has to make. Even though numerous decisions have been routinised, the examples of Lenin, Van Aartsen, and their relationships with farmers show that routine decisions can have far from routine consequences.

In a recent study, Gerry van der Ven (1996) closely analyses grassland utilisation and the production of maize on dairy farms. Taking an apparently simple (perhaps even simplistic)¹² model as a starting point, she arrives at 320 alternatives for action concerning grassland utilisation and at about 500 alternatives for maize production. Chapter 4 already described at length the need for various cultivation measures in grassland production. Because every cultivation measure involves certain alternatives, a gigantic matrix appears defining numerous possible types of 'grassland management'. If internally inconsistent combinations are removed from the matrix, 320 valid combinations remain. The same applies to the cultivation of maize. If grassland production and maize cultivation are combined (which is the case especially on sandy soils), mathematically 320×500 concrete alternatives for action emerge. It needs to be said that Van der Ven's is a relatively coarse-mesh analysis. Furthermore, these are only two of many more farm tasks. Be this as it may, choices have to be made in this virtually endless sea of possibilities. Farmers are not unfamiliar to this: they literally see an 'endless' sea when they look around; they also make frequent use of the possibilities that it contains.¹³ A farmer can realise only one single option (one combination of alternatives) on their farm. In addition, today's choice can have enormous consequences for tomorrow's situation and opportunities.

How to manoeuvre in this sea of uncertainties? How to choose a concrete way of working from the whole gamut of alternatives for action?

Before answering these questions, it seems appropriate to present a few additional arguments. First, I would like to emphasise that there are no strictly 'technical blueprints' with which to solve the described problem. Apart from the fact that all attempts at achieving this have proved to be futile and unsuccessful, the craftsmanship-like nature of the agricultural production process and the fact that its labour objects belong to the 'living world' (and as yet not unravelled 'nature') exclude every standard procedure. Standardisation can only imply vulgarisation. Furthermore, the current search for a more sustainable agriculture implies a more precise attuning of farming to local ecology. This also excludes, by definition, any kind of blueprint (Bouma 1977a, 1977b; Dicke 1988; Van der Ploeg 1994a; Van Lenteren *et al.* 1995; Bruchem *et al.* 1996, 1997a, 1997b; Mansvelt *et al.* 1999). In this respect, I would like to return again to the culling of cows. The sustainability discussion implies a review of 'culling strategies' and therefore also of breeding policy and selection practices (Beaudeau 1994). The 'sustainable cow', a cow that lasts at least five, but preferably more, lactation periods has become a new concept. Former axioms are reviewed – the objectives to which production is oriented change.

In other words, the coordination of production – attuning the set of technical actions to each other and to objectives relevant to the actors involved – cannot be but *social* coordination (see Koningsveld 1987). This is all the more the case since that which appears as a cultivation measure in a strictly agronomic analysis is part of the labour process in the practice

of farming or, more broadly, is part of the life and work of farmers, neighbours, participants, and so on. A cultivation measure is not only meaningful and significant strictly within the domain of production, it is also significant in the domain of family and community, the domain of economic and institutional relations, and the domain of reproduction.¹⁴

A cultivation measure (and the same applies to what appear to be strictly technical actions in the shed) can seem significant within a strictly technical framework, but undesirable since it demands more labour than can possibly be mobilised by the family and/or via neighbours. It is also possible that one is of the opinion that a certain way of working introduces too much stress (see Mok and Van den Tillaert 1987), or that it collides with one's own identity (for example, arable farmers 'do not want to get their hands dirty'; Wiskerke *et al.* 1994), or that it endangers soil fertility in the long run, or that – according to those involved – it is not economically sensible. Farm labour manifests itself in various domains, involving an ongoing 'transfer of meaning'. The technical is, especially in agriculture, an integral aspect of the social. And vice versa.

Finally, it is important to note that the problem of choice does not decrease with growing knowledge, but rather increases. Historically, the balance between possibilities and reality has been subject to considerable changes: whereas local ecology, climate, plants and animals represented sources of uncertainty in the past, the increased control of at least the majority of 'growth factors' has not reduced but enlarged the range of alternatives for action. This is emphasised by the fact that the variability in 'modern' agricultural systems is considerably larger than the variability of 'traditional' agricultural systems (Bolhuis and Van der Ploeg 1985; Jollivet 1988; Steenhuizen de Pijters 1995; Jongerden and Ruivenkamp 1996).

Farming was, and still is, like sailing in a sea of uncertainties. The number of uncertainties increases with the progressing of agricultural development, because the number of alternatives to choose from grows with the increase in available knowledge.

Sailing in a sea of uncertainties demands beacons; and when there are no beacons, a well-trying course of action is necessary. Such courses for action have been created. Over time, local *farming styles* emerged, cultural repertoires that contained a detailed specification of how one had to farm. One repertoire is described in Chapter 2 (on the history of Frisian dairying).

More generally, Hofstee described a farming style as 'a way in which one has to organise and manage a farm that is generally accepted by a more or less connected group of farmers'. He continues:

'This farming style can relate to various aspects of farm management, such as the nature and type of machines, the way horses are hitched up, the types and organisation of sheds and barns, the type of carts, and many other more or less important details of farm management, but equally [. . .] to the general structure of the farms' (1985, p. 227).

Numerous agronomic classics, such as Columella (1977), Zacaria (1802), Barigazzo (1980), Cupari (1869), and Marengi (1923), but, for example, also the descriptions of the early Staatscommissie (1912), can be understood as accurate and extremely detailed descriptions of local farming styles.¹⁵ Why did farming styles come into being? Hofstee answers this clearly:

'A farming style has, just like every real style, a social-coercive character [. . .] The habit obtains, when established, a more or less self-evident, normative character. Things do not only happen like this, they should happen like this' (Hofstee 1985, p. 229).

A farming style provided something to hold on to. Beyond the boundaries of the 'generally acceptable' and the well-tested, only uncertainties existed. In this respect, Hofstee (1985, p. 271) speaks of 'the fear for the uncertainty that would appear as a result of change'. Herrera's (1984) work is also very clear about this. In summary, his thesis comes down to the following: small changes, even small deviances from the well-tested path, could have an extremely disruptive effect. The farming style did not exclude change, but measured it very carefully.

Former (highly localised) farming styles were institutionalised codes (and hence clearly defined patterns of action) with which to sail the sea of uncertainties (or, as we would say nowadays, to address the almost endless matrix of alternatives for action). A style indicated a well-tested path, a style provided the opportunity to interpret,¹⁶ to evaluate, and to manage deviances. Thus, a style transformed change into a controllable, manageable, and non-threatening process, and into a progressively occurring process. Without a style, change would be repeatedly a potentially threatening jump into the dark. In other words, local farming styles provided faith – that is, the security that a certain approach would provide more prospect for continuity and for social recognition than another, deviant approach.

A farming style is essentially the institutionalisation of a number of interrelated choices. The potential choices are made into something that is self-evident: 'that is just the way it is'. Thus not every choice requires endless deliberation (in other words, transaction and transformation costs are reduced). Moreover, the risk of inconsistencies creeping into farm management is avoided. Furthermore, a farming style (as a set of institutionalised choices) is also the framework for ordering, interpreting, and evaluating experiences. Communication becomes possible and ordered and both the delineation and the accumulation of knowledge become structured.

Through the ages, farm labour has been oriented towards the search for, and the guarantee of, continuity. 'Keeping the name on the land'¹⁷ should in this respect be regarded as a striking metaphor.¹⁸ The future was confronted by facing the 'immediacies of context' (Giddens 1990, p. 28), the many immediate dangers and uncertainties.¹⁹ Markets, as well as the

town–countryside relation in which they were embedded, represented a wide range of possible threats. Notions such as the ‘free farm’ and the *suyvere deel* (clean part) provided farmers with the instruments to establish their positions within this arena. The norm of self-sufficiency had a similar effect. All in all, the local farming styles of the day can be understood as a *script* (as experiential knowledge that has become normative)²⁰ with which a farming style could be guided along the many cliffs towards the future.

Crucial and eye-catching elements include the decisive importance attributed to having one’s own resource base, the extent to which one’s own resources are understood as the fruit of one’s own labour, and the certainty that the future can be faced with a sufficiently developed set of resources.

Resources are valued on the basis of their *use value* – that is, their value in securing a future. If we return one more time to the cultural repertoire of farmers in the Frisian clay area (see Figures 2.7–2.14), it is not only the central position of the cow that strikes the eye. What is especially intriguing is its subtext: ‘if you have good cattle, everything will turn out fine’. It is emphasised that these are dairy cows *fol fan bilofte* [full of promise]. *Lân en folk binne seinige mei dy* [With you, the land and its people are truly blessed; see Figure 2.5]. These cattle ‘proudly carry their gift home every morning and evening’ (Figure 2.9). However, there is one condition: work has to be carried out properly (Figures 2.10, 2.13).

Another condition is that cattle are ‘made’ in such a way as to be a real promise. This is emphasised in Figure 6.1 with reference to the horses: they are worth exactly what they have been ‘imparted with’ (or more literally ‘how they have been created’).

Thus unfolds the faith implicit in the former cultural repertoires that inspired concrete farm labour: a future could be developed by working steadily with a high-quality resource base. In this way, past, present and future became merged in one graceful movement into an ‘organised flow of activities through time’ (Vincent 1977). Every style contained its own future project, a locally defined way for farm development. This attached significance and meaning to the, often hard and merciless, slaving of farmers.

From the 1950s onwards, however, the development projects entailed in the different styles became increasingly expropriated. Or worse, the relation between now and then, between present and future, would be turned dramatically on its head.

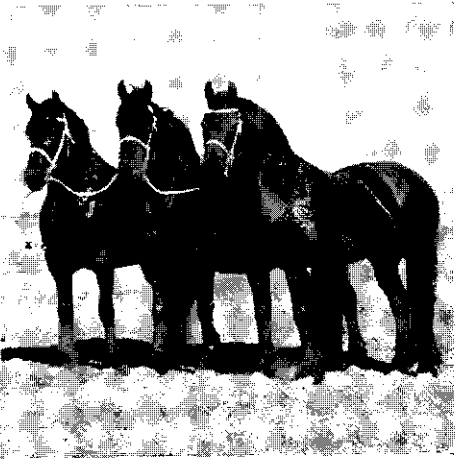
6.2 From faith to trust: the rise of the Ministry of Agriculture as expert system

In the 1950s, a new project emerges that will dramatically change the Dutch countryside and the agricultural sector: the modernisation project. One of its essential ingredients is the gradual delegitimation and marginalisation of former farming styles and the rise of the new expert system. Well-tried ways of working and the already developed resource

base were considered superfluous (see Figure 6.2). They had to make way for new practices. The cement changed dramatically too: faith gave way to trust.

Figure 6.1 From resources into promise: the creation of faith

III. IT FE



Net inkeld dat se kinne
mar dat se lûke wolle,
hwat har ynskepen waerd
dat reit jin doch safolle.

2. it Hynsder
1. de Kou
3. it Skiep
4. de Baerch

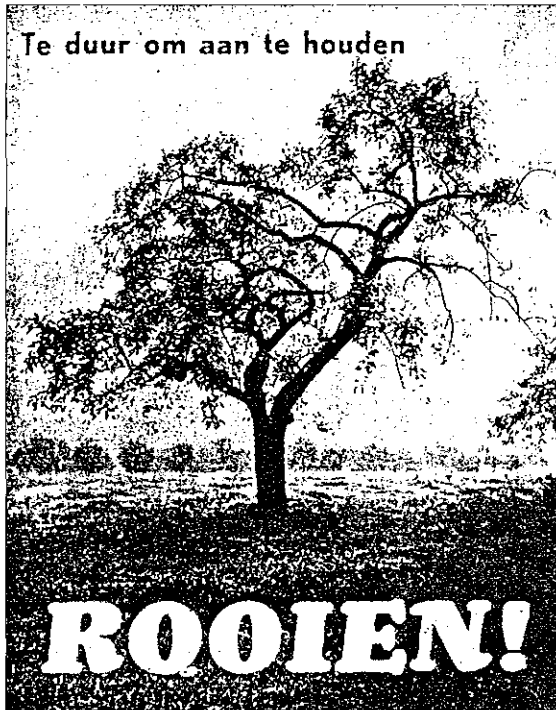
Not only are they able
But they are also willing to pull
How they have been created
Tells a lot

The modernisation project comprises in essence a radical, comprehensive, and far-reaching process of restructuring of agriculture. Farming has to be disconnected from its local parameters (from the 'immediacies of context') in order for it to be oriented towards new, more universal, beacons such as markets and technology; beacons that already (and later increasingly) surpass the local (Van der Ploeg 1992).

This modernisation project supposes above all the development and institutionalisation of a new expert system. In the words of Giddens: 'Expert systems are disembedding mechanisms because [...] they remove social relations from the immediacies of context' (1990, p. 28). At the same time, an expert system has to guarantee the raised 'expectations across distantiated time-space locations' (*ibid.*). 'Institutional reliability is essential, because it means that even as the network of interdependence caused by the growth of specialisation widens, we can have confidence in outcomes that are necessarily increasingly removed from our personal knowledge' (North 1989). In summary, farming is disconnected from the

former guiding beacons, while new beacons and new guiding principles are introduced and institutionalised.

Figure 6.2 That which had been developed became superfluous



Too expensive to keep:
Uproot them!

In sociological terms, the Ministry of Agriculture as expert system can be understood as a relativisation, if not denial (and subsequent marginalisation), of the practical knowledge and the innovative capacity of farmers. Thus the establishment of this new expert system is, as it were, the completion of another project that had been initiated a few decades earlier in the sphere of agricultural sciences. I have already discussed this paradigmatic change which led to farming becoming part of a Cartesian theatre. From then onwards, agriculture was understood as the (more or less perfect) unfolding of different rules – from which ‘maxims’ could be deducted on the basis of which the sector could be organised. In short, this is the historic and epistemological basis for the Ministry of Agriculture as an expert system.

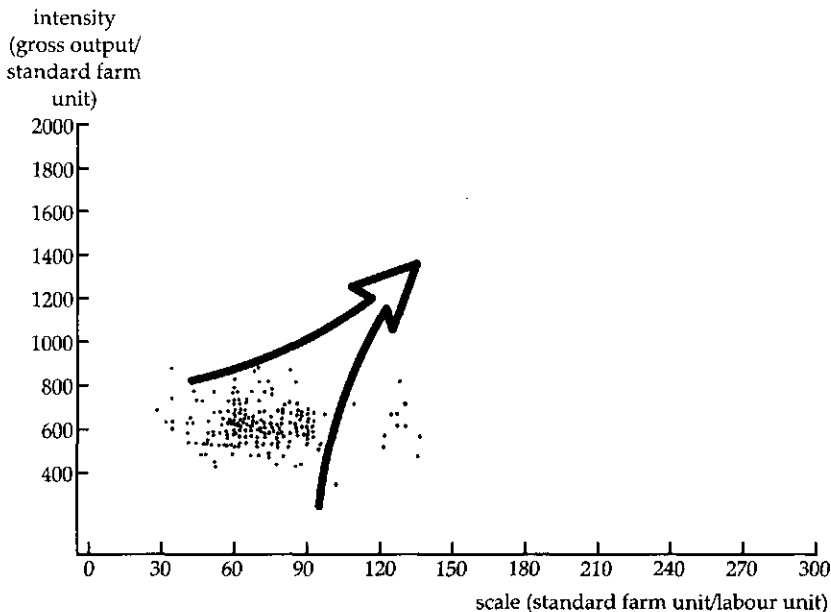
From the outset, modernisation is understood as a rationalisation, as a reorganisation, of the sector according to the models and procedures developed within the sphere of agricultural science. Thus, new elements and relations are introduced almost self-evidently. In this respect, I would like to refer to prediction, prescription, and intervention. Whereas the future was understood, within former farming styles, as completion of the present (further quantification was unnecessary), prediction becomes a crucial element in the new expert system. The same applies to

prescription: if former rules were largely internalised (and understood as being actor-dependent),²¹ the required behaviour is now made explicit and largely objectified. Finally, intervention: in order to make the predicted situation become 'true' (that is, realisable, plausible, obvious and effective), a number of instruments is needed to adjust the conditions under which farming is carried out in order to actually realise the predictions.

In a technical sense, the modernisation project can be imagined as the transformation of farming into a new, scientifically defined optimum. This newly imagined agriculture would be considerably larger in scale and much more intensive, than agriculture at that moment. Moreover, these two developmental tendencies that had previously been completely separated (Van der Ploeg 1987), would now be forged systematically into a single unity on the farm of the future. This is presented in Figure 6.3, which also shows that the initial diversity (partly expressed by differences in scale and intensity) would make way for a more homogenous agriculture.

If the image described in Figure 6.3 was initially regarded as a prediction, later it is presented increasingly as an *inevitable* process, indeed as the application of laws implicit in technological development ('the laws of nature') and in market relations and market tendencies ('the laws of society'). These laws are above all *known* by the expert system. The future is determined, as it were, and the science used in, and by, the expert system manifests itself increasingly as 'legitimizing rhetoric' (Szerszynski *et al.* 1996, p. 8).

Figure 6.3 The contours of the modernisation project



Why would the jump represented in Figure 6.3 occur? In which way and upon which principles was this image of the future founded? The starting points used were essentially constituted by market and technology; *not* by the market relations and technology of the day, but rather by the *expected* market relations and the *expected* technological development. It was assumed that better conversion opportunities (of inputs into outputs) and, therefore, more efficient production functions were inherent in the expected technologies. Future market relations would determine the optimal points on these functions. By 'reading' the future in such a way, it became possible to achieve an accurate specification of the future farm.

The situation in which the modernisation project was first formulated had a number of remarkable features. Agricultural production had returned to, and was exceeding pre-war levels and, following post-war reconstruction, was already producing a surplus. The European market, situated further afield, started to become attractive. However, it was a market in which one could only operate if a competitive advantage existed. During the reconstruction era, all labour was considered indispensable in achieving further growth. Therefore, technological development was based, in those years, on the premise that the available amount of labour should be mobilised as fully as possible.²² From the mid-1950s onwards, however, a more urban demand for labour was felt, as a result of industrialisation. Thus the question of whether agriculture could operate with less labour arose. The then familiar technological trajectory (continuous intensification grounded in the quantity and quality of farm labour) is compared with other, alternative trajectories, in particular those which are based upon a completely different scale – that is, upon a different relation between the number of labour objects and the amount of labour needed. American agriculture became an important point of reference, first for those who designed the modernisation project, later increasingly for farmers themselves.

From the mid-1950s onwards, the modernisation project is presented, and increasingly accepted, as a new expectation, related to various social developments and projects and especially to the possibility of combining these developments and projects in new and solid ways. By modernising agriculture, a competitive advantage could be achieved in new markets. In addition, an important contribution could thus be made to keeping the shopping basket cheap in the Netherlands itself. Furthermore, 'hidden unemployment' in the sector could be eliminated, releasing surplus labour for the rapidly expanding industrial sector. Finally, the incomes of the remaining farmers could be increased. An essential condition for this was a rapidly increasing production volume per farm. Equally important were an increased investment rhythm, considerable loans, and specialisation – in short, market integration. By way of such farm adjustments (that is by way of farm modernisation), farm incomes were assumed to increase continuously.

If all this sounds very plausible to those who witnessed the success of the modernisation project, and if it sounds inevitable for those schooled in a

form of technological and/or economic determinism, it did not seem so at the time. For farmers (Roep 2000) and their wives (De Rooij 1992; De Rooij *et al.* 1995), the modernisation project implied a radical change: not only in terms of the guiding beacons but also in terms of the concrete labour process itself. The modernisation project would only achieve much later its halo of *self-evidence*. At the time – that is, in the mid-1950s – it was thought that an agriculture that oriented itself too much towards prevailing market relations could easily become victim of this orientation. According to the collective memory of the time, some distance *vis-à-vis* markets would do no harm. The same reservations were expressed about technological development. ‘The newest is not always best’. Many years later agrarian historian Slicher van Bath delivered a lecture of this title. But such views were already well-embedded in the Dutch countryside. The temporal and spatial differences in the adoption of the new technological model (initially represented by cubicle sheds) illustrates this: those dairy farmers who were most convinced of their own ability and their own future opportunities – that is, in the north and west of the country – were the last to adopt this innovation.

In short, the creation of trust took quite a long time. One of the most important conditions for trust was that modernisation would prove to be a workable, successful, and reliable trajectory *in practice*. Hence, intervention became essential. This brings us to the active intervention of the state into the then prevailing set of economic relations.

6.3 State and market: driving structural development

In spite of, or probably because of, the scepticism of the time, the realisation of the modernisation project was undertaken energetically.²³ From the mid-1950s onwards, agricultural policy was increasingly and systematically oriented towards the realisation of a modernised agriculture.²⁴ The realisation of a jump as presented in Figure 6.3 became the goal, the *raison d'être*, and the legitimisation of the (new) agricultural policy and, perhaps even more importantly, the design principle upon which various specific interventions were based.

Land consolidation, interest subsidies, guarantee funds, ‘life-jacket regulation’, advisory services, applied research, ‘counter insurgency’ (see the columns of *Spil* magazine in 1977–1978), production management, the policies for nature and landscape conservation, manure and quality – were all separately and collectively (see, *inter alia*, Van den Brink 1990; and, more specifically, Frouws and Van der Ploeg 1973) geared towards realising the planned changes. Thus, the policy of the Ministry of Agriculture became largely a ‘self-fulfilling prophecy’.

By developing a set of instruments oriented towards the realisation of the supposed optimum, modernisation was *de facto* realised. All the more since the predicted future (again, see Figure 6.3) would only be granted to some farms. Hence, the image of the limited good²⁵ became, ironically, one of the structuring elements *par excellence* in the practice of Dutch agriculture: the future was represented as a scarce good. It seemed that it

was better to ensure a piece of the future *before* someone else did (before a neighbour did, so to speak): growth thus became a battle for the future.

Before I discuss these more surreal aspects of contemporary agrarian history, I have to raise a number of more profane issues. The first issue is evident. I have discussed this endlessly with a number of friends, among whom the eminent agricultural economist Jerry de Hoogh. In essence, de Hoogh's thesis comes down to the following: The modernisation of Dutch agriculture represents not so much a socio-political project but should, above all, be seen as the logical unfolding of economic relations (of markets and the relations and developments contained therein) as they were at the time and have been ever since. Labour became more expensive (partly because of the pull from the industry), capital and energy became cheaper. Added to the new technological opportunities,²⁶ no other development than the ones we have observed seemed possible – however painful this path appears.²⁷ It was implicit in the economic laws. De Hoogh adds that it was not so much the Ministry of Agriculture that initiated this inevitable disconnection. In his view, agricultural entrepreneurs experienced these changes in factor prices, and became, in turn, a driving force of what would later appear to be modernisation. The Ministry of Agriculture followed this farmer-initiated process out of necessity.

From 1957 onwards, a remarkable reduction took place in agricultural employment. At the same time, there were dramatic and continuous changes in the relation between labour and capital. Labour became more expensive, capital relatively cheap. These changes in relative factor prices caused, so it is assumed, a reduction in agricultural employment. The change in relative factor prices can be regarded as the causal complex; the reduction in agricultural employment as the outcome.

Both aspects (cause and effect) are contained (and inter-related) in the concept of structural development. Structural development is an ambiguous concept: it refers to changes in structure (in this case relative factor prices) that are regarded as all-determining. The concept refers also to the effects: to the adjustments of agriculture (the scale of farms, their sizes, the number of farms, agricultural employment, etc.) to these economic laws. Incidentally, it should be noted that the connection between the reduction in agricultural employment (an often harrowing and controversial process) and the economic laws is not only made with hindsight. Even though I opened this section with a reference to Jerry de Hoogh (partly to indicate the high esteem in which I hold him), the same reasoning was already functioning as justification and legitimisation at the time. By the late 1970s, the Dutch Agricultural Youth Organisation (NAJK) expressed a sharp critique of agricultural policy. It used the striking title: 'Keep on farming'. Thus, they distanced themselves from a selective agricultural policy which was geared to large farms and resulting in the neglect of the interests of others, especially of (young) farmers on so-called medium-sized farms. All this occurred at the cost of employment, according to the NAJK. In this respect, they talked in terms

of a 'failing agricultural policy'. The reaction from the expert system was typical. They claimed that the Ministry was not responsible for 'the fall in the number of farms and thus in employment – the reduction is inherent in the economic laws'. By 'attributing structural development completely to the 'failing agricultural policy'', the NAJK, according to the experts, 'ignores completely other important factors that have promoted these developments and that were located *outside of* agriculture and the agricultural policy' (my emphasis).²⁸ Reference is made to 'technological development and to the important fact that economic growth has resulted in a rapid increase in wages at the cost side under the influence of the general increase in labour productivity'.²⁹

Labour had become more expensive. Therefore, a larger volume had to be produced by less labour. According to the ministry, 'NAJK's critique treats agriculture completely in isolation, as if it does not form part of the national and international economies'. It is, therefore, wrong to attribute what happened 'solely to a failing agricultural policy'. For, 'even if large farms would no longer receive any state subsidies, they would be able to grow on their own account' (Ministry of Agriculture, press release 382, 1979).

The creation of synergy

In many ways, the modernisation project initiated in the 1950s is an admirable project. The gradually realised synergy between the government's project and various development projects of the organised business community, agro-industry, trade, science and of an increasing number of farmers is remarkable.³⁰ Today we would say that the extent to which an increasing number of 'stakeholders' were integrated into the modernisation project is and remains admirable.³¹ In an article I co-wrote with Long (1995), we highlighted this issue. Congruence – that is, synergy between development projects – is crucial for any development process. It is striking that such accordance is usually unachievable when considering the history of development projects at the global level, particularly in the Third World. The modernisation of Dutch agriculture is a remarkable exception within this otherwise rather depressing panorama.

Contemporary analyses of agriculture increasingly use the concept of *district*. South-Holland greenhouse farming (Vijverberg 1996), Chianina production in Italy (Venture 2000), or any other 'system', are regarded in these analyses as 'economic districts', each one with clear regional benefits. The district concept refers to the clustering of similar and complementary activities within a clearly defined social space providing an unmistakable economic advantage to those involved (Porter 1985). This advantage is not to be related only to physical vicinity; it relates above all to shared knowledge development, to co-operation and to confidence. If a seed supplier in the Dutch Westland district would supply a grower with low-quality and/or relatively expensive materials, the grower will inevitably let colleagues know and the supplier will find a large part of their market at risk. Vijverberg (1996) provides many other illustrations

(especially on the subject of technological development). The concept of district emphasises above all the importance of *convergence* and *synergy*. When the projects of growers, suppliers, sellers, researchers, and advisors converge, an extra ability, an extra 'capacity' emerges. This occurs partly because transaction and transformation costs are reduced considerably, but also as a result of the increased confidence.

What happens in the typical districts happened in and around the modernisation project of the Ministry of Agriculture. Convergence, and later synergy, was created around the notion of modernisation. The more successful it became, the more advantages the participants achieved, while the project as a whole appeared as better, and more obvious, than other development trajectories. The achieved convergence can also be read *differently*. If we concentrate on the actors involved (and to a lesser extent on their projects, as was done previously), we can say, following on from Szerszynski, that from within the expert system 'actor networks [are] constituted of which they [the experts] are the key members, but which stretch far beyond science to materially order society' (1996, p. 8). Following on from this observation, I would like to emphasise that this 'material ordering' came to include an impressive and increasingly irreversible co-construction of the material and the social as the convergence of projects and the growth of the 'actor-networks' expanded. The integration of applied agricultural research into the all-encompassing modernisation project implied, for example, that cows were created and criteria for bull selection were introduced, that fitted in with the newly considered optimum (and that made any other constructions hardly possible). The same goes for rural space: through land consolidation, low-level drainage, spatial separation of agricultural and non-agricultural functions, the space that was best suited for the realisation of the predicted optimum, was created. Other types of farming became suboptimal by default – simply because they did not contain the high degree of mutual attuning of space, cows, and farming that would become so typical of the fully modernised pool.

Initially, the modernisation project was, because of its uncertainty, an adventurous project. 'It really was an adventure to us [. . .] we could only hope that it would succeed' (Mansholt 1995, p. 76). Whether structural development would succeed was a continuing source of concern. 'Technocrats always want to know everything, but I was not too certain about it', again according to Mansholt (cited in Delaunay 1974). By the early 1960s, the question was seriously raised whether the brightest and the most enterprising farmers would be the ones who would abandon agriculture, leaving it as a reservoir of backwardness.³² However adventurous and uncertain (both aspects often go together) the modernisation project initially appeared, in retrospect it is represented almost without exception as the logical and unavoidable unfolding of the structural laws ruling the sector.

Different positions are taken in the debate about the relation between state and market. Various arguments are contrasted with counter-arguments. I would like to discuss some of them. First, it can be stated that markets never speak a 'language' of their own. Markets are not depersonalised or 'disembodied' entities. Markets are without exception institutionally embedded; they function via market-agencies (Saccomandi 1998). The latter not only represent specific interests but also actively articulate the presumed rationale of the market towards other stakeholders. It is hard to imagine how a market can be stripped of the institutions that compose it. To present these abstracted markets as an Archimedean point from which optimal developments and relations could be derived seems to me too much like a *salto mortale*. Authoritative agricultural economists (such as De Hoogh) also recognise that it is impossible to speak of agricultural markets nowadays without an intervening and regulating state.

A second argument touches more on the particular importance attributed to 'markets' within the modernisation discourse. The issue was not so much the market as it manifested itself at a particular time but rather with *expected* economic developments, the market of the future. Actual steps were taken to actually create the expected market on the basis of these expectations; to anticipate future markets, according to the jargon of the day. Thus projects arose, or more specifically, the modernisation project emerged. The point, though, is that after a certain moment such a project becomes 'coercive' – not because this is implicit in the past, but because it has been invested in with an eye to the future. The project becomes an interest in itself. Once the conviction became rooted that an ongoing conquest of foreign markets was an attractive, if not the most promising, perspective for Dutch agriculture, a number of practices were reorganised according to this conviction. In order to actually realise, utilise, and further unfold the competitive advantage, mergers and scale enlargement within the processing industry became of essential importance. The same goes for developments in dairy farming itself. A considerable flow of milk from large, specialised dairy farms to the dairy factories becomes necessary.³³ Because the output price at farm level is identical to the cost price of the factories, cost-price reduction and scale enlargement on the farm emerge, certainly in the long term, as essential conditions for, and indispensable ingredients of, the project as a whole.

However, this only describes the beginning. Once the sector became, to a certain degree, dependent on export markets, a continuation of the same path was necessary. Moreover, this very path implied that other development trajectories increasingly lost their relevance, if they were not *de facto* hindered. The infrastructure was tailored to large-scale bulk production, to the extent that other possible alternatives hardly fitted in.

Future-oriented actions are not neutral. Neither are they a logical completion of the relations at the moment on which a decision on action is made. In other words, projects are not a unilinear expression of the 'structure' at that particular moment, nor of the structure contained in

'opportunities and limitations'.³⁴ Such opportunities and limitations stem from the project as such, from its development, and above all from the interaction between the project in question and other projects. In so far as there is a 'structure' (a set of propositions that regulate and condition actions), these are above all 'emergent properties' – opportunities and limitations – that emerge during the course of the process.

The modernisation project cannot be understood as a logical unfolding of the structural relations and tendencies inherent in markets. The modernisation project was rather an attempt to step *beyond* the then prevailing relations. The role of institutions was pivotal in this. Without the explicit interventions of, *inter alia*, the Ministry of Agriculture, the modernisation project could never have occurred, at least in the form it took.

A completely different issue is, of course, presented by the fact that the modernisation project has, over the course of time, been made into (because it is increasingly understood and represented as) the logical, if not 'systematic', unfolding of structural relations in which agriculture was embedded. In particular the foundation of this apparently 'unavoidable dénouement' on a scientific discourse has contributed significantly to this. Thus, the initial prediction acquired an aura of indisputability.

In retrospect, one cannot but wonder about the nature of science practised at the time: a temporally and spatially confined empirical reality (the modernisation project as defined in North-west Europe) was generalised into a universal and ahistorical law. I will discuss this issue further in Chapter 7.

Incidentally, punishment for the sins was not a long time coming: the foundation on (assumed) scientific laws resulted in the expert system becoming more rigid, which became evident in the 1990s. The real relations in practice had shifted and new types of development, and new interventions, were necessary. However, the expert system was not capable of recognising this, let alone capable of adequate reaction. Whoever founds their knowledge on ahistorical laws places himself *de facto* outside of history when the times are changing. However, before we move into the turbulent 1990s, it might be a good idea to deal once more with the more orderly 1970s.

Actual state intervention in various markets expanded rapidly in the 1970s, in order to accelerate the modernisation project. State intervention initially concerned the land market (including land consolidations), the labour markets (socio-economic advisory), and the technology market (initially through technical advisory services and later increasingly through a deliberate technology policy). Direct intervention in the capital market also took place in the 1970s. The objective was to make capital cheaper. By means of a comprehensive interest subsidy programme (later supplemented, expanded, and continued by the guarantee fund, the so-called 'life-jacket regulation', the Investment Regulations Act (WIR) and fiscal laws, respectively), the price of capital was reduced both directly

and indirectly (De Bruin 1997a). Together with the high social costs of the factor labour, this implied that relative factor prices (the prices of capital and labour *vis-à-vis* each other) were changed considerably to the advantage of the factor capital. Heavy investments and the substitution of capital for labour are thus *made* into obvious operations.

If Hayami and Ruttan (1985) state in their, by now classic, work that agricultural development is a function of relative factor prices (which is also adopted by De Hoogh 1987), recent Dutch agrarian history shows that government in particular organises relative factor prices in such a way as to actually support the intended development project. This conclusion can be substantiated further by referring to the tax-free imports of concentrates through the Port of Rotterdam, the energy policy, the encouragement given to automation (Frouws and Van der Ploeg 1988), and the first trials of the environmental policy.

Again and again, government, or *in concreto* the Ministry of Agriculture, appears as a macro-actor, as a ubiquitous agency actually intervening in the development of markets and technology. Capital, energy, concentrates, and certain technologies are made cheaper on purpose. The opportunities to make labour relatively 'cheap' are ignored, at times scandalously so.* Hence, beacons are created that are often highly directive in micro-situations.

6.4 Rural exodus as structural outcome of structural development

Sociologically speaking, structure is that which directs and guides human action, in the widest sense of the word: including technical, economic, cultural, and political actions. Structure is that which orders complex and multiple action. If action displays certain regularities, it is very tempting to relate, if not reduce, this to an coercive, structural pattern.

The key questions of the social sciences are: (i) what do we owe structures, in so far as they exist, to? and (ii) wherein are such structures situated? Are they situated in the set of values and norms (for example, in the cultural repertoires that I discussed earlier in this book), in the prevailing power relations (such as suggested by the terms micro- and macro-actors and discussed systematically in more detail by political economy), or in the straitjacket of economic and technological relations?

As far as the first question is concerned, a series of answers was and is possible. To summarise the previous explanations for the sake of this line of argument: Structure (that which is directive to human action) is above all *contingent*. It is sometimes more or less accidental, but on other times the purposefully directed *concurrence* of 'things'. When *concurrence* occurs, structure appears, generating its own immanent persuasiveness. Where its specific roots lie (in the norms, in already created practices, in power relations, etc.) is always a matter for empirical research.

Alongside the role of the state in influencing, if not actively changing, relative factor prices, a second *cause célèbre* is riddling the agricultural

* Translator's note: The author refers to the refusal of the Dutch Ministry of Agriculture to implement the EC regulation for financial assistance to small farmers.

science debate, especially in the Netherlands. That is the continuous exodus of labour from agriculture that occurred since 1957. The total number of workers in Dutch agriculture rose between 1850 and 1957 from about 300,000 to about 570,000.³⁵ A reversal of this trend sets in after 1957. In 1995, the total number of workers in agriculture is about 250,000. The trend seems obvious: agricultural employment falls inevitably and, so it seems, constantly. It is like the water flowing through the Rhine from the Alps down to the North Sea: it is a fact that happens whether you like it or not.³⁶ Not only today, but every day. Apparently, there are coercive, 'structural' patterns and/or relations (if not 'laws') that result in this constant decrease.

The explanation is obvious. Again, labour becomes more and more expensive, capital cheaper. In other words, Dutch agriculture cannot develop other than through a continuous exodus (that is, via a constant reduction of agricultural employment). If this were not the case, the 'whiplash of competition' would be merciless.

The latter notion forms one of the central and connecting assumptions on which the Ministry of Agriculture as an expert system is based. The design of new policy aspects starts out from, and takes place via, the assumption that agricultural employment (and therefore the total number of farms) will fall. Or rather, the presumed decrease acts regularly as the solution *tout court* to any problem. In addition, the flipside of such a decrease (the concentration of production in a reduced number of farms) – usually defined as structural development – has become the norm to evaluate policy as a whole and also its constituent parts.

Structural development is the imperative with which the expert system perceives, organises, reorganises, develops, adjusts, and evaluates its 'area of competence'. Structural development is the notion with which the Ministry of Agriculture has made Dutch agriculture what it is (which is largely a success story). However, it is also the notion with which Dutch agriculture is guided towards its own downfall. In so far as a structuring moment did exist in the past decades or exists today, it has above all been situated in this notion of structural development, in the practices associated with it and reorganised by it, and in the inability to move *outside of* its scope.

The undeniable reduction in agricultural employment is the result of always unique constellations, characterised by the interlocking of different and always varying projects. From the mid-1950s onwards, urban-industrial demand for labourers increased considerably. At the same time, unknown opportunities for mechanisation presented themselves to the agricultural sector. This resulted in a sizeable movement of agricultural labourers from the rural sector to the urban economy. The bitter taste left after the large agricultural labour strikes in the late 1940's added impetus to this first 'round of reorganisation'.

The small farmers followed the agricultural labourers. In the former rural economy, larger and smaller farmers were connected by a complex web of services. Small farmers usually provided labour to large farmers. They

helped out in milking and haying, or took care of the heavy work in the autumn (the cleaning out of ditches, for instance). Large farmers, on the other hand, provided other services: supplying a few extra horses or, later on, a tractor and/or a good bull. These were transactions conducted preferably at a charge agreed beforehand or else settled on mutual terms. However, mechanisation on larger farms made this socially regulated exchange obsolete; hence, the maintenance of smaller farms was severely threatened (for a similar analysis of developments in the French countryside, see Eizner 1985).

Other episodes would take place later. In the late 1970s, a subgroup of dairy farmers specialised completely on milking. The growth of forage crops and the breeding and raising of youngstock became 'externalised': delegated to other (often smaller) farms. In the early 1980s, this process accelerated. The long-awaited quota system was about to be implemented. For some farmers, this was reason to utilise all available shed space, labour, and money to maximise milk production. Youngstock was grazed out, as it is called. Thus, a new type of division of labour emerged between farms: some farms specialised exclusively in milking, other farms specialised in the care of youngstock and/or in fodder production. The quota system drew an abrupt line through this pattern: the highly specialised farms again obtained space as a result of the quota system and 'took back' the breeding and rearing of youngstock. Consequently, the *raison d'être* for the other farms suddenly disappeared. They had none or hardly any quota and the youngstock by which they earned their livelihood had been taken away.

Numerous similar episodes can be described. First farm labourers leave, then farmers' sons, subsequently farmers on smaller farms, then those who provided services to the larger farms. The obligatory introduction of the 'milk tank' forms a separate episode, resulting in numerous mixed farms giving up dairying out of necessity, while many small dairy farms retire early and/or cannot be continued. 'The final phase of the introduction of the milk tank has resulted in accelerated redundancy', according to the Minister for Agriculture in an answer to parliamentary questions (Tweede Kamer 1981-1982, 17100, chaps. XIV and C, nr. 12, p. 43).

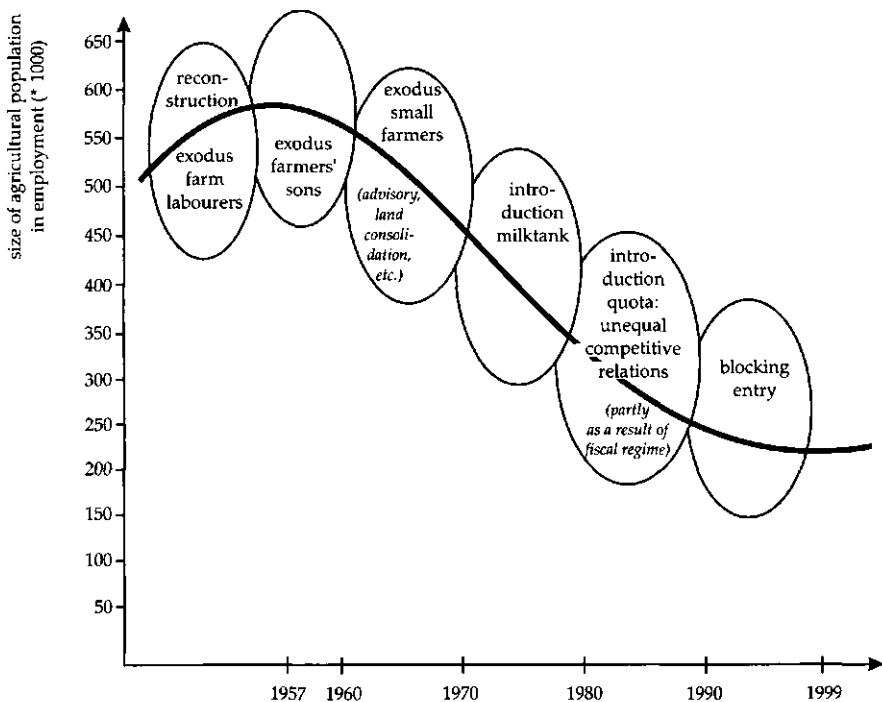
From the second half of the 1980s onwards, a period arrives when the entry of non-farmers into the agricultural sector is blocked almost completely. In the period 1970-1980, 2.7 per cent of new farms were added annually, either by founding new farms (1.4 per cent) or by enlarging farms above the bottom line of 10 standard farm units (SFU) (1.3 per cent annually). Without the entry of new farms, the annual decrease in farm numbers would have been 4.9 per cent instead of 2.3. 'The increased interest to start a farm is apparently an important factor' (LEB 1981, p. 43, table 2.2). Finally, the period arrives when farmers on the large farms go broke.

As indicated in Figure 6.4, the episodes are always specific ones, each with its own dynamics, its own beginning and end, and also more or less disconnected from the other episodes. The outcome, however, is always

the same: reduction in agricultural employment. First, as a result of an initial concurrence of circumstances, subsequently as a result of a second concurrence of circumstances, etc. Time and again, it involves an interlocking of particular circumstances: hard-headed farmers, a broken farm labourers' strike, opportunity to find employment in the ports or in industry – or the opportunity to start a small farm and expand it gradually. Numerous other episodes are added to this, such as the typical Dutch variant of the quota system, the unwillingness to pass available EU support on to small farms, and so on.

Furthermore, there are several more continuous processes, each representing the interlocking of particular partial interests and projects. In this respect, I refer to succession,³⁷ migration,³⁸ the occasional hopelessness,³⁹ the loss of 'pleasure' in the farming vocation,⁴⁰ and the tension between 'living poorly and dying rich'.⁴¹

Figure 6.4 A deconstruction of rural exodus into different episodes



In the world as described by the expert system, the reduction of agricultural employment is disconnected from all these defining episodes and processes. The reduction is very much represented as a structural outcome of 'structural developments'. Both occur without doubt: it cannot be denied that the relative factor prices have changed largely to the disadvantage of labour between the mid-1950s and 1995. The same applies to the redundancy of labour from agriculture. Of course, the key question is what kind of relationship exists between the two. Although it is a silly and well-trodden example, a parallel can be made with the

irrefutable fall in the number of storks, coinciding with a similar trend in the number of births. It is well-known that this coincidence does not say anything about the relation between both developments.

Let us first take a close look at the arguments as they are presented and then look for the 'black swans'. In their preface to an important collection of agro-political essays, Maris and Rijnveld point to the rise in real incomes in the Netherlands, about 50 per cent between 1950 and 1960. 'If income development of the agricultural population wants to keep in step with this, agriculture should follow the increases in productivity in other branches of industry. But how?' (1963, p. 5). The answer is typical of the extent to which the modernisation project was generally accepted at the time: 'A sufficient rise in labour productivity can only be achieved by a strong reduction of the number of labourers' (*ibid.*).

Of course, these authors were aware that this is only half the truth.⁴² An increase in labour productivity can be supported by a reduction in the number of labourers or by intensification (produce more per unit of land and animal at equal scale)⁴³ or by a combination of scale enlargement and intensification. Continuous intensification, however, was rejected because this 'would lead to new difficulties in marketing' (*ibid.*).⁴⁴ This is a strange argument, for two reasons. First, a rise in production could be sold via foreign markets (which actually happened later on), and, second, it would soon become clear that large-scale farms would produce much more intensively than smaller ones.

The argument by Maris and Rijnveld was hardly disputed. This is typical of the extent to which the modernisation project had become taken for granted. It is also shown by the language used: 'Agriculture is thus [sic], according to the number of people working in the sector, a declining branch of industry and has to be [sic] like this in order to carry on'. On the next page, 'necessary scale enlargement of agriculture' (1963, p. 6) is mentioned and elsewhere in the collection, Maris and Galan speak of a 'compulsory demand' (1963, p. 133).

6.5 Black swans,* or the micro-macro problem in agricultural economics

The agricultural sector is a complex aggregation of ten thousands of farms, their interrelationships, and their relationships with other agencies and actors representing the non-agricultural sectors. This refers, en passant, to the aggregation issue or the micro-macro issue: one of the most tricky questions of the social sciences. Can the 'behaviour' of a sector be presented in the same way as the actions of an individual entrepreneur multiplied by a hundred thousand or more? Could the rationale and development of a sector be equated with those of the actors that comprise the sector? Can the situation at the level of the sector be imagined (and thus calculated and predicted) as if it concerned the simple, straightforward addition of all entrepreneurs involved? And can

* Translator's note: the presence of black swans proves that the statement 'all swans are white' is untrue; hence, they represent the Popperian falsification principle.

that which emerges as regularity at the sector level be considered typical of the individual farm?

A classical mistake in the complex translation from the micro- to the macro-level and back again is the so-called 'phallacy of the wrong level'. What applies to the one level is, as it were, automatically attributed to – that is, applied to – the other level. It can be stated that the expert system in agriculture has elevated this typical mistake to its *raison d'être*.

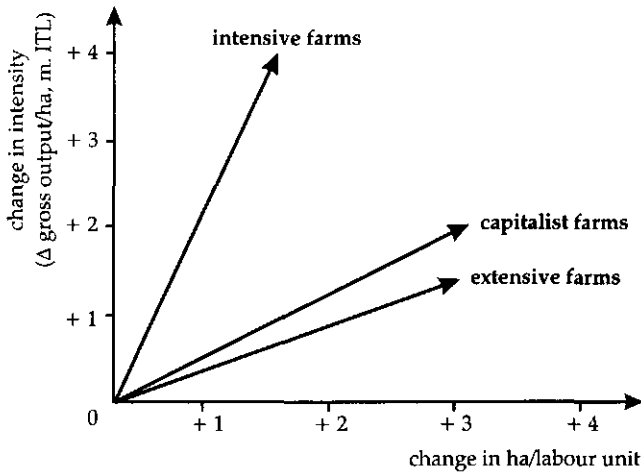
At the macro-level, an undeniable and irrefutable relation seems to exist between the fall in agricultural employment and the changes in relative factor prices. However, market relations do not affect the sector as such. The 'sector' is an abstraction, a complex aggregation that cannot be equated with one farm (whether or not it is multiplied by a hundred thousand). Market relations affect individual agricultural enterprises. It is either one or the other: either they influence them or they do not influence them at all.

Let us first pursue the *a contrario* argument, however and assume that relative factor prices enforce their 'logic' on the sector as a whole. Capital becomes cheaper and labour becomes more expensive. It implies that scale enlargement, and hence reorganisation or redundancy, would become inevitable; for the sector as a whole but also for all the farms that compose the sector. It can be argued that some farms will react appropriately to this (by introducing the necessary structural adjustments), other farms will not do this or do it too late. The latter group will be punished by the 'whiplash of competition'. Incomes will be relatively low, and their most likely fate is marginalisation. Only the farms from the first group will be able to continue in the long term and will excel through higher incomes in the short term.

In the early 1980s, I conducted a research with Eppo Bolhuis in the Italian region of Emilia Romagna. The available material enabled us to build a constant sample, consisting of thirty farms over a ten year period (see Bolhuis and Van der Ploeg 1985; Van der Ploeg 1990). Although the situation in Emilia Romagna, with its distinguishing characteristic of Parmesan cheese production, cannot be compared easily to the Dutch situation, the relative price relations between capital and labour in Emilia Romagna were and still are also subject to impressive changes.

Our findings have been summarised in Figure 6.5. In the period between 1970 and 1980, some of the farms involved increased their scale of production considerably, whereas intensity was only increased modestly. This group operated, as it were, largely according to the logic of the market. The second group, however, of the proverbial 'black swans', realised a highly contrasting development trajectory during the same period. The scale of farming was only increased slightly; intensity (in this case production per cow and/or per ha), on the other hand, was increased dramatically. In other words, they continued on the path that had previously been dismissed by Maris and Rijnveld *e tutti quanti*. However, this 'deviation' did not result in demonstrable income deprivation, nor in lower prospects for farm continuity.

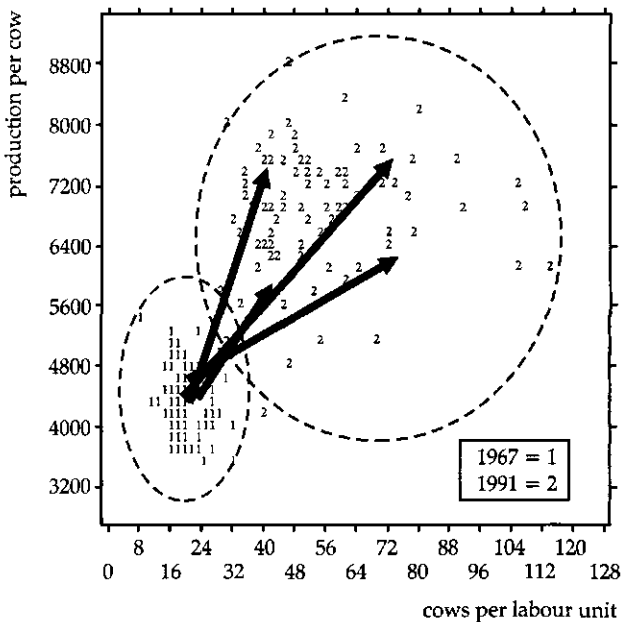
Figure 6.5 Empirical development patterns in the dairy sector of Emilia Romagna 1970–1980



Source: Bolhuis and Van der Ploeg (1985).

Within one and the same economic setting, *various* types of economic organisation and *various* types of farm development are possible. Later, this was also shown for the Dutch situation (see Figure 6.6 that relates to a constant sample of 117 Frisian dairy farms).

Figure 6.6 Empirical development patterns in the Frisian dairy sector (1963–1992)



Source: De Bruin (1997a).

What are these different farm development processes based on? Which (differential) mechanism supports them? Why are those in the expert system so blind to the meaningful diversity within empirical reality?

The studies summarised in Figures 6.5 and 6.6 relate to farming in otherwise homogenous situations – that is, the same set of economic, institutional, ecological, and technological conditions applies to all farms involved. Nonetheless, highly diverging farm development processes exist which can, first, be traced back to the highly variable ways in which farms are related to markets. The way in which the farm relates to the prevailing technology supply is also highly variable. Moreover, relations with both markets and technology supply are the object of strategic choices made by the actors involved. Second, income aspirations and the organisation of time can vary widely between farms (see De Bruin *et al.* 1991). Finally, a wide range of alternatives for action exists in principle with which farmers can parry possible pressures on their incomes.

The elements mentioned above are of great, if not decisive, importance to the concrete form of the development process in agriculture (and therefore to the concrete form of the developing farms). At the same time, they are almost completely absent from mainstream theorising: the *virtual farmer* is fully integrated into markets; they always apply the latest technologies (and preferably before others do); their strategic choices follow the model of the *homo economicus*; their time horizon coincides with fiscal depreciation opportunities (and is hence standardised too); and one ubiquitous criteria is used to describe income aspirations: profit maximisation.

If farm income is under pressure (as a result of falling prices, rising costs, rising income aspirations, family enlargement, and so on), various reactions are imaginable.

- 1 Attempt to reduce costs; for example, by 'doing more yourself' (see the substitution curves in Chapter 5).⁴⁵
- 2 Increase technical efficiency so that the same amount of resources produces a larger volume. Craftsmanship is the key here. It should be mentioned that 1 and 2 are often combined in various ways.
- 3 Scale enlargement: the number of labour objects per labour unit is increased. This can happen step by step or in leaps. The latter usually demands investments, for example in new technologies (and land-dependent branches will mostly have to invest in extra land). Implications for the cost structure can be considerable. Scale enlargement can also have negative effects for the output per labour object (3a). In combination with output-increasing technologies, however, both scale and intensity can be increased (3b) (see De Veer 1986).
- 4 Resign oneself to income reduction: a certain degree of marginalisation occurs. In this case, it is possible that additional non-agricultural income is sought.
- 5 Close the farm and sell the land, animals, machines, and buildings.

- 6 Pursue higher value added per unit end product by way of price increase of the product in question. This can be done by direct marketing, on-farm processing, and/or a change to quality production.

All of the mechanisms mentioned above are valid in theory. To what extent they are also valid empirically is subject to numerous temporally and spatially dependent factors, including the scale of income reduction and whether it occurs abruptly or gradually.

Take an imaginary agricultural sector comprising 100 farms. Assume that 10 farms close down (category 5, above). The resources of these 10 are taken over by 10 other farms that are part of category 3. The remaining 80 farms can be divided into categories 1, 2, 4, and 6. The net result of this exercise is that the average farm has enlarged somewhat, the number of farms has decreased (from 100 to 90) and total production has increased (contribution from 2, 3b, and probably 6).

This artificial example demonstrates that 'macro-data' (such as falling farm numbers, increased production) should *not* be interpreted as indicative of a generally occurring process of scale enlargement. Scale enlargement is above all a *localised* phenomenon. It is only one of many mechanisms to offset income reduction. Structural development is not more but certainly no less than one of the many 'local developments' taking place in Dutch agriculture.

This conclusion can be supported further by the outcomes of the so-called 'mutation analyses'. The development within various size categories is presented in Table 6.1 for the period 1975–1980.

Table 6.1 Differential development processes in Dutch agriculture, 1975–1980

size category in 1975 (in SFU)	absolute number in 1975	Disappeared (%)	Reduced	same (%)	grown	absolute number in 1980	newcomers since 1975
10–70	58,200	34		56	10	38,250	5,800
70–130	44,800	10	20	45	25	40,200	1,800
130–200	33,400	7	13	48	32	31,300	1,600
> 200	26,200	9	10		81	23,900	2,100
Total	162,600					133,700	11,300

Note: SFU: standard farm units

The total number of farms fell from 162,600 to 145,000 between 1975 and 1980. However, the reduction in farm numbers was not exclusively situated in the 'too small' group (in the early 1980s, a farm that could provide work for one labourer was defined by the Agricultural Economics Research Institute (LEI) as requiring at least 130 standard farm units (SFU); in 1984 this line was raised to 150 SFU per farm). The 1983 parliamentary 'Explanatory Statement' explains that 'it has to be expressed that a considerable number of farms are still too small. As a minimum for a farm to provide enough work for one labourer, the LEI used a limit of 130 SFU for 1981. Using this norm, 43 per cent of Dutch farms would be too small' (Tweede Kamer 1982–1983, vol. 17600, chap. XIV, no. 2, p. 36).

However, examination of Table 6.1 shows that at least⁴⁶ one quarter of the farms operating initially below 'this minimum' (the farm size category 70–130 SFU) were developed further. The difference from the farms that were larger initially (130–200 SFU) is only gradual in this respect (25 versus 32 per cent). In contrast, Table 6.1 shows that 'stagnation' and/or farm reduction is not restricted to 'farms that are too small'. The same phenomena occur in the larger farm size categories as well. In short, there are plenty of black swans!

'Farms that are too small' do sometimes grow and 'large farms' come to a halt or stagnate at times too. No watershed exists in this respect. The notion of the 'farm that is too small', with no other option than closure is therefore a virtual image that does not correspond with the world as it is. Of course, it is equally obvious that smaller farms are closed relatively more often and larger farms grow relatively more often (at least during the modernisation period). However, to relate this to underlying mechanics, to a causal complex constituted by prevailing economic relations, is untenable.

The aforementioned balance (more reorganisation of smaller farms, more growth of larger ones) is, above all, the outcome of an agricultural policy that is inspired by the premise of unavoidable structural development and that gears its policy towards it. 'The structural policy', according to Appendix XV (19.5/2955) of the Explanatory Statement, 'intends to arrive at the optimal combination of production factors entrepreneurship, labour, land, and capital' (p. 8). In the knowledge that 'building units of an adequate size has been central to Dutch agriculture over the past decades' (*ibid.*, p. 4), it cannot but be concluded from Table 6.1 that creating this 'optimal combination' has succeeded at least in part.

So far for the empirical processes of reorganisation and enlargement. We have to take one more complementary step. For even if it appears that smaller farms can indeed realise continuity, they still seem to be doomed. In the *long term*, they supposedly lack continuity and reasonable incomes.

6.6 The commodity fiction

Between the early 1960s and the mid-1990s, an almost endless stream of publications appeared which argued time and again that larger farms are generally characterised by better farm economic performances than smaller farms. Stable anchors in this stream are the Farm Management Survey publications, which report annually on the results of farms whose accounts were collected by the Agricultural Economics Research Institute (LEI). More convincing proof of the necessity of scale enlargement was almost unthinkable. Larger farms realised better labour incomes, better entrepreneurial incomes, and better net results.

These systematically produced findings are apparently at odds with the above mentioned black swans. Yet, the one is not a negation of the other. The economics of the farm can be approached, represented, and analysed in different ways. It is possible to start out from the real situation on the farms, especially where the empirical relations between commodity and

non-commodity circuits are concerned. In the previous chapters, it has been made sufficiently clear that such a difference is of essential importance in various ways. Different farming styles are partly based upon these purposefully produced differences.

However, a different approach is also possible. The neo-classical approach consistently takes for granted consistently what Polanyi (1957) defined as the 'commodity fiction'. This means that all resources, irrespective of mobilisation and use, are considered to be commodities.

Accordingly, the farm was and is conceptualised as a 'meeting point of markets'. It is regarded as irrelevant that parts of the used resources are not mobilised through markets (and do not appear as commodities in the actual production process). 'A good entrepreneur is supposed to calculate and act as if these resources *were* acquired through the markets in question.' Thus it is made plausible that the prevailing market prices are introduced into the analysis for all the resources used. The farm is translated into a series of costs and a series of outputs.

Initial criticisms of this approach argued that these devices for calculating farm incomes obscure and sometimes completely misrepresent the actual situation on a farm (Vondeling 1948). Be that as it may, the difference between the thus constructed costs and outputs – that is, the net result – soon appeared as an apparently objective, indisputable, and trustworthy measure to distinguish good from bad. It was not too difficult. *Good* soon appeared to be almost identical to large, and *bad* to small.

For example, in 1991–1992, the net return of the smaller, highly specialised dairy farms was NLG –82,218 and on the farms defined as large NLG –74,513. 'Loss' was suffered everywhere. However, the loss was worse on small farms than on large ones. If family farm income was NLG 67,000 on larger farms, this was less than NLG 36,000 on smaller farms, according to the LEI (Van Dijk *et al.* 1993). Labour is insufficiently remunerated on smaller farms (at least worse than on larger farms). Smaller farmers continue only through 'self-exploitation'. The possibility of maintaining the farm and letting it grow would be correspondingly smaller. Sooner or later smaller farms would have to disappear.

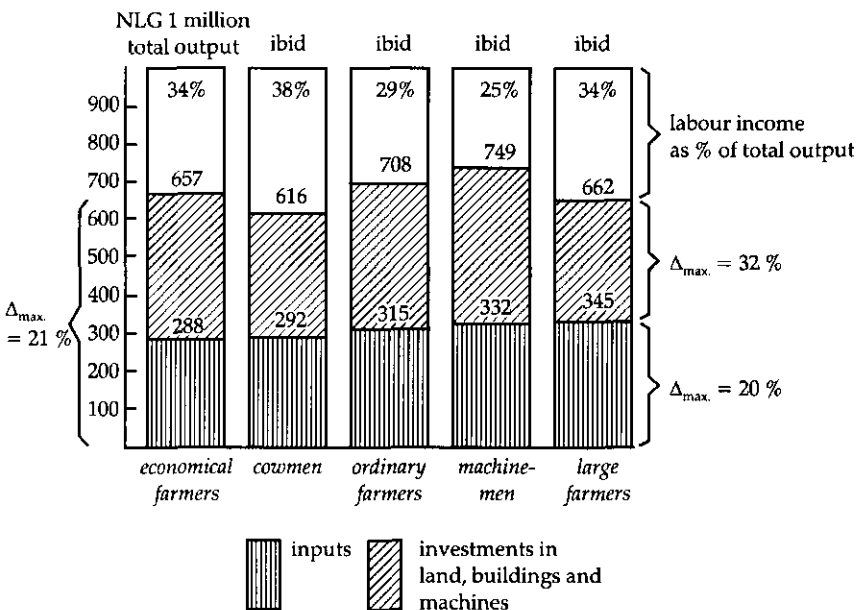
There are a few arbitrary moments in the prevailing calculations of the net return (and to a certain extent of family farm income), which are inherent to the neo-classical perspective. These are arbitrary moments that imply foremost a bias against smaller farms. In order to calculate the net return, a number of costs have to be calculated: the monetary value of labour of farmer and family members, the monetary value of the land, animals, and machines, and their respective interest rates – that is, the remuneration of net worth.⁴⁷ The following issues are decisive in this:

- 1 the interrelations between assumed values of capital, labour, and land;
- 2 the introduced time horizon;
- 3 the assumption that farm and farm family coincide not only analytically but also in reality;
- 4 the assumption that every farm represents a point in a unilinear development;
- 5 the assumption that outputs coincide with saleable products.

As discussed in Chapter 5, the subjective assessment of factor prices varies considerably. 'Economical farmers' will consider labour to be relatively cheap and capital (and non-factor costs) relatively expensive. Hence, economical farmers will pursue the replacement of labour by capital to a lesser extent than, for example, machine farmers. Land is the expensive factor par excellence for intensive farmers: they will minimise the input of land. And so on. The introduction of one set of calculable prices (the agreed wage for labour and the interest of government bonds for capital) cannot be but arbitrary.

We might conclude therefore, as a first issue, that the points of reference are highly variable in practice. Whichever the standard chosen, some farming styles will be calculated as richer, some as poorer. More specifically, this type of reasoning can be geared towards the assumed interest rate: 7 per cent will not be high enough for some farm types and will, *vice versa*, go far beyond the reproduction rhythms that apply to other situations. A second issue concerns depreciation, which is calculated according to a certain time perspective. However, the social organisation of time in agriculture is very variable. Machines are replaced every few years on some farms (in order to sell them at an attractive residual value),⁴⁸ whereas there is a preference on other farms for working with second-hand machines, which are used as long as possible, partly through well-attended maintenance. A similar variation can be found with cows: cows are only milked for 2–3 years on some farms, whereas this is 8–10 years on others. Again, it will be clear that a 'golden road' is completely fictitious. The purport of these first two issues can be illustrated by Figures 6.7 and 6.8.

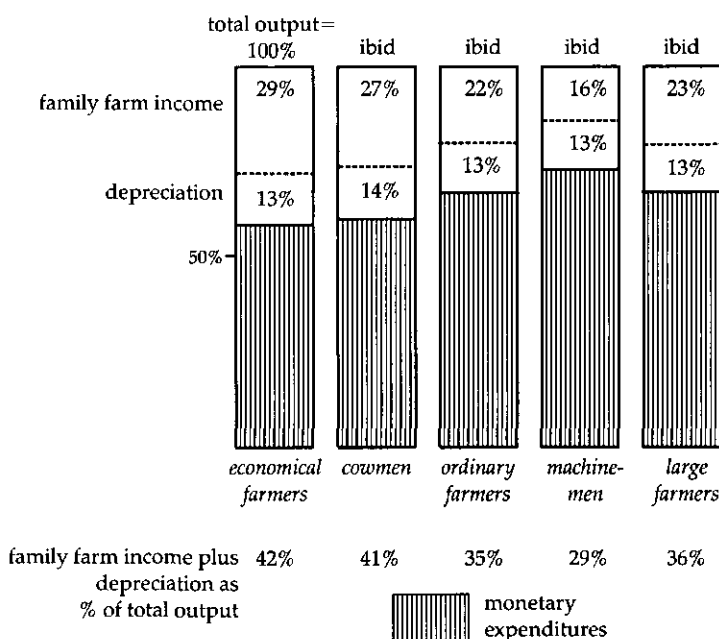
Figure 6.7 A neo-classical representation of the income situation in various farming styles



In Figure 6.7, the neo-classical approach is applied to a number of farming styles. In Figure 6.8, the Chayanovian approach (Chayanov 1966; Van den Broek 1998a) is applied to the same database.

One of the striking differences is that the income component of, for example, economical farmers rises from 34 per cent to 42 per cent of total output. This is a considerable difference in practice. However, the difference is eliminated systematically in the construction of the virtual agricultural world (see LEI 1996, pp. 62–66).

Figure 6.8 An application of the Chayanovian approach to farming styles in the Netherlands



Third, there is the issue of pluriactivity. In some situations, this complements the income considerably, whereas it is of marginal importance in others. Such additional on-farm and/or off-farm activities occur both on smaller and larger farms, but not randomly so. Pluriactivity is comparatively more important on so-called smaller farms. The subsistence base has been widened.

Of course, the commodity fiction was not without its critics. Perhaps the most remarkable annotations were raised by Jan de Veer, vice director of the Agricultural Economics Research Institute (LEI) at the time.⁴⁹ In an article in the 1977 annual report, he questions whether, and if so how, 'the farm results as determined by the LEI fulfil the function of assessment criteria and warning signal' (LEI 1978, p. 9). He investigates two approaches. 'First, one can examine whether remunerations charged for means of production correspond with the assumptions of maintaining the continuity of the enterprise.' Furthermore, account is taken of 'the

assessment of levels of consumption and savings realised in practice'. Both approaches are typical of the commodity fiction. The conclusion reached by De Veer is plain as day: 'Neither of these approaches has arrived at tenable conclusions. A final assessment needs to be supported in both cases by subjective and socially informed considerations' (*ibid.*).

Astute observations hide behind this general conclusion. 'Despite negative farm results [i.e. a negative net return], farms have succeeded on average to maintain their net worth and to adapt to the demands of technical and economic development.' Despite the negative results, 'considerable investments in expansion and modernisation' have been made (*ibid.*, p. 23). Analysis of consumption and savings results in similar observations. In short, '[a] negative net result, calculated on the basis of assumptions made by the LEI, does not have to imply that the possibilities of spending and capital formation by entrepreneurs and their families have to fall below the level required for maintaining continuity'. And *vice versa* it applies that 'a positive net result does not imply that a situation is achieved in terms of possibilities for spending and capital formation by which farm continuity is assured' (*ibid.*, p. 42).

The quoted reflection by De Veer is the outcome of a solid analysis, based upon rich empirical material. Interestingly, it is an immanent critique. De Veer uses the neo-classical method to analyse the range, limitations, and therefore the validity of the then established neo-classical approach (in which the commodity fiction is both starting point and *raison d'être*). In addition, Jan de Veer occupies a prominent place within the expert system (both then and later). Therefore, it is all the more remarkable, and intriguing at the same time, that his critique hardly caused a stir. Initially, there were a few ripples, but it all died down after a few years. Thus, in his introduction to the 1979 Budget (Tweede Kamer 1978–1979, vol. 15,300, chap. XIV, nr. 13), the minister remarked that the figures of net value added and factor costs in agriculture should be interpreted carefully. 'The absolute value of the factor costs is highly determined by the assumptions used in the determination of the remuneration claims for labour, land, and capital' (*ibid.*, p. 2), referring indirectly to De Veer's article. One year later, the 1979 *Landbouw-Economisch Bericht* appears. The ritual statement has once again found its pre-eminent place: 'It appears from farm economic data that about 75 per cent of farms achieved a negative net result. This means that the used production factors are not remunerated according to the rates on these farms'. The commodity fiction has returned in full. Even though an objection *à la* De Veer follows ('a negative net result cannot be seen as a sign of the continuity of the farm coming under threat'), it is no longer seen as very important: 'The above mentioned figure indicates that a considerable proportion of agricultural labour has no continuity in the long term' (LEB 1980, my italics). This quote sharply reveals the true nature of the expert system.

De Veer shows in a meticulous and extraordinarily thorough manner that one of the foundations of structural development – that is, larger farms having more chances of success than smaller ones – is untenable both methodologically and empirically. In name of the future (the long term),

however, this discovery is put aside. The notion of structural development might not be right at present, it should be right and will be right in the long term. The predominance of theory over practice, of future over present, emerges here quite dramatically.

There is no longer a place for empirical reality. In the 1981 Budget (chapter XIV on agriculture and fisheries), normality has been re-established. In this text, the expert system announced by way of the minister that 'space for as large a number as possible of socio-economically viable family farms depends largely on the profitability of agriculture' (Tweede Kamer 1980-1981, vol. 16,400, chap. XIV, nr. 2, p. 54). It is stated, needlessly, that 'farm development policy cannot surpass this either' (*ibid.*).

The story about Jan de Veer, or rather the story about the sticky mud in which his statement eventually went down, is not unique. There are plenty more of these anecdotes – and that is precisely what is made of the matter. The issue in itself does not alarm me. What seems worrying is the nature of the notions concerning the 'long term'. All in all, it involves conventions, *axioms*, that are shared within the expert system. These are axioms that do not need to be specified, let alone need any support or proof. These are the axioms that are shared across the network on which the modernisation project is based.

Careful empirical studies and/or thorough theoretical discussions do not matter. In so far as they identify complications, they are at the most twists and turns in the road to a 'long term' when everything will eventually be as it 'should' be. Furthermore – and this should also be an issue of careful attention – these conventions (or maybe I should say these virtual images) inform the development and implementation of policy, after which series of frictions, unintended consequences, problems, and missed chances emerge.

The previous analysis can be summarised briefly and concisely. 'Small farms', as defined and understood within the expert system, do not exist. Indeed, there are smaller and larger farms in Dutch agriculture. The size of farms is one of many dimensions along which farms can be distinguished. However, in so far as 'small farms' are defined as productive units that are doomed to disappear, *those small farms do not exist*. The notion of 'small farms' is an 'artefact', it is a construction created and reproduced by the Ministry of Agriculture as expert system.

'Small farms' figure in the expert system as a defect, as an aberration – that is, as insufficiently large farms, as farms on which no reasonable income nor continuity can be realised. 'Small farms' are the flipside of 'large farms', which embody a magical capacity to participate in a future from which small farms are excluded.

Judged by the contemporary diversity and dynamics of the sector, this is a completely untenable notion. Small farms too demonstrate dynamics, small farms too can be made successional (De Bruin 1991). Unfortunately, ideas do not have to be 'true' to still make an enormous impact. 'Things are real, if they are real in their consequences.' It is a basic principle with

which every social scientist is made familiar. The notion of 'small farms', as carried by the Ministry of Agriculture as expert system, is a textbook example of this.

It was mentioned at the start of this chapter that the expert system is not so much concerned with today's agriculture. The knowledge that is accumulated is particularly involved with the supposedly necessary transformation of agriculture to a future that is represented as being inevitable. In combination with the discussed *commodity fiction*, this results not only in the construction of the aforementioned *artefacts*, but also in further far-reaching distortions.

In the early 1990s, I was involved in an interesting research project with the acronym DOBI. The research followed on from concern about the stagnation of automation in agriculture. One of the diagnosed causes was that too little was known about the different objectives, strategies, and information needs in the agricultural sector. Hence, the software developed was often too crude; it resulted in coarsening instead of the necessary fine-tuning.

One of the aspects of the research project concerned an application of the methodologies that we had already developed within the research into farming styles to the database of the Agricultural Economics Research Institute (LEI). The objective was to map out the differentiated information needs more precisely. The work was carried out with great enthusiasm. Relations were excellent on the work floor and the end result did not look bad either.

Still, there was a hitch. It appeared that there was something strange: the LEI sample (the databases that provides information about Dutch agriculture) appeared possibly biased. To cut a long story short, the style of farming economically is underrepresented within the LEI sample. Checks and rechecks were conducted, but the conclusion was final: there is something wrong with the LEI dataset that is supposed to represent Dutch agriculture as a whole. The technical cause was tracked down too. It is probably a case of negative self-selection.

The importance of such a bias should not be underestimated. By underrepresenting the style of farming economically, smaller farms are once again represented as economically uninteresting, as a *cul-de-sac*.

A second implication (which was particularly important in the widely debated manure issue of 1994–95) is much more serious. Since the style of farming economically is generally characterised by low input levels of minerals and by a high internal efficiency, mineral surpluses are relatively, if not very low. A timely correction would have been very expedient. An important study such as 'the socio-economic implications of N, P, and K policies' (Projectgroep Verliesnormen 1995) would have turned out decisively different – if they had included an adequate sample entailing also the economical farmers. In our naivety, we initially assumed that there was no problem whatsoever. Our task is to conduct scientific research. If this shows that a certain database (in this case the LEI sample) no longer meets changing social trends (increasing attention to farming

styles, for instance), there is no problem at all. Criteria change and the LEI should have reacted positively to these changes by saying 'This is an important signal. We will analyse this further and review its implications for our work. For it is very important to us to constantly improve our database and to adjust it to changing circumstances'.

However, this appeared to be a misperception. Even though the initial text was censored, even though LEI employees wrote various and increasingly concealing sections to replace earlier versions, the text was shelved. It became increasingly obvious that publication was being delayed (it appeared eventually in April 1996). Meanwhile, I found myself in an impossible position. In legal terms, publication (and any other type of communication towards the press or otherwise) is only possible after approval by the client. Only nine months after an agreed publication, has the researcher the right to express his own opinions about the research. I checked this again with old hands in my own field. They were unanimous and outspoken: 'Don't do anything foolish. Just wait and do whatever you like afterwards'.

More generally,⁵⁰ this incident shows the extent to which, once it has been created, a (mis)representation starts to generate an interest in itself – more precisely, an institutional interest. The LEI wishes to maintain the monopoly on the representation of Dutch agriculture. Every correction or self-correction appears potentially threatening in this respect. Admitting that a mistake has 'simply' been made is, within this track of thought, so much as admitting that a mistake can potentially be made again. The results could, in principle, be disputed and criticised. This clashes with institutional interests.

In all likelihood, the same applies more generally to the expert system as a whole. The taken position becomes a onerous burden, which begins to influence 'imperatively' the further unfolding of events. (Incidentally, agricultural research institutes such as the LEI have to earn an increasing proportion of their budget through the market: maintaining 'institutional rights', or rather 'institutional infallibility', thus becomes a material interest too.)

6.7 Interim summary: the pillars of the expert system and the modernisation discourse

Wandering through the recent history of Dutch agriculture, we have encountered a few 'axioms' that constitute the core of the Ministry of Agriculture as expert system. These are axioms that are shared across a wide network; axioms that are so self-evident that they do not need to be tested or discussed; axioms, finally, that provide coherence to policy for a long time, if indeed they were not the origin of it. In summary, the following axioms are involved:

- 1 Modernisation is a necessary and inevitable process. It is driven by general economic laws (especially the change in relative factor prices) and by technological development. Markets and technology compose a structure that rules Dutch agriculture. This structure (this 'causal

complex') generates a 'structural outcome': the constant reduction in the number of farms and employment in the sector. The continuous nature of this reduction emphasises the stable and dominant nature of the structure. Frictions, deviations, and the fact that a constant reduction in farm numbers takes place via different episodes do not matter.

- 2 By way of a continuous rural exodus, the necessary space is created for ongoing scale enlargement. Exodus and scale enlargement merge together into structural development. Structural development is a 'compulsory demand'. Without structural development, the future is unthinkable.
- 3 The Ministry of Agriculture is actively involved in designing, implementing, and legitimising structural development as a concrete process. In the discussion about this, however, the ministry presents itself as being almost devoid of agency. At most, the ministry follows the structural imperative contained within markets and ongoing technology development.
- 4 The development of the sector as a whole is interpreted as an illustration of the development of its constituent parts (the 'phallacy of the wrong level'). In so far as a differentiated view of the sector is necessary, it is derived from the extent to which structural development is realised. There is a leading group, a middle group, and a group of laggards, the 'farms with a productive disadvantage'. The one-dimensional, unilinear, and normative character of this division is shown most clearly in the further characterisation of the middle group: 'This group contains those farms that either will join the leading group in the long term or will fall back towards the laggards' (Memorie van Toelichting 1977, 19.5/1635-4, p. 6). This classification scheme leaves no room for black swans.
- 5 The agricultural sector contains a considerable number of laggards, the smaller farms. They are not able to generate an acceptable income, nor are they able to realise continuity. That is why they are disappearing.
- 6 The only right way to gain insight into the relations in and development tendencies of Dutch agriculture revolves around the consequent application of the commodity fiction. This is another reason why black swans remain unseen.
- 7 Even though various developments (dynamic processes) take place in Dutch agriculture, only one development is, on the whole, really important: *structural development*. Therefore, the notion of structural development constitutes the conceptual framework with which empirical developments are perceived and/or filtered away (resulting in the production of knowledge as well as ignorance).

Collectively, these axioms constitute the rigid benchmarks from within which the modernisation discourse is (re-)composed time and again. 'At the core of the modern project [. . .] is the notion that there is a small class of phenomena, objects or events [or rules] that drives everything else – a suggestion often linked to a belief [institutionalised in the 'expert system']

that [. . .] these root phenomena [are firmly] understood' (Law 1994, p. 12). On the whole, these 'root phenomena', as previously summarised, permeate in the notion of the 'vital agricultural sector' (*Rijksbegroting voor het jaar 1981*, 16.400, chap. XIV, p. 3).

Such a 'vital' sector 'is of great importance, for more than one reason' (*ibid.*). It supports employment, the export surplus on the balance of trade, food security, the liveability of the countryside, and the appropriate use and management of 'our' rural areas. 'A strong agriculture is indispensable' in all this (*ibid.*). In other words, a 'vital or strong sector' is in the public interest.⁵¹ The subsequent translation of this public need into a strong sector is determined completely by the pillars of the modernisation discourse: 'We have to bear in mind that this [that is, a vital sector] is *only possible* if farm results are such that the continuity of the farms is not endangered' (*ibid.*, my emphasis).⁵² The commodity fiction rules clearly here; a translation into the doctrine of small farms is not absent either: 'The amount of production factors (land, labour, and capital) mobilised in agriculture, expressed in standard farm units, is a standard for measuring the income capacity of the farms' (*ibid.*, 33). It is established then, and later, that 'a considerable proportion of farms are too small. The LEI set a boundary of at least 130 standard farm units'. Ergo, 43 per cent of farms were too small. They do not meet the necessary level needed to make and keep the sector 'healthy'. 'Continuity has not been guaranteed sufficiently for anywhere near all farms' (Eerste Kamer 1979–1980, 15800, chap. XIV, no. 49a, p. 35, answer to question 67).⁵³

Therefore, far-reaching 'efforts by industry as well as government' are necessary (Tweede Kamer 1980–1981, 16400, no. 2, p. 3). It is mentioned 'that government policy concerning the agricultural sector aims at improving, and at making easier, the *adjustment* of farms to the socio-economic and technical developments instead of taking away the effects of these developments [that is, rural exodus]' (Eerste Kamer 1979–1980, XIV, 48a, answer to question 67; my emphasis).

Thus the modernisation story is told and retold. Although the nuances and accents vary, the core remains the same. It is barely possible to adjust the discourse significantly. The underlying axioms do not allow any other 'solution' than the one outlined above. The discourse thus produced is suitable for an interpretation only of those empirical developments that conform with and confirm the story and the axioms. By ignoring all possible alternatives the expert system renders itself both deaf and blind. The more the axioms are confirmed, the blinder it becomes. A cataract develops more and more obviously.

Finally, maintaining the axioms becomes an institutional, if not material, interest. I already referred to the Agricultural Economics Research Institute (LEI) in this respect. Of course, this process extends further. The more the modernisation policy becomes based upon the convergence of projects, the more 'accomplices' there are, the more established interests to defend, the more the axioms become reified.

In the early 1980s, there was much discussion about the apparently inevitable production controls. Initially, the debate involved the so-called 'co-responsibility charge', while possible forms of quota restrictions were brought in later. However, the Minister for Agriculture mentioned as early as 1981 that 'the EC problems cannot be allowed to be shifted onto the more modern, specialised farms [. . .] It would imply a punishment of efficiency and good entrepreneurship' (Memorie van Toelichting, Tweede Kamer 1980–1981, 16400, XIV, no. 2, p. 3).

In reference to theoretical concepts used previously in this chapter, I would like to point out here that the expert system had raised *expectations*. *Guarantees* had now to be proved, the *reliability* of the Ministry of Agriculture was in fact to be confirmed.⁵⁴ This happened in statements such as quoted above.

Once *trust* is created, it becomes a structuring moment *par excellence*. Trust has to be constantly reconfirmed. The 'best pupils in the class' (I use an expression of Eizner) should be not only rewarded but also be helped along the chosen path. The 1990s will show some striking examples which I will discuss in more detail later.

Once a policy is institutionalised, it becomes an interest in itself. I was confronted by this during my involvement in the search for a solution for the ammonia problem in south-east Friesland with two colleagues, Klaas van Egmond and Lense Koopmans. The way in which the pursued policy (laid down in the Temporary Act on Ammonia and Livestock Farming, IAV) became a determinant of possible solutions, soon became apparent. Whatever the solution for south-east Friesland, it had to be formulated in such a way that other regions would have no grounds to dispute agreements already made on the basis of the IAV. To do so would mean that all policy would have been made redundant and lead to a flood of compensation claims. Once a policy has been adopted (however unfortunate the policy, as was clear in the case of the IAV), it becomes one of the most persuasive arguments in pursuing and improving continuity of policy – not only because interests are involved in the policy pursued thus far, but rather because policy itself now represents an interest.

The modernisation project not only embodies a *discourse*, it is also a *mode of ordering*, a way of designing, of ordering, the world (in this case Dutch agriculture). The modernisation project extends beyond its own boundaries, '[because it is] performed or embodied, in a concrete [. . .] manner in [a] network of relations' (Law 1994, p. 20). The initial project of the expert system has become rooted in associations and arrangements with certain groups of farmers, exporters, banks, industry and farmers organisations. Convergence occurs. Stakeholders and shared interests emerge.

Importantly, this convergence is not created haphazardly. There is a clear pattern: potentially interested parties as well as 'laggards' are defined clearly, at least as abstract categories. Thus, the modernisation project is largely a 'self-generating process' (Law 1994, p. 15). It creates and demonstrates its own necessity. As mentioned previously, it is a self-

fulfilling prophecy. Hence, the concrete development of Dutch agriculture cannot be understood as the 'structural unfolding' of 'structural laws'. It is a process that has been actively *created* over time – it is also a process that became entangled with its own compulsions. It appears to be very difficult to turn back once the road has been taken. The self-created compulsions prompt *continuation*.

Notes

1 It is hard to draw the boundaries in black and white. The expert system extends, as it were, partially into the research and planning departments of large agribusiness groups as well as into various autonomous research institutes. Furthermore, the expert system increasingly branches off into and intertwines with 'Brussels', the Ministry of Housing, Spatial Planning and the Environment (VROM), as well as provincial departments for the development of agriculture and the countryside.

2 DWK is the Department of Science and Knowledge Dissemination (the directorate instructing the knowledge organisations), BSB is the bureau for strategic policy development (Bureau Strategische Beleidsontwikkeling), DL is the Department of Agriculture, and MKG is the Department of Environment, Quality and Health.

3 In so far as can be examined, at least 10,000 people work within the expert system. This number is rising. The estimated number of academics working at the Ministry of Agriculture, Nature Management and Fisheries (including the agricultural research institutes (DLO), the advisory service (DLV), experimental stations, the Forestry Direction, and the National Inspection Service for Livestock and meat (RVV), but excluding Wageningen University and the agricultural educational colleges) was almost 2000 in 1986, 2350 in 1991, and 2459 in 1996 (data from the Personnel and Organisation Department of the Ministry of Agriculture, Nature Management, and Fisheries and of the National Council for Agricultural Research – NRLO). In 1978, 869 agricultural academics were working in the ministry and/or one of its associated knowledge institutes. In 1983, the number had risen to 1094 (data are from the 'Netherlands Institute of Agricultural Engineers', NILI).

4 Not only in their relationships with the Ministry of Agriculture, but also in the relationships among themselves. For: 'To be able to have confidence in dealing with individuals of whom one has no personal knowledge [. . .] a third party is necessary in the exchange, namely the government, which specifies property rights and enforces the contracts and secondly norms of behaviour to constrain the parties in the interaction with respect to opportunism, cheating, etc.' (North 1990).

5 Authorisation relates to influencing and controlling human activities, while allocation relates to the possibility of controlling directly the material substrate, the 'object world' of human activities (Giddens 1984, p. 51).

6 The unequal power relation is inherent to the notion of macro- and micro-actors. Macro actors occupy a 'location that enables them to take decisions which extend more widely in time and space' (Mouzelis 1991, p. 39). For micro-actors, on the other hand, the 'social system' is much more an 'external' – that is, unchangeable – fact, for 'his or her participation does not dramatically affect [the] structural features [of the social system]' (ibid.).

7 The problem inherent in such concepts is the *a priori* assumption of a certain hierarchy. Its application inevitably leads to reification. Incidentally, it is remarkable that usually a previously selected group of empirical facts and assumptions is used in the analysis. In the Dutch case, it could be stated that the 'macro-actor' is often the prisoner of the 'micro-actors'. The development of manure policy over several decades is a clear expression of this.

8 A group of researchers in Australia has conducted a wide range of studies of farming styles under the supervision of Frank Vanclay, in the aftermath of the liberalisation of the trade in agricultural products. The overpowering conclusion is that reactions to liberalisation varied widely within an already highly heterogeneous agriculture. In short, diversity increased; see, *inter alia*, Vanclay *et al.* 1998.

9 The question about the culling of the cow in question will lead eventually to the existing architecture, the available shed space, as well as available land, the desired stocking density, etc.

10 I started this example with a decision about culling cattle. A French veterinarian, François Beaudeau, has devoted his whole Ph.D. thesis to culling. He shows there that culling is never an isolated action, but is part and parcel of a more comprehensive strategy that also relates to breeding, selection, feeding, the relation between milk and meat production, and so on. Further, he demonstrates in the study that the culling strategy is inspired by a number of more general opinions (for example 'let nature do the job' versus 'pursuing the highest level of profitability'). Equally, the culling strategy appears to be related to the farming style as a whole. And, third, a culling strategy leaves an unmistakable mark on the presence, frequency, and intensity of various cattle diseases. In the Netherlands, Roep *et al.* (1991), among others, have paid attention to different replacement patterns and their relations to farming styles.

11 Western European 'Russian experts' will frown here, as the usual version of this story involves horses. This is also much more in line with typical Leninist analyses. During my visits to Russia, however, I have heard the story being told constantly as if it involved cows. Apart from the fact that this suits me much better in terms of the storyline, a classification in terms of horses must have been impossible because they were all commandeered by the Red Army in order to fight the Belarussians and the imperialists.

12 Whoever takes note of Tables 2.1 and 4.1 in Van der Ven's Ph.D. thesis will realize immediately that too few variables have been taken into account. Van der Ven is the first to admit this. Within the DOBI project (see below) she developed a more detailed, and very powerful, method of analysis.

13 This occurs by way of study groups, the systematic comparison of farm economic data, farm visits, cattle inspections, field trips, the farming press in which farm reports are constantly included, and so on.

14 For a more extensive discussion about different domains of farm labour, see Bennett 1981; Van der Ploeg 1987, 1990.

15 Initially, farming styles were highly local and/or regional in nature: they were answers to local history, to the local ecosystem, to local relations between town and country, and so on. Farming styles manifesting themselves today (and as described in Chapter 3) are highly intralocal and/or intraregional. This is a logical effect of the shift in ordering principles. It is no longer the local setting, but the general context of markets and technology development that prompts new answers, new development opportunities. This results in the phenomenon of intraregional styles.

16 In more general terms: 'Unity of style [. . .] is, just like every other unity of culture, a precondition for real communication. If one does not know of others why they do things the way they do, a discussion about each other's actions, and hence a good relationship, becomes impossible' (Hofstee 1985).

17 According to the title of the well-known study by Arensberg and Kimball (1948) about Irish agriculture. See also De Haan (1993).

18 Reference should be made in this context to the process of historically guaranteed, relatively autonomous reproduction (see Van der Ploeg 1990; Saccomandi 1991).

19 This pattern contrasts sharply with the relations that are institutionalised during the period of modernisation. If the modernisation project is characterised by an accurate definition of the farm that is regarded necessary in the future (the 'vanguard farm') – which differs dramatically from the contemporary farm – the farm of the future is considered in this pattern to be the completion of current farms. If discontinuity rules in the one case, continuity prevails in the other. Furthermore, it is remarkable that the act of warding off the 'immediacies of context' received a lot of attention in the former farming styles, whereas this is remarkably absent from the contemporary modernisation discourse. I will return to this issue in the following chapters.

20 Evidently, conflicts (such as described in *Groun en Minsken* and the *Nijboer fan Lycklemastate*) and tragedies (the first reaction to the high butter prices) were needed, in order for these norms to emerge and to make them permanent.

21 Beyond doubt, a smaller farm could be expected to do things differently from a larger farm. The latter was regarded to take more risks (although, conversely, it was considered that 'pride goes before a fall'). Both Hofstee's work and many regional novels are proof of the highly anthropocentric nature of the earlier nuances within a farming style.

22 In this respect, the fence rack is an interesting synecdoche: widely recommended until the mid-1950s, after which it became above all an indicator of the traditional farmer (see Frouws and Van der Ploeg 1973).

23 Realisation of the modernisation project included both a development policy and a policy aiming at accelerated exodus. The latter policy aspect was used to create space (first land, later market shares, later again quotas and 'environmental space') for the 'growers'. Development policy was geared towards this group in particular. The 1977 Budget of the Ministry of Agriculture states: 'Highest priority should be given to strengthening the development policy' (Tweede Kamer 1976-1977, 14000, chap. XIV, no. 2, p. 3).

24 The Explanatory Statement of the Minister for Agriculture (Memorie van Toelichting 1979, 10/5193-6, p. 5) quotes approvingly an article from the newspaper *Nieuwe Rotterdamse Courant*: 'Recent history of Dutch agriculture of the past, say 20 years can really be defined as a success story [. . .] All this is not due to an advantageous concurrence of circumstances, but due to a restless effort [. . .] Constantly anticipating new developments, technical and commercial innovations – in short, staying wide awake to everything that happens and changes – that is the way to keep your head above water'. The Minister adds: 'Agricultural policy has continuously encouraged and united these developments. And that is what I want to keep doing in this term, both nationally and internationally'. The remainder of the statement is evidence of this. I quote the citation here partly because, at other times, the expert system represents the state, and the Ministry of Agriculture in particular, as almost devoid of any agency. I discuss this elsewhere in this chapter.

25 'The model of cognitive orientation that seems to me to best account for peasant behavior is the 'image of the limited good' [. . .] broad areas of peasant behavior are patterned in such a fashion as to suggest that peasants view their social, economic and rational universes [. . .] as one in which all the desired things in life, such as land, wealth, health, friendship and love, manliness and honor, respect and status, power and influence, security and safety exist in finite quantity and are always in short supply [. . .] there is no way directly within the peasant's power to increase the available quantities' (Foster 1965, p. 296). I use 'ironic' here, because this image of the scarce good is usually used strictly in the analysis of irrational 'peasants' far away. However, it appears to be the key to understanding the race forward and, more specifically, the crazy competition for quotas in the 'highly developed and rational Netherlands'.

26 Following Hayami and Ruttan, it is assumed that technological development is 'endogenous' in character – that is, driven by relative factor prices.

27 See the 'golden mountains of technology', an article in which De Hoogh (1987) presents his arguments most accurately. De Hoogh felt hurt particularly by the exploitation of the Third World (and by the obvious wastage in Europe).

28 Here I quote a press release of the Ministry of Agriculture (nr. 382, 9 November 1978) entitled 'Comments of Minister Van der Stee to 'Boer blijven''. More in-depth discussions can be found in the parliamentary discussions.

29 Incidentally, a few other reasons are given in this text, such as the 'general economic growth that has supported the demand for high-quality products' and the 'establishing of the EC, which has resulted in a considerable enlargement of marketing opportunities for Dutch agriculture'. A pleasant aspect of these 'factors' is of course that they could have implied, in principle, a (relative) increase in the number of farms and employment. But I will leave this aside.

30 One of the strong points of the modernisation project was that it unfolded gradually into an agenda for all the actors involved: government, farmers, advisors, agribusiness, technology designers, and so on. Thus emerged what we now call mutual reinforcement or

synergy. Similarly, axioms were created. Moreover, coordination and simultaneity emerged, precisely because a clear 'magnetic North' existed. It was clear whither agriculture was moving.

31 Of course, this surprise took effect in two directions. I remember vividly the comment of my friend Bruno Benvenuti, the Italian agricultural sociologist who knew the Dutch situation very well. He was surprised time and again at the possibility of announcing in the Netherlands that half of the farmers had to disappear 'without it leading to a farmers war – which would occur elsewhere and in different times'.

32 All the more remarkable is that modernisation settles into an undisputable norm from the 1970s onwards. This applies above all to administrators. In the early 1990s, we developed a number of 'building blocks for an agricultural development plan for Friesland' (Van der Ploeg *et al.* 1992). Together with previous studies of farming styles, this resulted in numerous discussions in the province of Friesland. I remember vividly the comments by Geert Hofstra and Pé Miedema, both great men. As a result of numerous comments from the floor ('well, we haven't done that badly as economical farmers'), these Frisian foremen concluded in a conversation: 'hell, Jan Douwe, it's wrong. It'll lose its fire. They will stop investing, that shouldn't happen'.

33 This is actually encouraged by the system of volume premiums and discounts, which had been introduced in the late 1960s. Specialisation is actually encouraged by the 'milk tank regulations' of the 1970s.

34 Here, I refer to the structure concept that is in common use in contemporary social sciences and that is highly influenced by Giddens' work.

35 Incidentally, these figures are controversial. Instead of 570,000 jobs for 1957, the figure of 650,000 is also quoted. Primary employment (on farms) comprises over 250,000 jobs in 1995, whereas employment in the agro-industry as a whole (including service industries) comprises 250,000 jobs too. Between 1957 and 1995, an incontestable process of externalisation takes place: part of employment localised directly on farms in the past remains in existence but 'moves' to agencies such as contractors. For a further discussion, see Chapter 7 of this book.

36 I did not dream up this comparison: it was brought forward in a debate by Gerrit Meester, professor at the University of Amsterdam and Director of the Bureau for Strategic Policy Design of the Ministry of Agriculture.

37 The intragenerational reproduction of the farm is possible only if the future farmer's siblings agree with a transfer price well below the market price (De Haan 1993). If solidarity within the family decreases – that is, if the siblings let prevail the perspective of immediate monetary benefits over the continuation of the parental farm – farm closure is the only option.

38 A considerable number of Dutch farmers have sold their belongings here in order to buy a larger farm and/or a farm with more future prospects elsewhere. They have used the dramatic differences in land prices, and later in quota prices, largely to this end. This stream of migration is largely directed at Canada, the US, Australia, France, Portugal, and more recently at Denmark and eastern Europe.

39 The importance of the modernisation message should not be underestimated: farmers and especially their successors were always presented with the idea that a large group of farms would be 'non-viable' – that is, would contain only 'leavers'. As a result, in many situations, it was decided 'to sell the lot while the price is still right'.

40 The term 'enjoyment' is from Hofstee (1982, pp. 3–14). Hofstee warned, at that time already, that farmers could lose their enjoyment in work. The conditions under which they (want to remain) work(ing) cannot be stretched infinitely.

41 This is a classic description with which farmers like to characterise their situation. Incomes can be subject to great pressure, while the total amount of capital is enormous. If the farm were to be sold, they could live very comfortably off the revenues for the rest of their lives.

42 It is stated in one of the essays in the collection that 'labour productivity in agriculture has increased initially [until about 1955–1957] above all through productive changes [that is,

through intensification]. In particular, large improvements in cultivars, breeds, fertilisation, feeding, and disease prevention have resulted in increases in matter output per ha and per animal' (Maris 1963, p. 11).

43 Penders is the editor of a jubilee volume of the Coöp. Centrale Boerenleenbank (now Rabobank), published in 1951 (the cover states: 'no people is stronger than its farmers'). In this collection, Staf, then director general for agriculture, writes: 'At this moment, when a further recovery of our national economy is of vital importance to us all, there is very little time even for a satisfactory retrospective and all attention should be directed towards the task at hand. Only by means of further intensification and rationalisation of farm management will Dutch farmers be able to fulfil their part of this task of greater agricultural production and export'.

44 By way of a 'highly reduced number of labourers,' and the resulting 'considerable improvement of the structure, an important contribution can be made to the reduction in the supply of agricultural products'. This is the rather altruistic sounding argument of Maris and Rijneveld (1963, p. 11). Such a contribution has never been made (on the contrary, see Van der Ploeg 1987).

45 This is analytically identical to de-externalisation and hence decommodification. For a number of empirical illustrations, see Bolhuis and Van der Ploeg 1985; Roep *et al.* 1991.

46 At least, since (i) it is not known which dynamics occurred within the size categories, nor (ii) is it known which dynamics occurred beyond the indicated time limit.

47 'The actual amount of labour conducted by the entrepreneur and contributing family members is accounted for on the basis of the number of hours worked at the prevailing agreement rate for permanent workers, increased by employer's contributions [. . .] On the basis of the profitability of state bonds (which are the starting point for the interest rate for net worth) an interest rate has been calculated of 7 per cent for durable means of production, excluding land [. . .] In the definition of costs, an interest rate for land is calculated of 2.5 per cent as if the farm was completely owned' (Van Dijk *et al.* 1993, p. 19).

48 Such a course of action is particularly inspired by the fiscal policy.

49 Incidentally, I would like to point out that Vondeling had already introduced a similar issue in the early 1950s. In this respect, it is also remarkable that accountancy firms maintain considerable distance from what they call the 'LEI doctrine'. The former CBTB accountancy firm, which now has become Alpha, has developed an elegant alternative.

50 I have experienced numerous incidents since (the same applies to my colleagues), which return always to the same crucial point: criticism is taboo in the expert system. When a university and an expert system are joined together (in the case of the Wageningen University and Research Centre), this results in difficult relationships.

51 To a certain extent, this reflects the supposedly vital convergence and synergy of different projects, such as the industrial need for a positive balance of trade, the consumer demand for cheap food and their need for food security, etc. However, the way in which these needs are linked to the particular development project of agriculture is a very special one.

52 Such a position constitutes a *constant* through time. In 1985, for example, it was said that 'it is important generally for the agricultural sector that healthy, viable farms are maintained or established. Modern farm management should exist expressing responsible entrepreneurship' (Memorie van Toelichting, Tweede Kamer 1984-1985, 18600, chap. XIV, nr. 2, p. 5).

53 'Farm economic data show that about 75 per cent of the LEI sample farms had a negative net result in the period from 1972-1973 to 1976-1977 [. . .] The above-mentioned figure indicates that a considerable proportion of agricultural jobs do not have continuity in the long run' (LEB 1979).

54 Which resulted in one of the most painful episodes of recent agricultural history. Smaller farms, extensive farms, farms that had not or hardly increased production in the past years were cut, whereas 'growers' received extra space because they had invested so much in the future. This provoked severe criticism in parliament.

7 Redundancy as Contemporary Drama and the Production of Myths

In the virtual world of agriculture, redundancy is regarded as a precondition for structural development: it is an explicit ingredient of the modernisation process. Redundancy implies the ongoing elimination of farms: farmers and their family members leave agriculture. Redundancy is regarded as a sign of progress. In the 1970s the expert system became concerned about the, then decreasing, level of redundancy: it was thought that less redundancy implied less room for structural development. The expert system saw redundancy as a kind of thermometer: if it went too low, the structural development project was cooling off.

A supposedly too low level of redundancy has frequently been used to portray smaller and/or part-time farmers in a negative light. By not giving way to others, they block structural development.

Today, we have left behind us this period within which the term 'postman farmer'* was widely used, in a derogatory sense. All the same, a significant minority of Dutch farmers still understands and imagines the 'crisis in agriculture' as arising from too slow a process of redundancy (Van der Ploeg *et al.* 1994).

Within the expert system, the notion of redundancy is one of the cornerstones of the way in which agriculture is understood and represented. Progress can be imagined only in combination with a considerable level of redundancy. Within the virtual world that the expert system created, development and redundancy are two sides of the same picture. This very combination makes redundancy into a normative notion with a very particular content: it is acceptable for small farms to fall by the wayside; only the disappearance of larger, so-called efficient, farms poses a problem.

Redundancy is, according to the prevailing ideology in and around agriculture, an inevitable effect of economic and technological laws. The competitive relations within which the primary sector has to operate worsen. Output prices stagnate and costs (including costs of living) rise. The classic answer to this, i.e. farm enlargement, can only be achieved on larger farms, especially since new capital-intensive and labour-reducing technologies can be applied on those farms.

* Translator's note: A highly pejorative term for someone who buttered their bread on both sides. It was the last expression of the uncaptured peasantry, a hindrance to development.

That is why redundancy always exists at the 'bottom end' of the agricultural sector. Smaller farms are confronted by a pressing income question. Or else, they face a successional problem: they will not be taken over by the next generation. They are so small in size that they do not have any prospects for the future. They are not competitive. Hence, there is, sooner or later, no option but farm closure.

The case seems to be incontestable. For many decades, the number of farms has decreased by about two per cent per year. This fairly stable percentage supports the image of redundancy as an inevitable and continuous process. Redundancy is a stable phenomenon – one on which policy is actively based.¹

I will show in this chapter that, however improbable it may seem at first, redundancy understood as the inevitable disappearance of smaller farms – in other words, as the constant closure of farms because of economic laws – does not exist in Dutch agriculture. The way in which redundancy is usually understood is a *myth*. It is part of the virtual reality that we have created for ourselves. It is a logical component of the whole worldview that encompasses the virtual farmer, virtual agriculture, virtual structural development, and so on. If judged by empirical evidence, the notion of redundancy is nothing but a virtual concept.

It is unarguably true that farms disappear every year. It is also true that poverty and despair exist in some farming communities. However, the ongoing reduction in farm numbers does not necessarily imply that the redundancy process is a necessary ingredient of agricultural development *tout court*. However, in scientific analysis as well as in political discourse, the reduction of farm numbers and the inevitability of redundancy as outcome of structural development are related to each other in such a way that one becomes the 'proof' of the other, and *vice versa*.

I will try to disconnect one from the other and at the same time I will offer an alternative explanation why farm numbers fall. Through this the real dangers and threats to agriculture in the Netherlands can be uncovered.

The development of farm numbers is first determined by farm 'succession'. *Fathers Work for their Sons* – according to the beautiful title of a study by Berry (1985). Sons continue, in turn, the work of their parents. 'Keeping the name on the land' (Arensberg and Kimball 1948) is the prevailing imperative. Intragenerational continuity is the link connecting past, present, and future, often by means of the most exotic of mechanisms – such as a pact with the devil (De Jong 1979).

Two complementary movements occupy the left and right sides of the main movement. Alongside the existing farms that have and are likely to successfully meet the challenges of succession, *new* farms can be started. On the other hand, the dance through time, the constant succession of existing farms, can be discontinued. Hence, farms will disappear.

The total number of farms at any given time is the outcome of two movements: of the setting up of new farms and of the closing of existing

farms. The net result of both movements shows the development of farm numbers.

Table 7.1 provides data about both movements. It demonstrates that the creation of new farms is lower than the closure of existing farms. This is in itself historically unique.² More importantly, the rate of decline has fallen considerably from 4.9 per cent in the first half of the 1970s, to 3.5 per cent in the second half of the 1970s, to 2.3 per cent in the 1990s (in fact, over the 1990–1997 period). If 5760 farms were closed annually in the second half of the 1970s, this number had fallen to 2890 farms per annum in the 1990s.

Table 7.1 Outflow and influx of farms (percentage per year)

	1970–1975	1975–1980	1990–1997
Outflow	– 4.9	– 3.5	– 2.3
Influx	+ 2.7	+ 1.4	+ 0.6
net reduction/year	– 2.2	– 2.1	– 1.7

At the same time the number of newly created farms (the influx) has also been in decline: from 2.7 per cent per year in the first half of the 1970s to, ultimately, 0.6 per cent per year in the 1990s.

Taken together, a net reduction in farm numbers of about two per cent per year³ has indeed occurred over the past decades. The 1996 *Landbouw-Economisch Bericht* mentions an average net reduction of 1.7 per cent per annum for the period 1976–1994. This number included an average reduction of two per cent in the category ‘farming main occupation’, while the percentage was considerably lower in the category ‘part-time farms’.

At the same time, Table 7.1 indicates that the apparently stable figure of annual net reduction of farm numbers is the product of highly changeable movements. Both influx and outflow decrease. This is sufficient reason to investigate carefully both movements and their interrelations.

7.1 Influx

If the rate of influx had remained constant during the 1970–1997 period (at about 2.7 per cent), the number of farms would have remained stable, or risen slightly. The influx, however, fell sharply. In an analysis devoted to ‘mutations’ over the period 1995–1997, Statistics Netherlands (CBS) states that ‘the number of farm creations was still about 1200–1400 per year in the late 1980s, [whereas] these figures have more than halved in the period 1995–1997’ (CBS 1989, p. 57).

The influx of farms is the result of numerous processes, the result of various projects that do or do not interlock. Starting a new farm, however microscopic, has for a long time been experienced as an important step in the emancipation process of those involved.⁴ It was remarkable that young people from non-farming families too tried to develop their own farms. At present, young people who want to set up a new farm (and more specifically, non-farming young people who want to set up an organic farm, for instance) seek refuge elsewhere; not in the Netherlands, but in Denmark or Germany, France, Italy, Ireland or Spain. And fathers

who want to organise a farm for their second or third sons, turn their gaze towards Portugal, eastern Europe, or Canada. In other words, a considerable influx still exists, but this influx no longer materialises in the Netherlands but rather elsewhere.

Setting up new farms in the Netherlands has become increasingly difficult.⁵ Extremely high land prices, high quota costs (irrespective of whether this concerns milk quota, ammonia emission rights, pig rights, and so on), very high transaction costs (to acquire access to existing supply and distribution circuits, to obtain loans, to acquire recognition and support in the immediate environment, etc.) and a set of institutionalised rules that regulate the distribution of available resources (for example, who received land in the Flevo-polders for what reason, who received interest support for what reason) – all of these issues have turned the ‘creation’ of a new (small) farm into a ‘heroic deed’.⁶ It is hardly possible at all. *Not* because the markets rule out this possibility in themselves, but because of the way that these markets are ordered institutionally. Elsewhere in Europe, these same markets are regulated differently, allowing many more young people (ironically, including many Dutch youngsters) to create new farms. In the Netherlands, however, this has been made almost impossible. The way in which government projects (fed on the idea of continuous redundancy as favourable and unmistakable condition for structural development) and the projects of young farmers and young non-farmers who would like to become farmers relate to each other is such that any kind of substantive influx is made impossible. This is the very reason why the actual influx has reduced so sharply. The desire to become a farmer has not disappeared.⁷

Does the influx of new farms constitute a direct threat to the development opportunities of already existing farms? Does influx occur at the cost of the expansion opportunities of established farms? Is there a zero-sum game (Van der Ploeg and Nieuwenhuize 1986) in the sense that opportunities for one group (newcomers, for instance) occur at the cost of development opportunities for the others (in this case existing farmers)?

Although I will address this crucial question later in more general terms, I would like to introduce a particular situation at this stage. It involves an exemplary case: a large estate in the Netherlands on which numerous tenants make a living. The maintenance and further development of landscape and ecological values is one of the aims of the landlord. An aim that collides in various ways with the wishes of some tenants to realise massive scale enlargements.⁸

The following question arises in this situation: do we encourage the development of smaller, mixed farms as well as the development of organic farms (which correspond better with the aims of the leasing association) or do we provide space to a small group of fast-growing farms? In short, do we provide space for newcomers and assume that ‘growers’ have to ‘hold up their own trousers’, or is all available space reserved for the latter group? Of course, the interesting issue here is that

the said situation (of landlord and tenants) does not involve anonymous land and quota markets. The landlord needs to purposefully allocate quota and land among the tenants. Which line is chosen eventually is not even that important (interested readers are referred to Van Broekhuizen and Van der Ploeg 1999). The point is that the definition and distribution of opportunities emerge here as a fundamental moment of choice, and that the opinions about the most desired future image is pivotal in this. Influx and, hence, the number of future farms can be influenced – it can even be enlarged. Whether this will happen, however, depends upon the ‘battle for the future’, a battle that interferes in various ways with the already established interests. In this sense, the estate in question is a fascinating *microcosm*, in which part of the conflict awaiting the sector as a whole is played out already.

7.2 Outflow

Let us now examine the outflow. What farms close down and why? Usually, two types of outflow are identified: ‘voluntary farm closure’ and ‘early or compulsory retirement’. I will follow this distinction here.

‘Voluntary retirement’

Voluntary retirement (a somewhat euphemistic term) occurs especially where farms are *not* succeeded. ‘Intergenerational reproduction’ (De Haan 1993) is, for whatever reason, blocked. A multitude of (sometimes interlocking) demographic, cultural, political, and economic changes play a part in this. It is important to stay with this issue a bit longer. Especially since it demonstrates that ‘succession’, as it is called in the agricultural world, has become increasingly difficult, at times almost impossible. However, this is because of other reasons than presented by the redundancy myth.

- 1 First, demographic changes. It was customary in many areas that farmer sons would marry at an older age (at 30, for instance). Usually, this coincided with the time when they could take over the parents’ farm. It implied that the son’s children would reach their marriageable age at the moment their father became tired of work (say at 60). This scheme has given way to another pattern. Although the differences are apparently subtle, their implications are far-reaching (for a more general discussion, see Van den Broek 1998a).

Assume the average son marries at 25 and has children. Assume that he wants to farm on average until he is 65 years of age. Finally, assume that his son in turn marries also at 25, has children and has to provide for a family. By implication, father and son (if the latter wants to take over the farm) have to both work on the farm for 15 years and have to draw two family incomes from it. Now, this happened in the past too, but the point is that because of the changed demographic cycle, the period over which this has to happen has become longer. At the same time, the preconditions under which such is possible are increasingly absent. Generating two family incomes implies that the production volume has to be increased at least temporarily.⁹ This was not too

problematic in the past. Nowadays, because of the quota systems in dairying and in intensive husbandry, it has become almost impossible. 'In the past things could take their time – now, everything is turned upside down', is an often heard statement. A son who wants to take over will therefore choose another job temporarily, which usually results in the son and/or his wife, after about 10–15 years, not wanting to return to the farming occupation, which they have become alienated from anyway. This is one of the reasons leading to 'not taking over'.

- 2 A second demographic factor of unarguable importance is the highly reduced family size. Even though, in agriculture, there are less proverbial two-children families than elsewhere, it is obvious that 'recruiting' a successor has become much more difficult at the current family size (of two to three children) than previously. All the more so since the assumption that one of the children will take over has all but disappeared and the children's horizons are infinitely wider now than they were in the past.
- 3 The next factor is of an economic nature. Because of the sharp increase in the value of land and quota, the inheritance sum has increased dramatically. Even though it is traditional in agriculture to keep market prices 'outside' – farms are generally passed on at about 50–60 per cent of their market value – such an amount¹⁰ and the necessity to enter into high loans can become increasingly prohibitive, particularly on larger farms. All the more if two additional factors are taken into account. First, brothers and sisters are entitled to part of the mentioned take-over sum. They have to agree on the undervaluing of the farm. This becomes increasingly difficult as a result of the actual degree of commoditisation.

Furthermore, every take-over (and hence the take-over sum that goes with it) is viewed in the light of the future prospects of, and on, the farm. Is it possible to generate adequate income in the future in order (a) to pay and redeem financial obligations that have been entered into, (b) to produce a reasonable family income and, finally, (c) to save an adequate amount to 'keep the farm up with the times', as they say? Here above all future prospects inform today's actions (whether or not to take over). A farm take-over does not take place on the basis of today's relations and data; deliberating about whether or not to take over takes place via the future.

- 4 Here another factor enters into the story. Thinking and talking about farm succession is largely objectified by the expert system which highlights the viability of the farm in objective and 'undisputable' terms. A farm is viable if it is of sufficient size, and only under this conditions can the farm be taken over. Thus, viability functions here as an intrinsic feature of the farm. It is a 'structural fact' that determines 'actions' (for it determines whether or not the farm can be taken over). This contrasts highly with the ideas circulating amongst the Dutch Agricultural Youth Organisation (NAJK). The central question there is: how do you prepare the farm for take-over (for a more extensive discussion, see De Bruin 1991). Thus the following paradox can occur

in practice: young people take over a non-viable farm and develop it, often in an original way, into a prosperous enterprise. How is this possible? Precisely because they *prepare* the farm for take-over.¹¹ They examine the farm to be taken over from a different future project, as a result of which the apparent lack of viability disappears. Again, black swans arise; they remain largely unacknowledged, however. They are 'hidden novelties'.

Since the expert system puts forward a different view, these black swans remain at best 'refrigerator anomalies' (according to the poignant term by Koningsveld 1976). Hence, young people who consider farm take-over are confronted mainly by the standard story (in the agricultural education, accountants, advisory services, agro-political discourse of farm organisations, press, etc.). Of course, all this does not lack impact. In too many occasions, farm take-over is abandoned because the farm is represented as too small and therefore as not viable.¹² In combination with the, often, extremely high value represented in a relatively small farm (a farm of, say, 20 hectares and a relatively small quota of 200,000 litres easily represents, depending on its location, an amount of NLG 1.8–2.5 million), the dominant view of the expert system ('there is no prospect for non-viable farms')¹³ results in the often encountered statement 'let's sell the lot dear while we still can'.¹⁴

Thus, various projects interlock (the willingness of 'growers' to pay large sums for land and quota, the political arena in Brussels generating uncertainty about the future value of quota, the way in which the expert system represents the future, and probably the tendency of brothers and sisters to make the best of a bad bargain). As a result, there is great pressure on farmers to retire from agriculture.

Still, outflow of farm numbers has *fallen* from about 5760 per year for the period 1970–1975 to, on average, 2980 farms per year in the first seven years of the 1990s. Outflow fell not only in absolute terms but also in relative terms, from 4.9 per cent, to 3.5 per cent, to 2.3 per cent (see Table 7.1), and to 1.9 per cent in 1997.

The actual reduction in outflow is remarkable, because all relevant preconditions (whether demographic, political, cultural, economic, etc.) tend toward the opposite. Apparently, a remarkable 'resistance' is hidden in the sector, a determination to keep farming, against all opposition. I will return to this below.

As an interim conclusion, we can state that in Dutch agriculture of today, not taking over of farms not only informs about the supposed poverty and hopelessness, but it refers also and particularly to the impact of changing demographic, political, cultural, and economic relations within which a succession has to be realised.

'Compulsory redundancy'

Alongside voluntary farm closure, so-called compulsory farm closure exists. This term refers usually to farms with an entrepreneur younger

than 55 years of age on which the process of farm closure has started. Succession is not yet a relevant issue on these farms. Thus, the absence of a successor can not (or hardly) explain this type of farm closure. 'Compulsory farm closure often relates to farmers younger than 55 years of age. Furthermore, this group is often defined by the term 'early retirees'. Financial and economic factors play an important role in this type of closure, such as not being able to fulfil financial obligations' (LEB 1998, p. 110).

Table 7.2 provides an overview.¹⁵ More than half the number of farm closures falls in the above-discussed category of lack of succession. One third falls in the group of early retirees. I have introduced the age category of 55–60 as an interim category.

If we search for (sociological research is sometimes like investigative police work) farmers who, conform to the redundancy myth, have to close their farms because of poverty and hopelessness, we will have to focus our search among the group of early retirees. This involves an estimated 990 farms per year. Usually, farm closure in this category is associated with the idea of defeat. 'I can't do it anymore.' The farm cannot be continued, which is considered, certainly in agriculture, as personal defeat, as proof of failure – since 'the good entrepreneur will make it'.¹⁶ Those who do not 'make it' are left with the unenviable destiny of becoming a bin man (according to the *communis opinio* within the sector).

Table 7.2 Farm closure and age, plus an indication of possible causes

category	percentage	number of cases per year	demographic and cultural complications at succession	sell the lot dear as long as it is possible	disability	divorce	bankruptcy	migration
voluntary closure; age >60	55 %	1570	++	++	0	–	–	–
interim category; 55–60	12 %	330	+	+	++	–	–	–
early retirement; age < 55	33 %	900	–	?	+	+	+	+

It should first of all be mentioned that the number of early retirees as a whole is less than one per cent per annum. This is in noticeable contrast to the 'mortality rate' (it is, admittedly, a morbid expression, but the word is used in the technical language in question) encountered in small and medium-sized enterprises (SMEs). All in all, the 'birth rate' is about 10.8 per cent per year there, and the mortality rate is 5.7 per cent per year.¹⁷

At any event, a number of factors and circumstances play a role in the phenomenon of 'early retirement'. These are of a completely different nature to the ones that played a role in the so-called 'voluntary closure' encountered among older farmers.

- 1 If we look more closely at the category of early retirees, we have to refer first to the considerable and rather fast growing group of 'migrant' farmers who sell their farm here in order to set up a new and

- larger farm abroad. This is estimated at present to be about 250 farms annually.
- 2 The next issue is the divorce issue (again a cultural change directly affecting the development of the agricultural sector). Divorce implies almost inevitably farm closure, certainly if one is married in 'community of property'. The reaction from within the sector came very quickly in the form of changing earlier, and more *en masse* than elsewhere, to marrying with 'marriage settlements' (Bernet 1997). Still, a certain number of farms (an estimated 100 per year) will necessarily close as a result of divorce.¹⁸
 - 3 A third factor is disability.¹⁹ More than 100 farmers per year become permanently disabled (GUO 1995, 1996; UVI Jaarverslag 1998).²⁰ In the past, this was solved usually within the setting of the extended family and/or by early mobilisation of children; nowadays, however, disability often implies farm closure. Apart from physical disability, stress can result in severe mental problems, which manifest themselves, for example, in the neglect of farm animals. This too can result in compulsory farm closure (in this case through the AID). The number of cases involved annually is not known. Van den Broek (1998b) concludes on the basis of empirical research that problems of (severe) neglect occur on about one per cent of Dutch livestock farms.
 - 4 Furthermore, there is a category that is hard to situate within the subdivisions used in Table 7.2. These are mostly farms that are compulsorily bought out: farms that have to make room for city enlargement, nature reserves, and/or infrastructural works. However, a number of these farms will be continued elsewhere (they provide the opportunity to others to 'sell the lot dear'); others will emigrate. And finally, an (unknown) proportion will decide to live off their capital. To avoid double counts we will leave this category outside of the analysis entirely.
 - 5 Next, we have to point to those farms that get into acute problems due to an increasing friction between investment obligations arising from the prevailing regulations and their own financial space and investment cycles (see Frouws *et al.* 1996).

If we combine migration, divorce, and disability (ignoring the categories of friction and expropriation), we are left with an early retirement figure of $250 + 100 + 100 = 450$ cases per year. This is about 50 per cent of the total number of early retirements. Again, these cases cannot be gathered together under the banner of the redundancy myth. Irrespective of what informs about what, it definitely does not refer to the inevitable poverty and hopelessness, which, in turn, necessarily, would result in farm closure. It involves other issues (however sad they may be).

- 6 Finally, we are left with a group of farms that have entered into too high financial costs. Part of these (especially the supposedly 'viable' farms) are saved by regulations for the self-employed. This involves on average about 500 cases per year. Furthermore, there are about 115–

200 cases that face inevitable bankruptcy.²¹ An interim category (of about 300–400 farmers per annum) exists between these two – farmers who cannot, or do not want to, use the ‘life-jacket regulation’ and hence avoid bankruptcy. These farmers close their farms of their own free will, because they did not succeed in achieving their future project due to a mismatch with other projects. Heavy investments have been made (through external capital) in a certain future project (usually a future project aligned with the predictions articulated by the expert system). Disappointing revenues (a slight fall in the milk price, for instance) make the path between imagined future ideal and the present situation impassable. This will result in ruin.

Thus we have finally arrived at one category to which applies that economic and financial reasons are a direct cause for farm closure. What is important here theoretically is that this category does not consist of smaller, ‘failed’ farms, but rather of larger farms moulded according to the modernisation logic.

Mathematically, at most 540 farms per year are involved in this. Again, these are not farms that are ruined by poverty and hopelessness. It generally involves dairy farms with quotas of over 1 million kg (in south-east Friesland, for instance). In greenhouse horticulture, it involves young entrepreneurs who have expanded their farms quickly and hence have entered into high financial obligations. The category that we talk about represents therefore (perhaps not fully but at least to a considerable extent) the folly of the modernisation race. However, it does *not*, or to a limited degree at most, involve an expression of redundancy as the necessary elimination of the ‘bottom end’ of farms.

7.3 On which farms does outflow occur?

Within which category does outflow occur most? Conventional wisdom provides an explanation: Outflow (both ‘voluntary’ and ‘early retirement’) will occur on smaller farms in particular. The argument is obvious. Large farms can generate more revenues as a result of their size than smaller farms and, therefore, bear the brunt and/or setbacks and meanwhile free up sufficient resources to keep on growing. Smaller farms can do neither. They have no choice but to suffer defeat or fall behind even further. In summary, decline occurs on smaller farms, continuity and growth on larger ones.

Every statistic related to farm results and incomes seems to emphasise this ‘iron law’ (even though it requires certain ingredients, such as the use of misleading averages, the consequent use of the commodity fiction, ignoring essential differences in styles, and so on). Recent memory – for it was always said that smaller farmers became redundant – emphasises this iron law once again. Who pays attention to the fact that we deal with completely different episodes? And who has taken into consideration that a remarkable number of large agricultural enterprises have come onto the market in the past years? In short, it seems an almost ludicrous enterprise

to dispute the iron law that smaller farms become redundant and larger ones continue to grow.

Table 7.3 is based on an analysis of the most recent mutation files of Statistics Netherlands (CBS).²² The total number of farms and the number of farm closures is shown for different farm sizes and age categories. The number of farm closures is also expressed as a percentage of the total number of farms for each category. All data refer to 1997.

Table 7.3 Mutation data, 1997

	<i>farmer < 55</i>	<i>farmer 55–60</i>	<i>farmer > 60</i>
Very small farms 3–24 NSU ^a	13,972 farms, 354 closed (2.5%)	4453 farms 156 closed (3.5%)	16,309 farms 949 closed (5.8%)
Small farms 24–40 NSU ^a	5748 63 1.1%	1733 30 1.7%	3715 104 2.8%
Medium-sized farms 40–70 NSU ^a	11,364 86 0.7%	2991 30 1.0%	4990 74 1.5%
Summary 24–70 NSU ^a	17,112 149 0.9%	4724 60 1.2%	8705 178 2.0%
Middle large farms 70–100 NSU ^a	10,495 46 0.4%	2471 12 0.5%	4142 21 0.5%
Large farms > 100 NSU ^a	15,622 65 0.4%	4039 19 0.5%	5875 24 0.4%
Summary > 70 NSU ^a	26,157 111 0.4%	6510 31 0.5%	10,017 45 0.4%

Note: ^a Netherlands size unit

In 1997, 2033 farms were closed for good: they were not taken over within the family. The table demonstrates that farm closures are divided among all farm size categories and among all age categories. At the same time, it is clear that this division is highly unequal.

The bottom three lines of Table 7.3 present farm closure data for the larger size categories. They contain the farm size category that includes 70–100 Netherlands size units (NSU) and also the category of farms over 100 NSU. The figures have been summarised in the final line, referring to all farms over 70 NSU. I want to bring to mind that the rule of thumb used usually within the expert system states that farms of over 70 NSU are situated in the 'green zone'. The Rabobank in particular, which is of course an important institution here, excels in such representations.²³

It appears from the table that a closure percentage of 0.4–0.5 per cent per year exists for every age category in this group of larger farms. It is a figure that, it seems to me, refers above all to the things in life that can go wrong: divorces; death; disability; migration; bankruptcy; and/or 'compulsory' farm closure, which represents avoidance of permanent bankruptcy.²⁴

All in all, this percentage (0.4–0.5 per cent) refers to solidity, to the *resistance capacity* of Dutch agriculture. Moreover, the growth of small and medium-sized enterprises is more than sufficient to compensate this figure. The table informs also about the situation in the ‘orange zone’, the so-called medium-sized farms in the 40–70 NSU category, and about the small farms (24–40 NSU) that are situated in the so-called ‘red zone’ – according to the Rabobank classification. It shows that closure percentages are still relatively low. Take the small farms (24–40 NSU) with farmers over 60 years of age. This is a group in which potential successors are confronted directly with the expert judgement that take-over would be irresponsible. The farm is too small, it is situated permanently in the ‘red zone’. If it is assumed that continuing to farm ‘till death’ as a phenomenon has almost disappeared²⁵ and that the idea of ‘let’s sell the lot dear while we still can’ will take root here in particular, farm closure will take place when the present farmers reach about 70 years of age (although my impression is that 65 years of age is a more realistic figure today). If this were the case there would be, every year, a cohort of 10 per cent (or, assuming a lower retirement age, 20 per cent) within which no other opportunity than farm closure would exist. However, the actual closure rate is not 10 per cent, let alone 20 per cent, but only 2.8 per cent (and taking into account the ‘things that go wrong in life’ and the increasing importance of disability and death amongst this older age group, the percentage of closure due to lack of any prospect would be even lower). In any event, it is not remarkable that 2.8 per cent of farms in this category are closed per year. It is miraculous that from the yearly cohort of 10 to 20 per cent, 7.2–17.2 per cent are continued *trotzdem alles*. This highlights the resistance capacity discussed earlier, especially within this age and size group that is seemingly ‘doomed’.

Finally, there is the last category of minute, almost microscopic, farms. The top row in Table 7.3 concerns those farms that are between 3 and 24 NSU in size of which there are nearly 35,000. However, they are hardly farms in a strict sense; their size is simply insufficient.²⁶ Besides ‘farms’ that only have residential functions (Van der Vaart 1999), it will mainly involve part-time farms. Closure percentages within this category rise with an increase in age from 2.5 to 3.5 to 5.8 per cent.

I would like to make three remarks with regard to these figures. Realising that this category of minute farms involves mainly residential units with some land and part-time farms, we have to establish first that overwork (especially in the latter category) and hence farm closure will occur here more often than in other farm size categories. Furthermore, the choice to dedicate all time to the actual main occupation (i.e. to stop with farming) will occur more frequently on these types of farms, especially in periods when ‘farming’ is put in a bad light and/or because of the disproportionately high transaction costs of running a farm (albeit a small one) under the increasingly stringent state regulations. If we pay specific attention to the group of older farmers within this category (closure percentage 5.8 per cent), it should be remembered that these are minute farms that are of importance to the next generation (which undoubtedly

meanwhile works elsewhere and mostly lives elsewhere too) either because of their monetary value or their attractiveness as a future residence.

Although a comparison can no longer be drawn well as a result of changing classification schemes, I would like to refer to the 1976 Agricultural Census. At the time, there were almost 15,000 farms of less than five ha, where the farmer was over 50 years of age.²⁷ Ignoring farms without a successor, the available data show that from the then present successors, more than 600 were over 22 years of age, working elsewhere, and/or students. Hence, more than four per cent of the theoretically required successors were already integrated actively into other circuits and networks: in work outside of agriculture and/or in academic education. Since then, the proportion of students and/or children working elsewhere will have increased considerably. Hence, it is amazing that at the end of the day only 5.8 per cent of these minute farms with heads over 60 years of age are closed annually. This percentage should be much higher, precisely because the children (the potential successors) have long since found their destination elsewhere. However, against all expectations many minute, 'non-inheritable' farms are still somehow continued.

This leads to the second remark. It is gradually becoming *bon ton* to recognise that the urban Dutch have rediscovered the value of the rural (RLG 1997). What is forgotten, however, is that there is a subcategory of people who are privileged in this respect: they know the charm of rurality and can use family networks to re-establish a foothold in the countryside. This subcategory contains the sons and daughters, sometimes nephews and nieces, and/or grandchildren of the farmers of old. The movement towards the countryside (that which Kayser (1995) has pointed to as the '*repeuplement de la campagne*') is marked amongst these people, and they in particular have at their disposal the means to fulfill their dreams: they can take over the 'farm' (De Haan 1998a).

In other words, what is remarkable here is not so much that approximately six per cent of the smaller farms run by an older farmer close annually. What requires attention above all is that an equal, or even much larger, proportion is continued (mathematically, between 10 and 20 per cent of these farms should be closed per year). What prevails is the take-over by family members who prefer an attractive place of residence with some agricultural activity over immediate monetary gain.

This phenomenon is not restricted to the minute and/or smaller farms. There is a number of larger, sometimes even very large, farms in the Netherlands, on which either the man or the woman or both have a (part-time) occupation outside of agriculture, often involving professions that require high to very high qualification levels. The combination of jobs is considered attractive and hence continued. At the same time, the farm as such can be managed more flexibly, and it can be developed further if necessary.

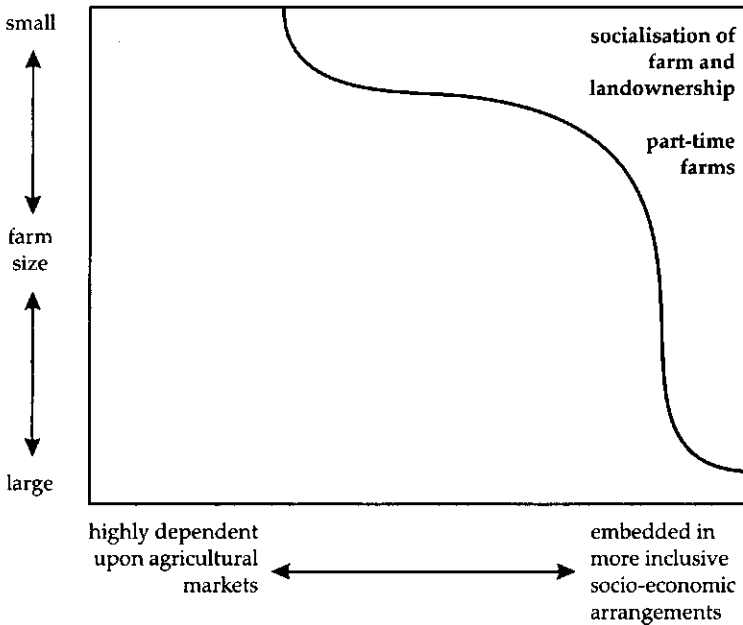
In thinking about agriculture, we usually imagine a whole that can be defined in terms of many dimensions (spatially, socially, culturally, economically, etc.). This is partly due to the way in which the words used have become established (and are reified by conventional statistical representations). However, the concepts and particular realities to which these words refer can be subject to considerable changes. Thus the 'farms' that I discuss here can no longer be regarded as the farms of old. Even statistical concepts such as 'agricultural enterprise' and/or 'part-time farm' are hardly adequate, certainly not if these terms refer to completely contrasting constellations. In fact, what is discussed here is a category of units that was initially managed as a farm, but which has become in the meantime largely 'socialised' in the sense that their maintenance is based upon ongoing transactions between the rural and the urban. In a spatial sense (and according to the conventional definition of Statistics Netherlands), there might still be an 'agricultural enterprise'; economically, however, it concerns units maintained (also in an intra-generational sense) by transactions between the city and the countryside. For this very reason they have been immunised against the economic 'laws' that are said to rule agriculture as a whole. These (residential) farms (regardless of their nature and size) can be maintained due to the incomes earned in the city. Thus, the spatial and economic dimensions no longer coincide as they did before. Symbolic transactions are clearly involved too – the value and attractiveness of life in the countryside²⁸ are communicated to the cities, whilst urban concerns will be articulated towards the agricultural sector.

Of the undifferentiated set of 110,000 'agricultural enterprises', we can thus already 'define' one part (at least in theory). This is illustrated in Figure 7.1.

Let us also approach this issue from the perspective of the remaining, 'real' farmers. In the world of virtual farmers it was thought that the reluctance of small farmers (i.e. the 'postman farmers') to give up, introduced a brake on structural development.

Together, farms smaller than 24 NSU represent a production capacity of 395,743 NSU. This is five per cent of the total production capacity of Dutch agriculture. If these farms were expropriated as part of a dynamic structural development and re-allocated to farms in the 'green zone' – the so-called viable farms – growth of 9.2 NSU, or on average six per cent, could be realised per 'viable' farm. Hence, the assumption that closure of smaller farms could support structural development in and of Dutch agriculture (I recall that this assumption is one of the bridging if not constituting pillars of the expert system) is no more than hot air.

Figure 7.1 The socialisation of part of agriculture



Finally, I would like to present a more mathematical argument (which is related, incidentally, to the previous one). Table 7.3 and the associated discussion inform about different constellations and the closure percentages related to these constellations. Young farmers face different issues, prospects and problems than old ones, and large farms differ in this respect from smaller farms. However, within the conventional representation all farms that are closed, irrespective of the particular constellation of which they are part, are added up and divided by the total number of farms, in order to present a supposedly universal redundancy percentage, which is claimed to represent inevitable trends and their equally inevitable causes. It is like adding oranges to apples and dividing them by rabbits to prove that magpies are born to steal the silver. Farm closure is a concept that, in scientific terms, should be dissected into new and complementary notions, which constitute each individually, but above all collectively, as adequately as possible a representation of the multiple adaptation and transformation processes that occur in contemporary agriculture. For example, it is much more important to know how many, and which, farms change from being full-time to part-time (and to know whether this is temporary or permanent) than it is to know how many minute residential farms with six sheep and a goat are closed in the municipality of Drachten, because the sons and daughters now work in Tilburg and no longer want to move back north. The same applies to the concept of succession. I will discuss this further in the next section.

7.4 Succession: the big enigma

Many of today's scenario studies and foresight models are no longer based upon *historical* redundancy percentages, they are derived from *expected* redundancy trends. The latter trends are usually founded, in turn, upon the 'greying' of the farming population and on the anticipated unwillingness of young people to take over the parental farm. Figures about the succession situation act as statistical foundations of this.

From the mid-1970s onwards, the annual agricultural census has been used to provide information about this situation. The outcome is largely the same every time: 'greying' (that is, a farmer older than 50 or 55 years of age) occurs on more than half of the number of farms, and no successor is present on the majority of these farms. Consequently, it is concluded that over one quarter of farms will disappear in the foreseeable future.

The use of these succession figures is very deceptive, however. Agriculture comprised 156,463 farms in 1976. Of the farmers, 74,960 were over 50 years of age (48 per cent). Of those, 63 per cent did not have a successor.²⁹ If a cohort analysis is conducted (the age distribution is known for the whole population) over the period 1976–1996, and assuming, in line with the discussion above, that prospects have not become brighter, at least 72,000 farms should have been closed between 1976 and 1996 due to the absence of a successor. However, the total number of farms did not fall to about 84,000 – there were still over 110,000 farms in 1996. The conclusion cannot be but that, in contrast to the initial figures, many more farms were continued than was initially expected. At least 36 per cent, although probably a much higher figure.³⁰

The use of succession expectations at face value introduces gross distortion in any analysis. Yet it is still done in almost every future projection or scenario study concerning Dutch agriculture. The unreliability of listed succession prospects can, incidentally, be explained quite easily. The succession situation will be uncertain in many cases. To be on the safe side, many respondents will decide to state that there is no successor. If succession prospects improve, this is psychologically more attractive than the reverse situation. Furthermore, sons or daughters who did not want to know about take-over initially (also in order to avoid work under the authority of *padre padrone*; Ledda 1978) may frequently change the minds and decide to make the best of a bad job later. And finally, some respondents will be of the opinion that such family matters are of no business to government. Hence, the statement of succession prospects probably tells us more about intra-generational relations and conflicts, and about the tension between the farming population and the state, than about 'objective' trends. Attempting to extrapolate succession trends on the basis of such responses is a deceptive enterprise.

The notion of succession is a social definition. The prevailing statistical definition reflects largely the notion of 'take-over' as it was developed decades ago within the framework of the modernisation project. What we need today is a redefinition in terms of expectancies (and not in intolerable black-and-white terms of *whether or not* succession takes place).

7.5 What else happens within the category of 'winners'?

Table 7.4 (again based on recent Statistics Netherlands (CBS) mutation analyses; see Liefwaard 1998) relates to changes in the sector of grassland farms (in overall terms: dairy farming plus extensive livestock farms). The changes concern one agricultural cycle, 1995–1996.³¹ The farms are divided into size categories (expressed in NSU) and the extent to which they have grown or decreased. Here we can regard 'decrease', especially if it involves a large reduction of the number of NSUs, as an indication of a (beginning of a) redundancy process.

Of course, the data in Table 7.4 should be interpreted with caution. Cyclical changes can have a certain influence. Similarly, decrease can be a temporary phenomenon: keeping more or less youngstock can result in shifts (just as a different cropping plan can produce similar shifts in Table 7.5). Furthermore, care should be taken of the almost 'optical illusion' inherent in both tables. The importance of a reduction of 2–4 NSU in the size category of 3–8 NSU cannot be compared with a similar reduction in the much larger size categories. Having said this, I think that a number of observations can be made.³²

Table 7.4 Growth and reduction processes on grassland farms³³

NSU	Reduction				stable	growth				total
	< -10	-10- -6	-6- -4	-4- -2	-2- +2	2-4	4-6	6-10	> 10	
3-8	—	—	0.1%	2.9%	85.8%	5.7%	2.0%	1.4%	2.0%	7313
8-16	0.2%	2.4%	4.6%	9.9%	67.8	7.0%	3.0%	2.4%	2.2%	6650
16-24	3.3%	6.1%	6.5%	10.9%	52.2%	9.3%	4.0%	3.5%	4.1%	3585
24-40	7.7%	6.4%	6.6%	11.1%	41.8	10.1%	4.8%	5.1%	6.5%	4551
40-70	8.5%	7.7%	7.0%	11.0%	31.2%	11.6%	8.1%	7.6%	7.3%	9322
70-100	10.0%	10.4%	8.2%	10.7%	24.9%	10.0%	7.6%	9.3%	9.0%	9466
> 100	19.5%	12.2%	7.1%	8.3%	18.1%	7.4%	6.5%	8.5%	12.9%	9662
	4169	3520	2987	4631	21,267	4442	2827	3058	3588	50,849
	8.2%	6.9%	5.9%	9.1%	42.5%	8.7%	5.6%	6.0%	7.1%	100%

If we operationalise the conventional ideas, as summarised previously, into the structure of Table 7.4, we should expect that reduction should be found in the 'top left-hand' corner (that is, the smaller farms), whereas growth should be concentrated in the bottom right-hand corner. However, this is not the case.

If we consider these figures systematically, we have to draw the following conclusions:

- 1 reduction and growth are divided over all size categories – reduction occurs equally on larger farms;
- 2 'stability' predominates on smaller farms, 'turbulence' increases as farm size increases (that is, reduction and growth collectively determine the picture more than stability does);
- 3 reduction is at least equal to growth on the larger farms: 19.5 per cent of the largest farms were reduced by over 10 NSU in this year, while 12.9 per cent of this group grew more than 10 NSU;
- 4 especially in the category of larger farms, a dual development seems to occur: either they succeed in growing considerably or they have to

reduce considerably (we are dealing with a normal distribution in the case of smaller farms, while a U-curve emerges on the larger farms).

The results of a similar calculation for arable farms is summarised in Table 7.5. The distribution of the cells emphasises the conclusions drawn previously. Reduction occurs mostly on the largest farms. Again, this implies, measured by the present facts, that redundancy as the necessary disappearance of farms at the bottom of the *echelon* is a myth.³⁴

Table 7.5 Reduction and growth processes on arable farms

NSU	number	Reduction					stable	growth			
		< -10	-10- -6	-6- -4	-4- -2	-2- +2		2-4	4-6	6-10	> 10
3-8	1990	-	-	0.4%	3.5%	76.2%	8.0%	4.1%	3.4%	4.3%	
8-16	1904	0.3%	4.1%	5.0%	10.6%	57.5%	8.5%	3.9%	4.3%	5.7%	
16-24	1179	5.0%	5.6%	6.5%	11.6%	45.4%	7.1%	5.8%	5.1%	7.9%	
24-40	1612	7.0%	6.5%	6.2%	9.8%	39.2%	9.8%	5.5%	7.1%	9.1%	
40-70	2754	11.1%	4.5%	3.8%	4.6%	34.2%	4.8%	3.4%	4.8%	11.4%	
70-100	1930	11.8%	7.4%	5.2%	9.4%	26.3%	8.9%	6.1%	8.5%	16.4%	
> 100	2091	21.7%	6.9%	5.3%	6.8%	17.2%	6.2%	4.9%	9.2%	21.9%	
		1104	712	651	1130	5593	1095	706	932	1537	
						41.6%					

7.6 From farms to employment: another paradox

In the current conjuncture, farm numbers fall with by 1.7 to 2 per cent per year. However, employment in agriculture falls considerably less rapidly. In the period 1992-1997, the total number of workers fell only 0.6 per cent per year (*Landbouw-Economisch Bericht* 1998, tab. 7.7). In 1998 there even was a slight increase in total agricultural employment (of +0.6 per cent). Behind these figures there are differences. The number of family workers (say, the farmer and helping family members) falls by 1.4 per cent per year. On the other hand, the number of non-family workers rises by 2.2 per cent per year. The total number of people economically active in Dutch agriculture was 282,480 (excluding 'non-regular and temporarily working non-family labourers') in 1997. Of these, almost 68,000 were contract labourers.³⁵ Five years previously this number was 61,000. The increase in contract labourers shows that a high increase in production volume on rapidly expanding farms (a subgroup of the remaining farms) demands an increasing labour input.

The combination of a falling number of farms and nearly stable on-farm employment is telling. First, it shows that the often hypothesised phenomenon of hidden unemployment, a certain degree of 'idleness' on smaller farms, does not exist or hardly at all. If this were the case, the reduction in farm numbers would be translated into a proportionate, if not even sharper, fall in agricultural employment. For if production volume shifts from 'less efficient' to 'more efficient' farms (following the logic of structural development), labour input would have to fall more than proportionately. This, however, is not the case. Additional labour is required in order to achieve the rise in production volume on growing farms. It could be hypothesised here that the so-called 'structural development' takes place faster than technological development does in

fact justify. Or formulated differently, the actually occurring scale enlargement is driven not so much by advancing technological development (as is usually postulated) but by other considerations and processes, such as the representation of the future as limited good.

In fact, primary employment falls even more slowly than the figures quoted above suggest. For, apart from a rising number of salaried farm workers, there is a tendency to use increasingly the services of contractors and custom workers, i.e. entrepreneurs who carry out certain work for the farm and who have the necessary machines and labourers at their disposal.

Systematic and completely trustworthy data on the development of agricultural contracting are not available.³⁶ It is clear, however, that 'after an initial fall in the period 1975–1990, their number has been restored to the level of 1975' (Reinhard 1993, p. 10). In 1990, over NLG 900 million was spent on custom work in agriculture. This is a considerable increase since 1975. The price index rose from 100 to 175, the volume index rose from 100 to 102.

The number of labourers employed via custom work amounted to about 20,000 in 1998 and there are indications that this number is rising slightly. Data from ASF and GUO/SGG (relating to pensions and salary volume, respectively) also emphasise the possibility of an ongoing increase.³⁷

Almost every farm uses custom workers. Their reasons for doing so vary considerably, however. On the one hand, there are smaller farms that cannot afford expensive, specialist machinery. Custom workers are employed here to save on the factor capital. On larger farms, on the other hand, it is not so much the costs of new technologies that is the prohibiting factor, but insufficient labour that is the issue. Through the use of custom workers, savings on labour are made.

A smaller dairy farm of, say, 40 NSU spent on average NLG 6,500 on custom workers in 1990; a large dairy farm (of about 150 NSU) spent NLG 23,000. Similar sums were spent by other types of farms, although it should be noted that these amounts are considerably higher for arable and mixed farms (Reinhard 1993, Table 2.3).

A restructuring is taking place in Dutch agriculture, which implies a remarkable concentration of production volume in an increasingly smaller segment of the very large, and growing, farms. However, this process of restructuring does not result in a remarkable rise in efficiency, either at the sector level nor at the farm level. The required labour input hardly falls for the sector as a whole. If the total amount of labourers falls by only 0.6 per cent per year (partly because the number of contract labourers rises on larger farms) and if the total amount of custom work stays the same or perhaps rises slightly (especially because the use that the larger farms make of it) and if the services of accountants and legal supporters increases in volume (especially for the larger farms), then it can be assumed that the total amount of labour in agriculture stays roughly at the same level. At the most a re-allocation of labour occurs: various goods and services that were produced initially by available family labour are

now generated by contract labourers and/or other enterprises that provide custom work (or services).

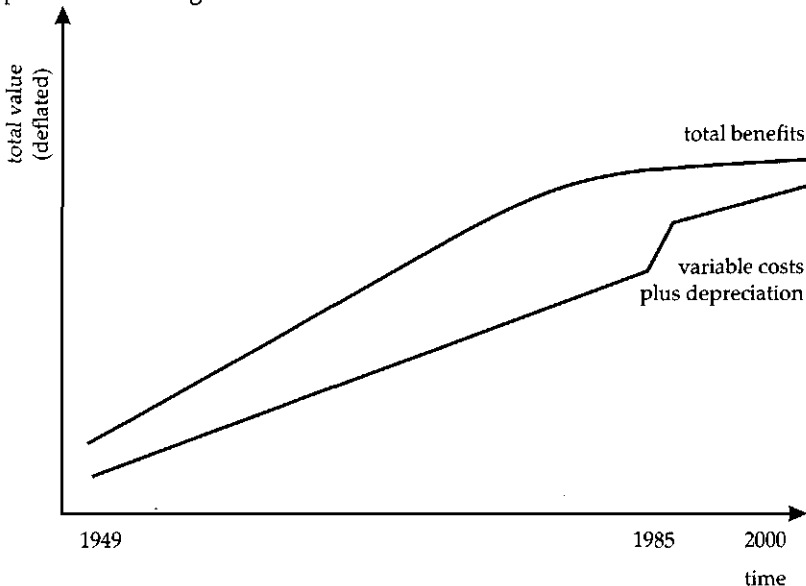
7.7 Resistance capacity: a differentiated fact

The developments in contemporary agriculture cannot be understood without taking explicit account of the resistance capacity of farmers. Everything is done in order to maintain the farm. To this end, different strategies are employed that correspond partly with the various constellations that have already been discussed.

We can be brief about the situation of the 'socialised' farms. They have effectively moved away from (distanced themselves from) markets. Their income is completely, or at least largely, earned elsewhere. The farm is an attractive place to live and stay, and the agricultural activities are experienced and organised above all as 'hobby'. Large macro-economic developments barely effect this category; they have been immunised.

As shown in Figure 7.2, the total income of Dutch agriculture has come under pressure since the late-1980s. Total revenues stagnate (certainly if we account for inflation), while costs continue to rise, sometimes abruptly. How can this trend be reconciled with a slowing down of the fall in farm numbers and with an almost stable employment level?

Figure 7.2 A stylised overview of the development of total benefits and costs of post-war Dutch agriculture



Apparently, something is amiss. Production factors have become more expensive (labour and land have tripled in price over the past decades, accounting for inflation), and output prices stagnated (the milk price fell by 50 per cent, accounting for inflation). From the viewpoint of neo-classical agricultural economics, farm enlargement and a simultaneous redundancy are therefore necessary, now more than ever before. Yet, it is hardly occurring.

This apparent contradiction can be explained by the existence of a number of movements that fall outside of the scope of explanations provided by the theories of the virtual farmer and virtual agriculture. These are movements, expressions of new strategic repertoires, that have only been recognised recently and whose value still has not been assessed. I will discuss the most important strategies here one by one.

- 1 First, I must refer to the importance of 'farming economically', a strategy that has been put into practice by an increasing number of farmers since the late 1980s. Farm management is organised in such a way that – I use a term that is popular internationally – a 'low external input agriculture' emerges: self-sufficiency has increased in various ways, in order to minimise the purchases of fertilisers, roughage and concentrates, livestock, labour, machine services, and various other services. Farm development too is adjusted substantially, to keep material investments as low as possible, as a result of which the balance between liabilities and net worth is maintained. Financial costs are kept as low as possible. Farms grow gradually, step by step and not abruptly, which would result in otherwise high financial costs and a considerable increase in the degree of commoditisation.

Various elements play a role in the development of the style of farming economically – including collective memory. As has been pointed out in various publications (Vondeling 1948; Wiskerke 1992; Van der Ploeg 1995), farmers dealt with the crisis of the 1930s by starting to farm economically (see also Chapter 2 of this book). Furthermore, a sizeable strategic arsenal was available to draw upon at the moment the 'squeeze' (Owen 1966), as represented in Figure 7.2, was felt (from the early 1990s onwards). Maybe the farming styles studies that we published from the early 1990s onwards have contributed somewhat to this. The style of farming economically was recovered from anonymity. The *sunige boer* became an intersubjective point of reference once again, a rationality that was widely recognised.

At the Research Institute for Animal Husbandry (PR) in Lelystad, an experimental set-up for a 'low-cost dairy farm' has been constructed alongside a 'high-tech' farm. The former experimental set-up is largely inspired by the approach of the 'economical farmers'. The high-tech farm, on the other hand, stands for technological optimisation (including e.g. robotised milking). The set-up is a valuable novelty: as far as I can tell, it is the first time in the contemporary western world that contrasts are purposefully built into applied agricultural research. It involves a *comparison* of different technological trajectories – in short, trajectories that engage with the practice of 'vanguard farms' and with the contrasting one of 'economical farmers'. The starting point of both farms is that one full-time worker should be able to earn a standard labour income by working fifty hours per week. To achieve this, the low-cost farm requires a quota of 400,000 kg milk, whereas the high-tech farm requires a quota of 800,000 kg milk. Projected onto the sombre perspective contained in Figure 7.2, this implies that employment (and the number of farms) in the sector is not a

unequivocal function of exogenous pressures. The 'squeeze' can be parried by a change in style. By farming economically, the cost line in Figure 7.2 has in fact been lowered (without it being reflected in conventional statistics).³⁸

- 2 A second strategy for cost-price reduction can be defined analytically as reducing labour costs. What I want to point at is that, by means of pluriactivity, part of the labour available at the farm is mobilised and remunerated elsewhere, resulting in a reduction of labour that has to be remunerated by actual agricultural production.³⁹ According to the most recent *Landbouw-Economisch Bericht*, the average farm income (of about NLG 48,000 per year) is supplemented by almost NLG 25,000⁴⁰ of off-farm income (LEB 1998, p. 191). This involves various types of income. It can involve a full-time or part-time job elsewhere – of either man or woman.⁴¹ It can involve performing activities for, or with, other farmers.⁴² However, it can also involve benefits and/or revenues from capital (dividends, rents, tenure payments, etc.).

Pluriactivity is a widespread phenomenon in Dutch agriculture. 'The specialised Dutch agriculture' is a myth just like 'the specialised farm'. According to a relatively recent study by De Vries (undertaken in the region Land van Maas en Waal), about 67 per cent of farms realise part of their family income from outside of the farm (De Vries 1995; for a more general discussion, see Marsden 1990).

- 3 Apart from pluriactivity, another phenomenon is important – that is, earning complementary revenues *within* one's own farm. I point here to the multifunctional farm, on which, alongside conventional economic pillars (such as producing milk or potatoes), new complementary pillars have been developed, such as farmer-led nature management, agri-tourism, production of specialities with high value added, processing and marketing of one's own produce, introduction and integration of care tasks, and so on.

A rapid expansion of the multifunctional farm has occurred in the past years partly under the banner of rural development and/or rural renewal. Van Broekhuizen *et al.* (1997) estimated that in 1996 an additional net income of about NLG 440 million per year was generated by multifunctional farms. They also pointed out that this amount could grow to NLG 1.2 billion per year in a relatively short period. It also appeared that the group of 'diversifiers' was of considerable size and above all rapidly growing.

- 4 A fourth type of cost-price reduction that plays a role in Dutch agriculture of old revolves around increasing the *technical efficiency*. This concept is used to refer to the relation between the total amount of mobilised production factors and the production value realised by them (Yotopoulos 1974). The more production is realised by a given amount of production factors, the higher the technical efficiency. Under today's conditions (summarised in Figure 7.2) increasing this technical efficiency is of the utmost importance. This type of cost-price reduction (I would like to recall that cost price is a relative concept: it is

always cost price *in relation to* the realised output price) is empirically based in the farming style of the 'cowmen' and 'ten-tonne-wheat-growers' – that is, in those styles in which fine-tuning and craftsmanship are decisive (for a more extensive description, see NRLO 1994; Wiskerke 1997).

- 5 Finally, I would like to refer to a sheer indestructible response, building on and drawing from a rich historical tradition. That is the (gradual) change to a *more intensive farm set-up*: arable farmers increasingly shift to the cultivation of trees and ornamental plants, or to laying hens; small farmers in the province of Limburg expand their asparagus cultivation; small dairy farmers on the northern sandy soils change to the cultivation of potted plants, ornamental shrubs, and so on – the morphology is too rich to discuss exhaustively here. The constant increase in the total number of NSU in Dutch agriculture documents the significance of this trend.

What is important each time is that the number of labour objects (the number of standard farm units or Netherlands size units) increases for any given land area. Hence, smaller farms 'grow'. A *small* dairy farm of about 10 ha is thus converted into a *large* potted plant farm of 10 ha.

Collectively, the different strategies for cost-price reduction (each representing an aggregation of development projects of particular groups of farmers) explain why redundancy, in the classic sense, hardly occurs at all under current macro-conditions. Adverse conditions (the squeeze described in Figure 7.2) are actively warded off by means of a broad and flexible strategic repertoire. Thus the contrary takes place, on the whole, to what would normally be expected, i.e. a dramatic increase of redundancy brought about by unfavourable market conditions. The same elements (particularly 1, 3, 4, as well as 5) also explain why total employment remains stable. Graphically, these countermovements can be defined as 'lowering' the cost line in Figure 7.2 and 'raising' the output line. Thus emerge the contours of what I will analyse as rural development in Chapter 9.

The strategic repertoire that I have pointed at previously is widespread in Dutch agriculture. This emerges, *inter alia*, in the pattern of answers to a simple question posed to farmers in a national survey (Boerderij 1998). The question was: 'What are the characteristics of a beautiful and well-organised farm?'. The answers are summarised in Table 7.6.

Various elements of the broad strategic repertoire I referred to emerge in Table 7.6. The most remarkable contrast appears between the top three rows (a, b, and c) and the bottom two (i and j). 'Producing high quality', 'the ability to carry out the work well', and 'avoiding stress' all refer to 'farm-internal elements' (elements that concern the farm – family relationship in particular) – that is, elements that can be influenced and adjusted without directly involving the market as a determining factor. This contrasts highly with the nature of i and j: 'being larger and more modern than others' and 'producing as much as possible at the lowest

possible labour input' can both only be realised *via* markets. These latter two strategies are classic responses to the squeeze. Almost three-quarters of the surveyed farmers (N = 683) consider such answers 'irrelevant', while the reverse image can be found 'at the top' of the table – that is, involvement in new responses.

Table 7.6 Farmers' definitions of a 'beautiful and well-organised farm', percentages

Characteristics	irrelevant	important	decisive
a. produce high quality	14	60	26
b. ability to carry out the work well	1	76	22
c. avoid stress	5	74	21
d. produce large volume at low costs	13	64	21
e. good balance of liabilities and net worth	12	70	18
f. good technical results	23	60	17
g. farm as economical as possible	15	69	16
h. invest carefully	15	66	9
i. be larger and more modern than others	74	23	3
j. produce as much as possible with as little labour as possible	74	25	1

A large (and growing) portion of Dutch farmers define 'the beautiful and well-organised farm' in a way that implies that they become relatively independent from global market and price conditions. This is shown in the responses to the question of 'whether the beautiful and well-organised farm can counterbalance price reductions and price fluctuations'. On being asked, 91 per cent of respondents answered affirmatively.

This self-confidence *vis-à-vis* markets is also reflected in questions relating to strategies by which farmers expect to *de facto* parry possible price reductions. The answers are summarised in Table 7.7.

Table 7.7 Strategies to parry price reductions

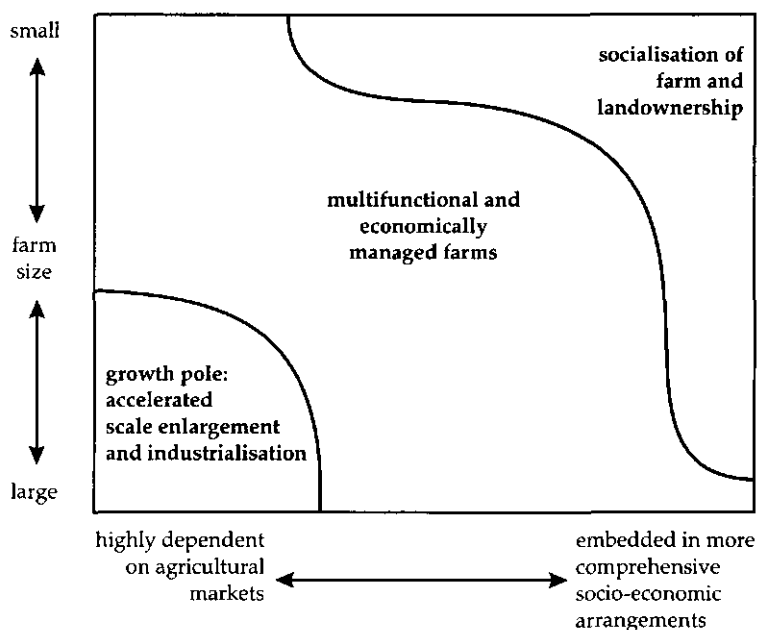
Strategic answers	irrelevant	important	decisive
a. pursue high yields	9	65	24
b. invest carefully	13	64	21
c. increase flexibility of farm	4	73	19
d. farm more economically	17	65	16
e. develop more branches	24	59	15
f. anticipate markets earlier	29	55	12
g. anticipate policy earlier	32	64	7
h. enlarge the farm	57	32	6

Again the contrast is remarkable: increasing technical efficiency (a), farming more economically (b and d), and diversifying the economic base of the farm (c and e) are considered more 'decisive' than sheer classic farm enlargement (h).

Adding this broad repertoire to the graphical representation in Figure 7.1, a new picture emerges, that is presented in Figure 7.3. Alongside the newly emerging multifunctional farms, a third constellation has been defined in Figure 7.3: the 'growth pole'. It is a category that distinguishes itself clearly from the other two. The image of the virtual farmer has become most internalised in this category. Ongoing specialisation exists in

contrast to multifunctionality, 'investing ambitiously' and growth exist in contrast to the 'economical'. A multifunctional farm set-up is understood as an obstacle for the further growth and expansion of one's own farm (which is the right conclusion within this particular strategy). Numerous other differences can thus be pointed out. I will discuss these further in the next chapter.

Figure 7.3 Contrasting constellations in Dutch agriculture



I would like to make one more observation to avoid possible misunderstandings. As has been pointed out implicitly in Figure 7.3, the constellations that I describe here can and should not be reduced simply to differences between small and large farms. Large farms too can unfold explicitly along the track of multifunctional farm development. And smaller farms can stake everything on continued expansion too.

7.8 There is none so blind as those who will not see: the danger of myths

The role of labour can be explained from various perspectives. With regard to contemporary Dutch agriculture, the thesis can be defended that the factor labour should be perceived, above all, as human capital. Labour is necessary in order to make agriculture more sustainable, in order to reorient it from bulk to quality production, and in order to give it a more multifunctional character (Van der Ploeg 1993a, 1993b). Within the expert system, however, the vision predominates that labour is pre-eminently a cost and that a considerable part of it is superfluous, it is a barrier to further 'structural' development.

An agricultural policy fed by such perception cannot but result in the introduction of frictions and distortions that will have to be paid for in the end. This is particularly relevant when considering the design of new agricultural policies, technologies, and market institutions. Indications of success and failure are necessary in all design processes (see Staudenmaier 1985). A failure indication indicates that the design is not adequate, as it collides somehow with the set of conditions within which the eventual design has to be situated. In short, a failure indication indicates the necessity of redesign.

The processes of design realised within the Ministry of Agriculture (and its subcontractors) do not consider a decline in employment as an indicator of failure. On the contrary, a reduction in employment, labour input, and/or farm numbers is understood as being inevitable. Acceleration of this process is even regarded as desirable within the expert system. A striking example can be found in agri-environmental policy: early versions predicted a reduction of farm numbers of approximately 40 per cent without this being understood as an indication of failure.

The virtual world view also implied that the Dutch Ministry of Agriculture failed to recognise until very late the vast array of new activities that was developing in Dutch agriculture. In turn, this resulted in a policy for rural development that failed to match with actual dynamics and renewal (see further Chapter 9). Summarising, it could be said that the ship steams ahead. Work proceeds self-confidently in the operations room. Red lights indicating that radar and sonar no longer function properly and that the windows are steamed up, are missing. One has no idea about the sinking of a similar 'mega project'. For *Titanic* was only a film.

Steamed-up windows: how many farms are there in the Netherlands?

The expert system in and around Dutch agriculture is partly based on a number of carefully kept registration systems. Import and export of agricultural products, the number of farms, the number of hectares under sprouts, the cost price of these sprouts – everything is registered with precision. In comparison to numerous other systems elsewhere in the world, the Dutch expert system is without doubt one of the most developed.

There is only one weak spot (which is possibly bigger here than elsewhere): the interface between registration systems, on the one hand, and the practices they inform about, on the other. Registration is based upon historically anchored concepts and categories that are out of tune with the complex and heterogeneous nature of contemporary practices. Moreover, the provision of information by farmers has long become part of a well-considered game in which their estimation of the (future) use of the data by the Ministry of Agriculture constitutes usually the starting point.

I would like to illustrate this by way of a discussion of the total number of agricultural enterprises in the Netherlands. This number is officially about 110,000 (1999). It is based on the so-called May survey, which registers annually (in the past through direct contact, now by post) the most important data for each farm. Apart from a small group of chronic refusers (and recently a small but persistently growing group of 'new refusers'), farmers carry out their duty. Thus a so-called 'relation number' appears for every farm. It is assumed that each farm has just one relation number. Hence, the total number of relation numbers should equal the number of farms – at least on paper.

In practice, though, some farms have *more* than one relation number for various reasons. Take a closed pig farm that is managed in partnership by father, mother, and son. This constitutes one relation number. Furthermore, the farm also has a small dairy branch in the father's name. This is the second relation number. And finally, the son has started his own activity, for example the cultivation of lilies, which is relation number three. The complex and lengthy succession (or take-over of the farm) results in a multiplication of relation numbers. Another frequently occurring situation involves the housing of several (intensive livestock) farms within one enterprise. For whatever reason (and these can be numerous), the constituent parts are mentioned as separate enterprises in the May survey. Although one entrepreneur thus runs six or seven 'branches' of the same farm, they appear in the survey as six or seven separate farms. A third situation also often occurs. In some regions, the extended family has existed for a long time, grouped around the farm (incidentally, there are a great many regional nuances involved here). This results in various sections of the farm being registered in name of different family members. Again, this implies that one farm enterprise emerges within the statistics as several units.

There are more relation numbers than farms, yet this is not explicitly recognised by the registration system. We have frequently encountered expressions of this. Say, in municipality X the number of farms should be 400, according to the statistics. After a painstaking search, including systematic consultation of regional experts and comprehensive checks (just visit all potential farms), there turned out to be only 200 agricultural enterprises. The same happened to us in the Gelderse Vallei. According to available survey data, there is an almost endless number of farms, so small that it is impossible to imagine anything but poverty. Driving around the area with the concentrate suppliers, we visited *every* farm, after which arrangements were made for further discussions, which soon showed that 'apart from cows, we have pigs, but they are in my uncle's name'. And so on.

By digging patiently into the organisation and construction of the Statistics Netherlands (CBS) databases (for which I owe many thanks to René Liefwaard of CBS), it appears eventually that more relation numbers disappear per year than can be explained by take-overs and/or closures of farms. All things considered, if one farm is closed or taken over, on

average 1.47 relation numbers disappear. This average is not constant for different subgroups, however.

A more differentiated picture is presented in Table 7.8. It shows that more relation numbers occur on larger farms than on smaller ones (although an upward trend can be seen on minute farms). Furthermore, there are relatively more relation numbers per farm on those farms where the farmer is younger than 55 years of age. This reflects without doubt the complexity of take-overs under current circumstances.

Table 7.8 The average number of relation numbers per farm (my calculations based on CBS data)

	age of farmer		
	< 55	55-60	> 60
3-8 NSU	2.30	1.75	1.30
8-16	1.43	1.28	1.12
16-24	1.75	1.27	1.08
24-40	2.18	1.43	1.00
40-70	2.41	1.60	1.04
70-100	2.57	1.57	1.00
> 100	2.47	1.51	1.12

These data have been translated into the number of farms per category in Table 7.9. Of course, no 'iron' sense of reality can be associated with the projection of possible mistakes to the universe as a whole. Still, this exercise makes plausible the thesis that we do not know how many farms there are in the Netherlands. The systematic mismatch between the number of farms and the number of relation numbers, implies that there possibly are only 60,000-70,000, instead of some 110,000 farms in the Netherlands. More importantly, the number of farms considered as the promise for the future by the expert system is not 15,662 but 6325. Hence, numerous assumptions have to be reviewed.

Table 7.9 A recalculation of the number of farms in the Netherlands

initial NSU category	age of farmer			total	reduction vis-à-vis CBS data
	< 55	55-60	> 60		
3-8	2115	901	5549	8565	37%
6-16	3778	1302	5312	10,382	20%
16-24	2117	953	2913	5983	26%
24-40	2637	1212	3715	7564	32%
40-70	4715	1869	4798	11,382	41%
70-100	4084	1574	4142	9800	43%
> 100	6325	2675	5246	14,246	44%
Total	25,771	10,486	31,675	67,932	37%

Table 7.9 takes us to a world of uncertainties. Ironically, this is the very opposite of what registration systems are designed to achieve. It is possible that a more pronounced dualism exists between large and small farms in the Netherlands than anyone has yet been able to identify. The production volume of (the smaller number of) large farms will be much

higher per farm than is assumed on the basis of non-adjusted data (such as included in the conventional farm survey). At the same time, it is conceivable that the smaller farms are not as small as is usually assumed. The question of interrelations is also to be reviewed: is there a connection between 'large' relation numbers and other 'large' numbers? Or will it be a connection of 'large' and 'small' numbers (in the sense that – as the Italian case shows – large farms control a considerable group of smaller farms)? Such crucial issues are not known. Although an incredible amount of data is registered, frightfully little is known about what actually goes on.

Perhaps the various figures that have been calculated and presented in this book should be fundamentally revised too. I referred previously to the very low percentage of closures in the group of large farms. If it appears that this group is much smaller, redundancy will increase correspondingly (towards over one per cent per year, which is higher than the redundancy percentage for all size categories!).

The expert system, however, does not entertain such questions and doubts. According to the system's parameters, they involve at most hair-splitting distinctions. 'Redundancy' continues without any doubt, while 'structural development' remains central. The *Titanic* will undoubtedly sail on.

Notes

1 This was obviously the case, for example, at land consolidations. The same applied to advisory services, in the interest subsidy policy, etc. (Frouws and Van der Ploeg 1973; De Bruin 1997a). It undeniably played a role in the initial designs of the environmental policy too.

2 I pointed out previously that both the number of farms and the agricultural working population rose constantly between 1850 and 1957. Historians speak of re-peasantisation in this respect. Incidentally, such growth occurs in other regions in Europe too: Tràs-os-Montes (through the return of migrants, former agricultural labourers who start a small farm, usually part time) and Scotland (through the increase of crofters, particularly young people who get chance as a result of special government programmes) are notorious examples. What will happen in eastern Europe remains open to speculation.

3 It should be mentioned that figures about 'outflow' are slightly inflated by the ever changing 'thresholds'. About 3000 farms 'disappeared' in the period 1990–1997 because they fell below the threshold of 3 NSU. If we correct our calculations for this, the actual outflow would amount to 2.0 per cent per year and the net reduction to 1.4 per cent per year (instead of 1.7 per cent per year).

4 I refer here to the *wroppers* of the Fryske Walden: former agricultural labourers or the second or third son of a farmer, who through hard labour built up a beautiful farm (De Bruin and Van der Ploeg 1992). Similarly, reference can be made to the *gardeniers*.

5 Please note that some presented figures about the current influx are probably overestimated. They include the phenomenon of children of extended family members taking over part of the farm, for example in order to start a 'tree nursery farm'. This provides them with the right to farm buildings and a house. Subsequently, the trees are allowed to grow wild into a park and an attractive residence has been established for oneself or which can be sold as an expensive villa. Profits are gigantic in such operations. All things considered, this does not concern the establishment of new farms, but quasi-legal mechanisms to convert agricultural land into building land. The inability of policy makers to

formulate an effective policy in which 'red pays for green' enables the continuation of this creeping type of suburbanisation.

6 In the two-year period 1995–1997, 917 new farms were established. Their average size was 7.2 ha, or 34.7 NSU per farm. The majority are arable and livestock farms. The 'heroism' is therefore twofold. It concerns not only the founding of a new farm, but also a new farm that is so small, according to the criteria of the expert system, that it will be defined as 'non-viable'.

7 This appears from the number of students in agricultural colleges, from their chosen educational paths, and also from the eager use made of the Tante Agaath regulations (see *Boerderij* 1998). Similar indicators appear in Bock and De Rooij's research on social exclusion (2000).

8 The more farms become larger and large scale, the more problematic the 'laboriousness' of plots with high ecological and landscape values.

9 When the father retires, reductions could again be made. Or use was made of the already progressed technological development in order to produce the same volume by one labourer (i.e. the remaining son). The French INRA studies are particularly important in this respect, indicating that the most important 'determinant' of farm size (in land-dependent sectors) is the number of working family members.

10 Venema and Overgaww (1994) refer to a balance sheet total for the average grassland farm in 1975–1976 of almost NLG 480,000. This figure had risen to NLG 1.65 million fifteen years later.

11 For example by combining a relatively small quota with a new cheese-making operation and direct sales. Numerous examples exist.

12 A very remarkable expression can be found on the island of Tholen, where of old open vegetable cultivation (mostly combined with the production of 'firsts') has resulted in a flowering sector, composed of (in terms of amount of land) rather small farms. However, they are constantly represented as 'too small' within the current vision. Hence, the result is that take-over levels are very low (all things considered, inconceivably low).

13 The sheer undeniable logic of this argument is nothing more than a tautology. It would be worth analysing the dominant view in terms of such tautologies.

14 There is a lot of doubt among farmers about the 'stability in value' of quotas, as they are part of the political game in Brussels.

15 I have derived this table from data presented in LEB (1998). The data refer to the period 1990–1997. More detailed data for the latter two years (1995–1997) can be found in CBS (1998). They show that the number of farms fell from 113,202 to 107,919 between 1995 and 1997. The net result of farms emerging above the threshold and those that fall through it is 1440 (for example, in 1995–1996, 1006 farms appear above the threshold, whereas 1724 fall through). The total number of closures in the two-year period is 6393. On the other hand, 917 new farms were founded (541 in 1995–1996, 376 in 1996–1997), while the 'net gap' (say, the farms that were lost) amounts to about 1700 farms. Most recent figures are in line with and emphasise the analysis of this chapter.

16 Again, a remarkable tautology, especially if the fact is taken into account that 'good entrepreneurship' can only be determined *ex post facto*.

17 The figures concern 1996. These figures are remarkably stable over the years; it should be noted, however, that the number of starters (as represented by the 'birth rate') follows a slightly counter-cyclic movement. Cohort analyses emphasise the stability of these figures. After five years, 60 per cent of the cohort is still active, after ten years about 40 per cent. I owe many thanks to Gerlof Rienstra of Kolpron for the collection of these data.

18 Approximately 1 per cent of all marriages in the Netherlands ends in divorce per annum. This would imply that a divorce would occur annually on about 570 farms (on which the farmer is younger than 55 years of age). Assuming that farmers divorce less often and taking into account the type of marriage (marriage settlement as opposed to community of property), the figure given here (100) should be considered a conservative estimate.

19 Agriculture is one of the most dangerous sectors in this respect (De Rooij 1990). There were 22,841 'benefit cases' among the self-employed put forward in 1995 (which occurred at the time through AWW), involving 4 million benefit days and a total amount of benefits of almost NLG 300 million. Among these benefit cases, injuries to the back and limbs are the most frequent, which is evidently related to heavy work. Stress and related psychological disabilities and 'illnesses of the nerve system' come second (GUO 1995, tab. 3.3.5). A similar picture is presented by GUO (1996).

20 It appears from GUO (1995, tab. 3.3.1) that about 8000 self-employed people in the agricultural sector are registered as disabled to the extent of 80–100 per cent (they were covered under the law relating to incapacity for work (AWW), and are now covered by the law on insurance against incapacity for work by self-employed persons – WAZ). A number of these cases are 'closed' annually as they reach the age of 65, due to death, and/or as a result of recovery or re-examination. At the same time, there is a new 'influx' from which new benefit cases emerge (between 1000 and 1100 per year). If the generally applicable distribution of categories of disability is applied to the latter figure, the new number of cases of complete disability amounts to 280. This concerns in part entrepreneurs younger than 49 years of age (GUO 1995, tab. 3.3.2). The thus presented problem could be solved in a number of cases within the family and/or through a farm care worker. In a number of cases, this will be impossible. Hence the estimate of 100 cases of disability per year that result in permanent farm closure. Consultation with experts shows that this is a reasonably conservative estimate.

21 This estimate is based upon various sources. I refer, *inter alia*, to GUO (1995) in which bankruptcies are mentioned in so far as they take place on farms that use external labour. This involved 92 farms in 1994 and 70 farms in 1995. However, it concerns only a subset.

22 I owe many thanks to René Liefwaard of Statistics Netherlands (CBS) for his help in the construction of this table.

23 The distribution of farms in size categories that are associated subsequently with the colours of traffic lights ('red': beyond help, you'd better stop; 'orange': the farm is in a danger zone; 'green': plenty of possibilities for continuity) is typical of the extreme degree of objectification and especially of the induction of symbols that have to support trust!

24 I know from my own contacts that this occurs on a regular basis.

25 Taking up residence in the former farmstead after a longer period of time is a different matter altogether: land, quota, emission rights, livestock, and so on are almost always disposed of much earlier.

26 A careful nuance is necessary here, however. Our experience in empirical research in the Gelderse Vallei (De Bruin *et al.* 1991) shows that only part of the production capacity falls within the 'white' circuits on part of these farms. It can be outnumbered considerably by the proportion that falls within the 'grey' circuits (and which does not appear in the farm surveys).

27 A considerable number of horticultural firms will have been among these: small in terms of land size, relatively large in terms of production capacity. If we take this into account, however, the subsequent conclusion becomes much stronger.

28 It is remarkable that a city such as Leeuwarden appears to have both the highest number of unemployed people per 100,000 residents as well as the highest number of jobs per 100,000 residents. This paradox can be explained by the fact that a considerable number of workers prefers to live *outside* of the city (and can afford to do so), whereas the unemployed live in the city (personal communication, H. Apotheker, then mayor of Leeuwarden).

29 A similar calculation is made in the 1994 farm survey for those who have a part-time agricultural job: in other words, small farmers with a non-agricultural main occupation have been filtered out. As a result, there appear to be 110,074 full-time farms. Of these farmers, 58,374 (53 per cent) are over 50 years old. Of those 33,371 (57 per cent) are said to have no successor.

30 In the calculation of the minimum effect, the complete reduction of farm numbers is attributed to the closure of farms by farmers of over 50 years of age who previously did not indicate that they had a successor. On the whole, this is not right: there are other farms that

are closed for other reasons. If this effect is included into the calculation, the 36 per cent estimate appears too low.

31 It should be mentioned that a similar analysis is conducted on the subsequent agricultural cycle in order to check thoroughly whether or not accidental distortions occur within one year. However, the results of the analysis for the period 1996–1997 emphasise the conclusions drawn in the text below.

32 Source: my processing on the basis of CBS (1998, p. 60, tab. 3a).

33 Which, it is self-evident, should be checked preferably by painstakingly longitudinal research.

34 Analysis of 'factory farms', horticultural firms, and mixed farms leads to the same conclusion.

35 Incidentally, it is remarkable that a detour through the employee insurances (see GUO 1995, tab. 3.1.4) shows that there were 100,000 insurance person-years (in which part-time jobs are converted to full-time jobs) of employees in salaried labour in 1995! This was 96,400 in the previous year. Hence, there are apparently considerable and systematic misestimates and/or distortions built into the conventional registration systems. Furthermore, it can be assumed that the figures from employee insurances are the most trustworthy (although they do not present the complete picture either).

36 There are various causes for this, such as the grey zone between agricultural and non-agricultural custom work, the fact that part of agricultural custom work is conducted by farmer colleagues, as well as the occurrence of definition changes in data systems, as a result of which comparison of multi-year data becomes extremely difficult. Despite all this, a number of interesting studies are available. I would like to refer to Reinhard (1989, 1993) in this respect. Furthermore, data that I have used in the following discussion were supplied by BOVAG, CUMELA, and ASF.

37 I owe thanks to André de Swart of BOVAL, Jaap Nieuwenhuize of the Ministry of Agriculture, Nature Management and Fisheries, and Henk Ligtenberg of ASF for collecting the data used here. Ad de Rooij of Stigas supplied further data. The number of insured employees in 'enterprises exploiting agricultural machines' rose from 16,177 in 1994 to 17,418 in 1996.

38 I would like to recall again that the statistical representation of Dutch agriculture is based largely on the commodity fiction. In addition, the samples used are usually biased against 'economical farmers'.

39 I think that this aspect is chronically neglected in conventional statistical representations. If one third of total labour on a farm is employed elsewhere, an income *from the farm* of 66 per cent of the conventional income is not an indication of poverty. It is a *comparable* income if related to the proportion of labour that is dependent on the farm! Or rather, if one would take account of (a) the integration of farm and family and (b) the fact that many farm families realise income elsewhere, the so-called net farm result would look decisively different, as it would be much less negative than is represented at present.

40 Of course, this is a snapshot. The percentage will fluctuate with an improvement or deterioration of the milk price.

41 A full-time job elsewhere of the woman is often an essential condition for take-over, for 'enabling take-over', of the farm.

42 In fact, it is a particular type of the past: at the time, larger farmers could only work their farm due to the labour input from other, smaller farmers. This happened all year round, for example, in milking, or at certain peak periods, such as haying time and/or in the autumn when ditches had to be cleared. Sometimes this work was paid for, sometimes remuneration occurred in the form of 'counterservices', such as the use of machines that the smaller farmer did not have at their disposal. Nowadays this mutual division of labour can be found in 'rounding up and taking care of youngstock', conducting agricultural custom work, producing maize, etc.

8 Structural Involution and the Erosion of Trust

Increase in output per farm can be realised through various means. One of the possible mechanisms is scale enlargement. It involves an increase in the number of labour objects – hectares, livestock units, or, in summary, standard farm units (SFU) or Netherlands size units (NSU) – per labour unit.¹ Scale enlargement can occur abruptly or gradually over time (Van der Ploeg *et al.* 1990). The magnitude of the scale-enlargement operation can vary considerably. Scale enlargement might contain a self-accelerating momentum: the more the margin per unit of end product is reduced as a result of the previous scale-enlargement process, the more scale enlargement will become necessary in the future.²

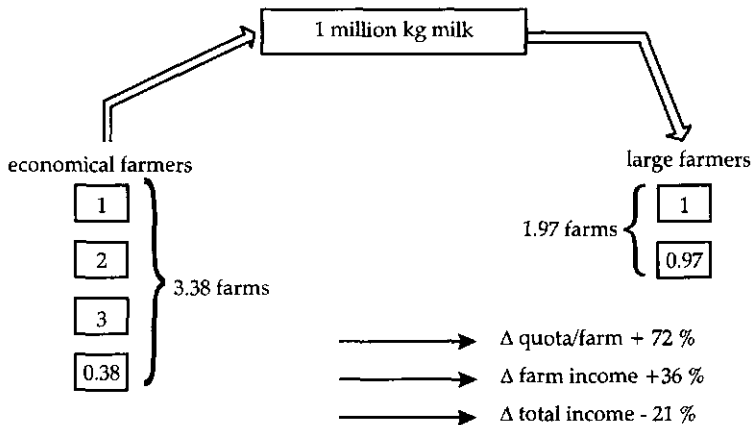
In the 1980s, Van Driel (1982, 1984) pointed out that the rhythms of scale enlargement vary greatly in Dutch dairy farming. *Proportionate* growth occurs on the smaller farms as well as on the so-called medium-sized farms (Van der Ploeg 1985, 1997); the level of growth realised is largely a function of the farm's internal dynamics and resources. Investments follow the rhythm and the limitations of one's own savings. *Disproportionate* growth, on the other hand, occurs on the larger farms. Here, growth is based particularly upon the mobilisation of external resources, which enables this acceleration. A breakdown of all dairy farms (Van Driel 1984, Table.1.1) shows that 52 per cent of the medium-sized farms increased the number of SFU/farm by between 5 and 40 per cent in the period 1975–1980. The biggest expansion (disproportionate growth) was found on the larger (vanguard) farms: 31 per cent increased the number of SFU/farm by over 40 per cent in this period. Only 12 per cent of medium-sized farms grew at the same rate. Disproportionate growth is grounded on considerable loans and implies high financial costs. Disproportionate growth is not a one-off operation; it becomes an ongoing process. It is a *fuite en avant* as imaginatively described in French studies.

This distinction is crucial to an adequate understanding of the scale-enlargement process as it takes place today. Some farms will try, if the opportunity presents itself, to acquire a small additional quota in order to obtain a more 'balanced' farm. Other farms will try to purchase vast quantities of, if not as much as possible, quota. Continuous growth is the norm there; it is necessary for they think they are engaged in a battle for the future. These farms are characterised by continuous and disproportionate growth, which finds expression in the size of quota purchases.

The unequal nature of growth, together with the now established zero-sum situation (in which growth of A is only possible at a simultaneous

and identical reduction of B),³ cannot be neglected in the analysis of scale enlargement as contemporary phenomenon. The implications of the substantial quota transfers and concentrations that take place nowadays are described in Figure 8.1. Starting from existing empirical data (derived from the Agricultural Economics Research Institute database), disproportionate growth under current conditions can be imagined as the reallocation of the quotas of smaller farms (managed according to the strategy of farming economically) to fewer large farms (operating according to another strategy, the one of large or vanguard farmers).

Figure 8.1 The impact of quota transfer

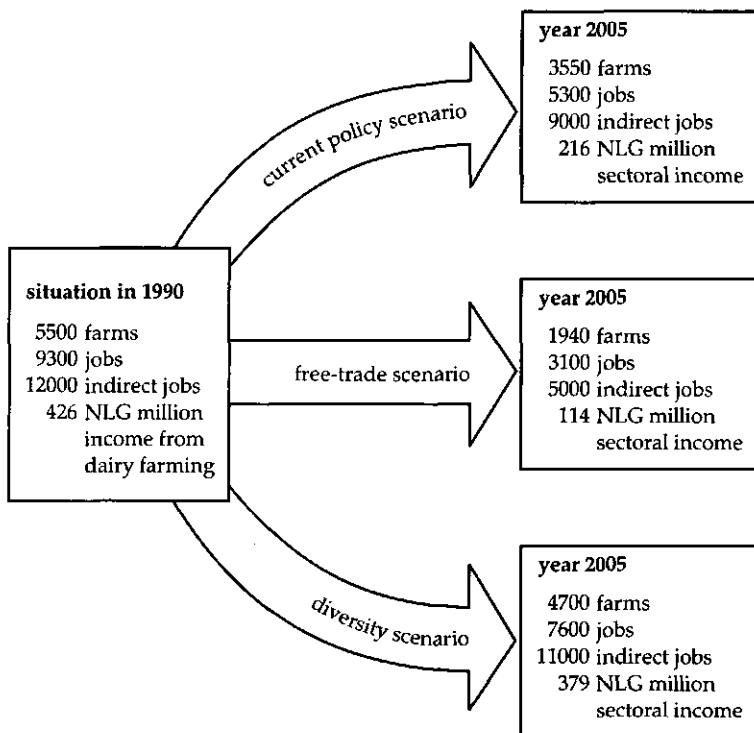


The transfer involves one million kg milk. Initially, the total amount of quota (in this example) was utilised by 3.38 farms. After quota transfer, it has become concentrated on 1.97 farms, which were already milking over 500,000 kg milk per farm. As a result of the transfer, the quota on the latter farms increases by 72 per cent per farm. However, income increases only by 36 per cent on these farms. The costs involved in quota purchase have not been taken into account. If they were introduced into the analysis, the income rise would be much lower, if not negative – especially in the first years after quota purchase. More importantly, the *total income* earned by this transferred quota of one million kg falls by 21 per cent. The reduction is inherent in the greatly varying cost structure: the economical farms are structured in a way that differs (in terms of costs, outputs, and particularly the relationship between the two) from the one of the larger farms.

The implications of different rhythms of scale enlargement to total agricultural income at the regional level have been examined by Antuma *et al.* (1993) in a study conducted at the request of the Frisian farmers organisations and the province of Fryslân (Friesland). The base year was 1990, while 2005 functioned as reference year. Assuming different scenarios, the optimal development trajectory for different farming styles between 1990 and 2005 was examined, using linear programming techniques. In 1990 there were 5500 dairy farms in the province of Fryslân,

generating a direct employment of 9300 jobs and a total agricultural income of NLG 426 million. Three possible scenarios were identified and calculated for the road to 2005 (see Figure 8.2).⁴ One of the characteristic differences between these three scenarios was the extent to which scale enlargement occurred.

Figure 8.2 Regional outcomes of different development processes

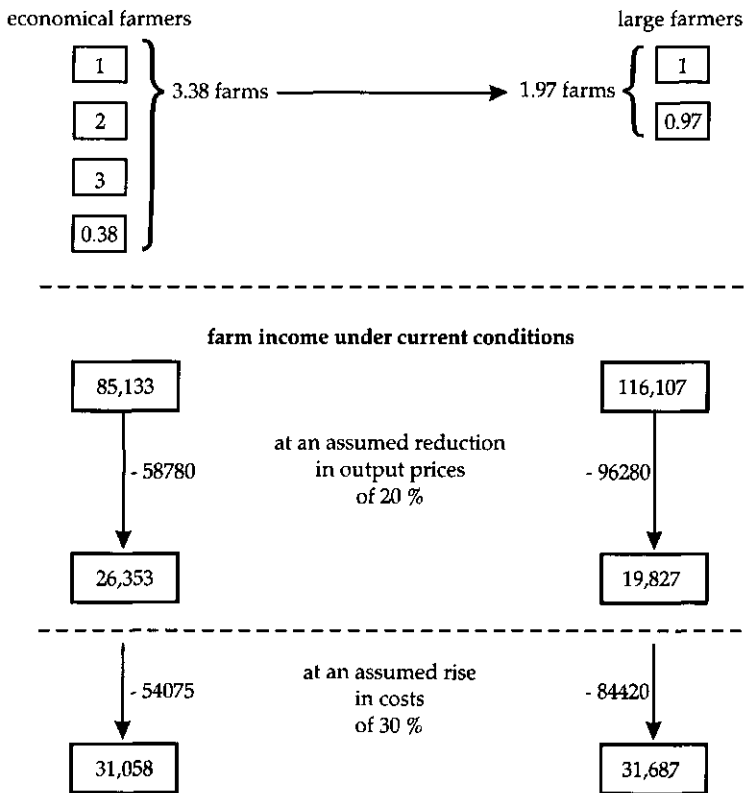


Only a small reduction of the number of farms occurs in the *diversity scenario* (based on a number of assumptions that we define nowadays as rural development). A high degree of scale enlargement occurs in the *current policy scenario* (based on policy that was 'in the pipeline' at the time). However, the most far-reaching degree of scale enlargement occurs in the *free-trade scenario*. The number of farms falls below 2000: the average quota increases from about 320,000 kg per farm to 1,130,000 kg per farm. In terms of the regional economy, the essential result in this respect is the sharp fall in the total sectoral income: from NLG 426 million per year in 1990, to 378 (diversity scenario), to 216 (current policy scenario), to a meagre NLG 114 million per year in the case of the most extreme type of scale enlargement (see also LUW/AVM/IKC 1993, tab. 6.1).

This study raises a number of issues. First, it demonstrates that it is possible to imagine and calculate the future in various ways. This is in sharp contrast to the way in which the expert system envisages the future. Different scenarios can be considered that emerge from particular

arrangements of various projects. Second, the study identifies a crucial tension: i.e. the relation between rationality at the micro-level and rationality at the macro-level. Accelerated scale enlargement can be both attractive and the natural thing to do at farm level; at a higher level of aggregation, however, the implications of the same behaviour can have different effects. Higher revenues at the farm level can result in sharply falling benefits at the regional level. Finally, reference can be made to a more theoretical implication. I referred in the previous chapter to the 'squeeze on agriculture' (Cochrane 1981). Figures 8.1 and 8.2 show that this squeeze does not necessarily result from relations situated *outside* the agricultural sector. It can also be tightened from within the agricultural sector itself. Such a phenomenon takes place when scale enlargement occurs through the displacement of economical farming by more capital-intensive (and possibly less efficient) approaches.⁵

Figure 8.3 The vulnerability of rapidly grown farms



Under the current circumstances, there is hardly any discussion of the macro-economic effects of disproportionate scale enlargement. The focus is on *private economic* advantages, limitations, and dangers. However, as the discussion of Figure 8.1 shows, these private economic benefits are rather fragile. The direct implication of accelerated growth is usually an increase in the cost price (as a result of the enormous financial obligations

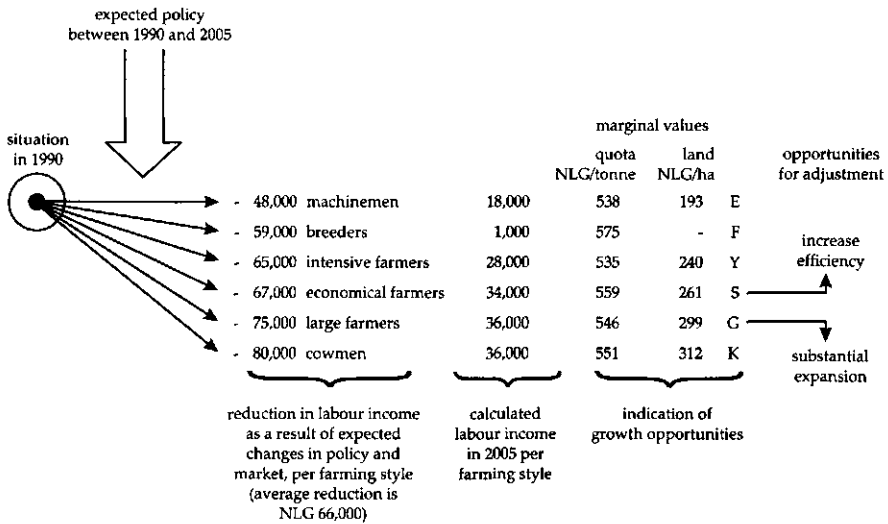
related to quota purchase). The counterargument is generally that substantial scale enlargement is required in order to build up a farm that can survive the coming competitive struggle. One should expand now, make the farm viable, in order to face more adverse conditions *later* (falling prices, rising costs). This assumption can be checked somewhat by means of the data in Figure 8.3 (which builds on Figure 8.1). First, the effects of a 20 per cent reduction in output prices have been calculated. What is intriguing is that it shows that large farms do not really have the best chances. The same conclusion appears if a comprehensive cost increase of 30 per cent is assumed.

The private economic benefits of considerable scale enlargement are rather doubtful under current conditions,⁶ especially in the longer term. Antuma *et al.* emphasise this. The unique, and attractive, aspect of their study is that the point of departure was not an 'average' or 'optimal' farm, but rather that the implications of various scenarios were calculated for different farming styles. The differential implications are summarised in Figure 8.4. *Grutte boeren* (large farmers) whose strategy revolves around constant expansion, had at their disposal the largest quota (718,000 kg versus, for example, 508,000 kg for the *sunige boeren* – economical farmers). Between 1990 and 2005, these large farmers would be confronted by a reduction in labour income of NLG 75,000. Labour income (a proxy for actual income) would be NLG 36,000 in 2005. Expansion of the farm (by leasing 185,000 kg milk) would give a bit more flexibility: labour income would increase by NLG 3000. Any further expansion is impossible, due to the limited environmental space (especially phosphate regulations) (see Antuma *et al.* 1993, pp. 40–43).

If this position is compared to that of the economical farmers, several remarkable issues appear. Economical farmers (who manage on average rather smaller farms) are also confronted by a substantial reduction in income (– NLG 67,000). In 2005, however, their calculated labour income differs hardly from the one of the large farmers (34,000 versus 36,000, respectively). If economical farmers could increase the technical efficiency on their farms, they could raise their income with another NLG 5000 (Antuma *et al.* 1993, p. 45). The conclusion is evident. Even though it is assumed usually that large, expanding farms have the best chances for the future, careful empirical analysis indicates that this is not necessarily the case.

A further step can be taken. It is assumed generally that the quota system poses an obstacle to milk production, especially to the rapidly expanding farms. Quotas make growth expensive. In other words, the quota system is a hindrance to structural development. Therefore, the possible implications of (careful) liberalisation of the quota system have also been calculated in the study by Antuma *et al.* For this purpose, A and B quotas were introduced into the analysis. A protected price is set for the so-called A quota, which equals 75 per cent of the current quota.

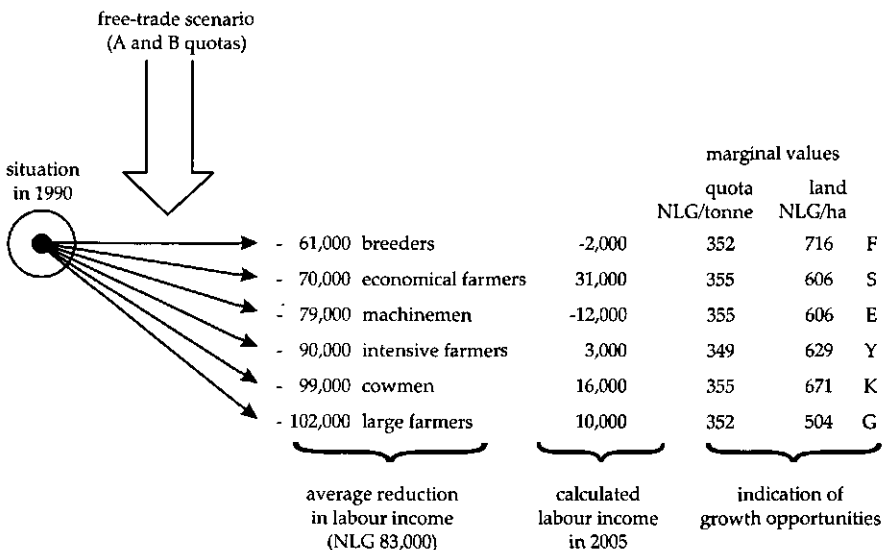
Figure 8.4 Differential development in the Frisian dairy sector between 1990 and 2005, assuming a continuation of current policy



Source: Antuma *et al.* (1993)

No quantitative restrictions apply to the B quota, which is at world-market prices. Figure 8.5 shows the results of this calculation. Remarkably, the re-introduction of 'milking for the sake of milking' results in relatively low incomes, particularly for the large farmers.

Figure 8.5 Differential development in the Frisian dairy sector, assuming a free-trade scenario



Source: Antuma *et al.*

The calculated labour income in 2005 (NLG 10,000) lies far below that of the economical farmers (NLG 31,000). This shows just how fragile the development project of the expanding farmers is, especially if they were to achieve their political-economic aims (i.e. abolition or loosening of quota restrictions). Under the current circumstances, a large farm is not necessarily a better spring board to the future; neither does an acceleration of growth offer, even under relatively favourable assumptions, better chances of survival than prudent farm development.

Agriculture has reached a turning point; a transition is taking place. Nowadays, and in contrast to earlier phases, accelerated scale enlargement entails enormous transaction costs (both at the private economic and the macroeconomic levels). The prevailing technological regime has reached its limitations: further development along existing lines (embodied in the constantly expanding farms) increasingly results in counterproductivity. Structural development increasingly resembles 'structural involution' (Geertz 1963).

8.1 The specificity of scale enlargement as contemporary episode

Scale enlargement cannot be regarded as a limitless process, nor as the permanent and structural outcome of laws inherent in economics and technology. As always (see Chapter 6), we are dealing with a particular period: form and context are decisively different now than they were before.

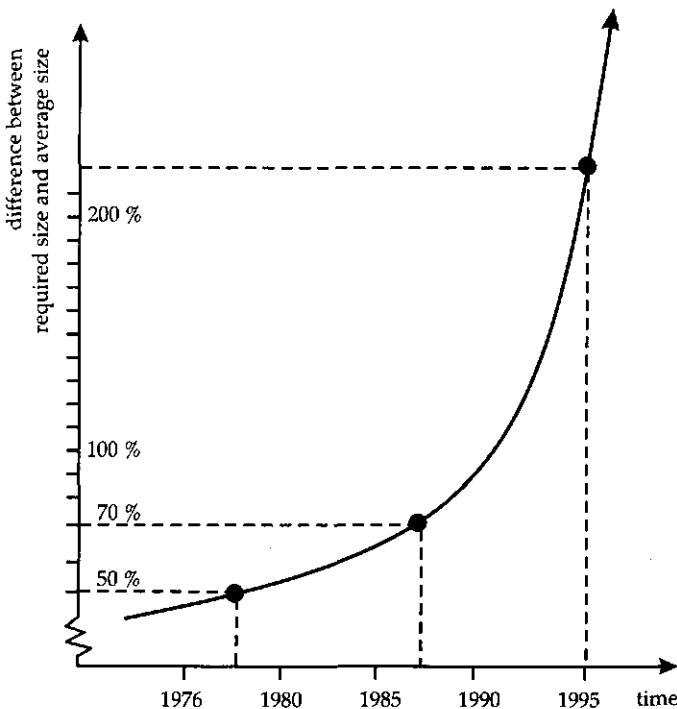
If we take a close look at the type of scale enlargement under consideration here, *acceleration* catches the eye first: the gap between the scale of the ideal farm and the empirical average, expands at breakneck speed. If the gap was about 50 per cent by the late 1970s (De Bruin 1997, p. 100), in the second half of the 1980s the viable farm was thought to need an output of at least 400,000 kg milk per farm, compared to an average milk production of 230,000 kg at the time. The gap between ideal and reality was about 70 per cent. A considerable acceleration of scale enlargement as a project has occurred since then. I have summarised several of the most remarkable indications of this growing gap in Figure 8.6.

In the autumn of 1995 and especially in early spring of 1996 – when I was writing the first fragments of this book – a new round of debate about structural development in the dairy sector sparked off. It was considered that Dutch agriculture was on the eve of another round of radical reorganisations. Initially, the emphasis was on the implications of the manure and ammonia policies, whereas it later shifted to the anticipated liberalisation of European agricultural policy. Arguments that attracted attention came first from the Agricultural Economics Research Institute (LEI). The realisation of the Integrated Plan* would imply a vast

* Translator's note: the main objectives and mechanisms of the Dutch agri-environmental policy were stipulated in this Integrated Plan (Integrale Notitie).

reduction of farms and hence of employment. Subsequently, statements emerged from the side of the industry barons. Aalbers, of what was then Friesland Dairy Foods, predicted a halving of the number of farms within 15 years. He was seconded by my colleague Dijkhuizen, at that time professor at the Agricultural University, who stated that the minimum size of a viable farm would be 800,000 litres of milk.⁷ At the same time, there were plenty speculations that the quota system would come to an end after the year 2000 as well as persistent, mutually reinforcing reports about continuous price reductions. The accession of central and eastern European countries to the European Union and the second GATT round both had significant influence on this debate.⁸

Figure 8.6 The acceleration of scale enlargement as a project



Dijkhuizen's statement merits further discussion. The touchstone of 800,000 kg milk per farm that he proposed (which is also presented in Figure 8.6) meshes wonderfully well with the idea, already playing a guiding role in the expert system, that about 7000–8000 greatly expanded dairy farms (each producing about 1 million litres of milk or more) would be able to produce 60–70 per cent of the total Dutch quota. It was assumed that this would result in lower cost prices, which was illustrated by referring to current cost price differences between smaller and larger farms. Another, intriguing element is the assessment of the quota system. According to Dijkhuizen: 'It is a blessing today, but it will be a source of worry in the future'. His argument goes as follows:

'Growth is necessary, but is restricted by production quotas. If the quotas disappear, growth will be possible again. In order to be prepared for this, however, farms will have to be expanded towards 800,000 litres in the meantime.'

Thus a remarkable *tour de force* is created: comparing current cost prices with the ones of the imagined future situation in order to make a reasonable case for the latter. However, today's cost prices are a reflection of historical growth processes, when (at least a large part of) production rights were not obtained via the market and, further, when no extreme form of acceleration existed. In other words, the present cost prices can hardly be used to support and legitimise a highly accelerated growth (occurring partly through quota purchases). Still, such a course of action is rule rather than exception in the expert system.

At that time, I had many invitations to do external lectures – usually twice a week. Sometimes they took place in small backrooms of local branches of farmers organisations, at other times at mass meetings boiling with agitation and heaving with excitement. Furthermore, my usual work continued and thus I would repeatedly spend a whole afternoon or evening sitting around a table for a long discussion with one farmer. These encounters linked together into an extremely significant research experience. Through them I have first hand experience of how 'structure' works. The outbursts of anger at meetings, the debates, the individually expressed disgust or despair – an engaged researcher could not wish for more, especially if he wrestles with the question of how different processes weave into that which we eventually (and particularly with hindsight) name structure.⁹

'Farmers became depressed.' If there is one summary of the events of that time, it has to be that one. Time and again the word appeared: depressed. On the one hand, the knowledgeable part of the nation (the 'people who have studied for a degree') state that you will have to milk at least 800,000 litres in future. On the other hand, you know that you will never really succeed at it. The costs involved are so high that they (a) cannot be financed and (b) cannot be solvable (that is, they cannot be compensated by enlarged output). Apart from this, personal reasons ('if it has to be like this, I quit') and/or other restrictions (for example, the available environmental space) were other important factors excluding such an expansion.

Statements such as Dijkhuizen's result in disillusion and hopelessness, leading to decisions to either 'sell the lot while we still can' or to 'get by for a while'. The same processes occurred a few years previously, when 400,000 litres was mentioned as the critical threshold. 'Many got depressed', farmers remembered later, 'at that time, it was thought that they wouldn't be able to continue to farm, that the game was no longer theirs that's why many people quitted'.

The beacons defined by the expert system generate not only feelings of depression, they have a structuring effect too. Let me quote a discussion partner from the Frisian Woodlands, Geale Atsma:

'I'll tell you what happens? If such stories go round and the local board of the bank has to assess an application of a smaller farm, the application is looked upon rather more critically. 'Is this really possible', they ask themselves, 'there really isn't a prospect for farms like this' . . . Well, that application will be returned. And that farmer is told to think things over very carefully. The man loses courage, he'll think, 'I'll never get through there'. He will think, 'it won't make any difference.'

A climax was reached in the second half of the 1990s (see also Figure 8.6). In a scenario study conducted by two agricultural research institutes, published as *Koeien en koersen* (Cows and Courses), large, non-land dependent farms of approximately 1000 cows each are introduced (LEI/SC 1996).¹⁰ At a high level of production this implies easily a total production per farm of about 10 million kg or more. By implication, the average rural community in the Netherlands would have less than two dairy farms.¹¹ Acceleration of scale enlargement is dazzling and scary in this case.¹²

I would like to describe two other aspects of contemporary trends. Both are closely linked to the acceleration issue. The first involves financing. Under current circumstances, it is no longer possible to create large-scale agriculture from private resources, or even justify a loan to do so. Additional benefits do not compensate for the huge investments in quotas, land, technology, etc. Thus, state intervention will be necessary, not only in order to create spatial and legal preconditions,¹³ but also to finance the intended transition. By the second half of the 1990s, such plans for restructuring did indeed emerge. The Plan Martens covered the pig sector. It anticipated a forced reduction of the number of pig farms from approximately 22,000 to 6000–7000. Every mixed and smaller farm would have to leave the field in order for the larger farms to continue growing. Equally, the Hoogervorst Plan (concerning horticulture) envisaged a reduction of the number of greenhouse farms from 8850 to 2790 (to be realised within 10 years). This Plan Hoogervorst was partly developed by the Agricultural Economics Research Institute (LEI 1998, p. 45). Both plans claimed that the proposed scale enlargement should be financed with public funds. They estimated the costs at NLG 500 million and NLG 475 million for greenhouse agriculture and intensive husbandry respectively. The plans stressed that continuous scale enlargement is no longer a profitable project in private economic terms.¹⁴ This point of view returned repeatedly in later plans (including government plans) and the required sum of public funding increased further. It is highly questionable, however, whether parliament will accept plans which imply such considerable public expenditure. They are likely to ask why they should invest so much money in the elimination of employment and why it is not possible for the large, so-called viable, farms to take care of themselves.

The second aspect that I think is quite unique to scale enlargement as contemporary episode is the deep and widely spread scepticism among farmers. In a survey conducted in mid-1997 (among a sample of about 700 farmers), extensive enquires were made about their opinions on sector-

specific plans and projects with respect to the supposedly required scale (Boerderij 1997). Table 8.1 refers to the outcomes of the survey. The response percentages refer to the respondents operating within the indicated subsector.

Table 8.1 Farmers' opinions about drastic scale enlargement

<i>Dairy farming</i>		
It has been said for a while now that 800,000 kg milk is necessary to call a farm viable. Do you think this is realistic?		
yes	no	don't know
15%	71%	14%
Do you think it is desirable for the sector to grow towards such farms?		
yes	no	don't know
11%	72%	17%
In a recent report by two research institutes, the idea was put forward to have dairy farms of 1000 cows per farm. Do you think it is worth while that this idea is considered at all?		
yes	no	don't know
5%	78%	17%
<i>Arable agriculture</i>		
It has been stated recently by people from DLV [*] and by people from Cebeco that arable farms will have to grow towards 200–300 ha in the coming 10 or 20 years. Do you think this is realistic?		
yes	no	don't know
12%	86%	2%
Do you think it is desirable that arable agriculture develops into that direction?		
yes	no	don't know
18% ¹⁵	77%	5%
<i>Horticulture</i>		
It has been stated in the horticultural sector lately that in the future a few hundred very large horticultural firms could look after the export market and that a further few hundred could produce for the national market. Do you think this is a realistic appraisal?		
yes	no	don't know
35% ¹⁶	60%	6%
Do you think it is desirable to move in that direction?		
yes	no	don't know
11% ¹⁷	83%	6%
<i>Intensive pig husbandry</i>		
It is assumed in many recent plans that the required size of a healthy farm in 2001 is at least 500 sows or at least 5000 porkers. Do you think this is a realistic appraisal?		
yes	no	don't know
25% ¹⁸	50%	25%
Note: * DLV: advisory service		

In summary, the project is fragile and it is difficult to justify private economic funding. It is not really attractive from a regional-economic perspective. And it is subject to increasing scepticism, if not rejection, by a majority of farmers. Furthermore, there is a second group of factors that make the scale-enlargement project extremely improbable under current circumstances. These factors are situated on the axis between society and agriculture. Collectively, they imply that the required synergy of a wide range of projects (including those of consumers) will be hardly if at all possible to realise.

Accelerated scale enlargement cannot but result in the creation of mega-farms. The required scale levels would make a further industrialisation of the agricultural production process inevitable. This collides increasingly with the desires of consumers, both at home and abroad. The most dramatic expression of the new consumer awareness took place at the time of the large outbreak of swine fever in the late 1990s. The writer Koos van Zomeren identified the choices facing us: 'It is either our morality that extends into the pig sector or the morality of the pig sector that extends into society at large' (NRC, 20 December 1997, p. Z3).

Mega-farms presume optimised production circumstances. This requires, left, right, and centre, a reconstruction of rural space that is at odds with the desires of society (see RLG 1997, 1999). The required optimisation will also run counter to ecological conditions. An example in this context is the high 'turnover rate' of sows and cows on today's large-scale farms: animals have become largely 'throw-away animals' on these farms (Van der Ploeg 1998).

The law of diminishing returns has been appropriately renounced in theoretical agronomy (see Chapter 4 of this book). However, this renouncement does not exclude the emergence of new constellations at a higher level of aggregation, that result in diminishing returns both at micro- and macrolevel. The contradictions between accelerated scale enlargement and its socio-economic implications refer to a technological regime stuck in its own logic. Further developments along these, already exhausted, lines can only result in increasing counterproductivity.

8.2 Why does scale enlargement occur anyway?

The previous section argues that accelerated scale enlargement cannot be understood as a very convincing project either in the sector itself, nor at the level of society as a whole. Nevertheless, there is a significant tendency towards continuous and highly accelerated scale enlargement in Dutch agriculture. At the same time it should be noted that this tendency stems from a local process, situated in one part of the agricultural sector (the segment defined by the bottom left-hand corner in Figure 7.3). This results in a number of questions. First, why does disproportionate scale enlargement actually occur here? Second, why does the expert system keep producing projections (such as summarised in Figure 8.6) that seem to make accelerated scale enlargement into an almost inevitable phenomenon? Third, what is the interrelation between the first two

questions – that is, between the practice and theory of accelerated scale enlargement?

A fairly well-definable group of farms can be distinguished that have developed a continuous, disproportionate, and increasingly accelerated growth into a systematic practice. Approximately 750 dairy farms in the Netherlands in 1996 housed more than 120 cows each (which is roughly equal to a quota of 1 million kg milk per farm).¹⁹ Remarkably, the number remained fairly stable during the 1990s: sometimes it rose slightly, and subsequently it fell again. This is partly due to generic quota reductions and to the steady increase in the milk yield per cow. Above all, however, the more or less constant number of mega-farms indicates the fragility of this construction.²⁰ Furthermore, it should be mentioned that part of these very large dairy farms cannot be understood as mega-farms.²¹ They are multi-person farms (for example, several brothers working together), which are comparable in terms of scale to the smaller family farms and which are often active in processing and marketing. Mathematically, the number of mega-farms in the dairy sector does not exceed about five per cent; and if we take this nuance into account, the proportion of large-scale farms based purely upon accelerated growth will be considerably lower than the figure mentioned above.

Let us turn to the other sectors. There were 136 intensive livestock farms with over 4000 pigs in 1990. In comparison, the average number of pigs per farm was 476 in the same year. By 1996 there were 231 farms with over 4000 pigs (including some with 20,000–30,000 pigs), whereas the average number of pigs per farm was 679 pigs. Hence, the number of mega-farms in the pig sector rose by 70 per cent between 1990 and 1996. Nevertheless, these mega-farms constitute only a fraction of the total number of farms: between two and four per cent. This does not alter the fact that this fraction produced almost six per cent of the total number of pigs in 1990, while the same group produced over ten per cent of total supplies in 1996. The tendency towards concentration is clearly visible, although it is still modest in scale.

The number of arable farms of over 100 ha rose by 27 per cent during the period in question (1990–1996). However, it remains a fraction of the total number. The most consistent trend can be distinguished in greenhouse horticulture: the number of greenhouse farms with over two ha under glass increased from slightly less than 700 to over 900. Again, this is less than five per cent of the total number of greenhouse farms.

Thus, a subgroup (of about five per cent) of very large farms can be distinguished. Continuous and disproportionate growth is of strategic importance to these farms: the necessity of continuous growth has become so much as a structural feature of the farm set-up. The high levels of growth realised so far, the financial costs related to this, and the high degree of externalisation and commoditisation imply a cost structure and cost-benefit relation of such proportions that these farms will suffer considerable problems when faced with price reductions. The margin between costs and output prices is very small, especially when compared to the room created in other farming styles. 'You can see at the moment

that the larger farms in particular, due to their investments, find it more difficult to meet their payment obligations as a result of the falling milk prices', according to LEI researcher Van Burgsteden in the farming press.²²

The project of the 'growers' carries with it an explicit ordering of the future world. First, the 'growers' imagine the future as a 'limited good', a scarce good (Foster 1965). In the agriculture of the future, there will be room only for a limited number of large to very large farms. Expansion at the farm level is probably boosted more by the desire to be part of this agriculture of the future than by its material necessity. The modernisation project is highly internalised. It is also constantly reconfirmed. A debate took place in the first half of the 1990s about the rationality of further growth (partly initiated by the Dutch Agricultural Youth Organisation – NAJK). It was clear by then that accelerated growth would result in an increase of cost prices and a simultaneous decline of profitability. However, this was not seen as a problem, according the Landbouwschap (the national representative of farmers organisations, and an undeniable element of the expert system): 'Don't listen to your accountant, operate like an entrepreneur'. According to them, investing in the future should take priority over the rationality of today's actions.

An important element in the 'moral economy' of the 'growers' concerns their perspective on redundancy as it occurs at present. In contrast to their colleagues, they regard the rate of the current exodus as too low. If there is a crisis in agriculture, in their eyes it is due precisely to the low level of exodus. The outflow should be accelerated.

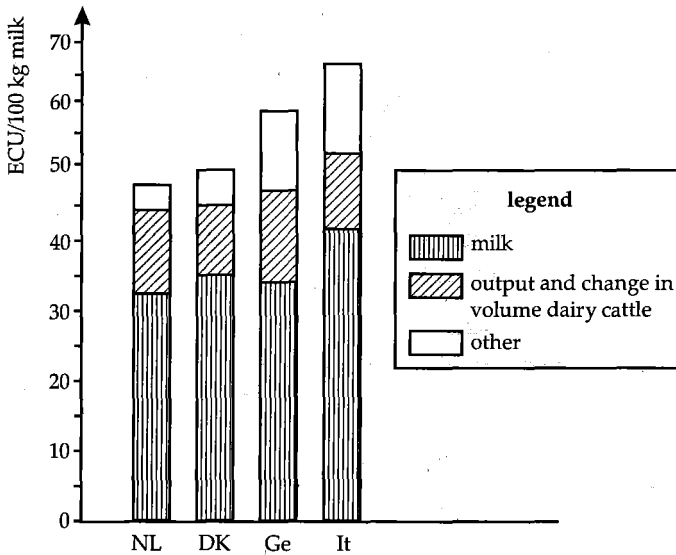
The undeniable ability of the 'growers' to expand their farms is rooted largely in a particular socio-technical network. The 'growers' use their relations with banks, agro-industrial enterprises, and government bodies knowledgeably and in such a way that various projects become interlocked. In this respect it is important that Dutch agro-industry follows a development trajectory that is usually characterised by the term bulk production. The comparatively low dairy value realised by the Dutch dairy industry is a concrete expression of this (see Figure 8.7).

Since milk is valorised only to a relatively low degree by the Dutch dairy industry, a low farm gate price and a large volume of production per supplier are important elements in the project of large businesses. In order to encourage this as much as possible, a complex system of differentiated bonuses has been developed – not only by the processing industry but also by the supply industry and banks. The larger the farms (that is, 'the more able to anticipate the interests and expectations of the industry'), the higher the financial advantages they are able to obtain. Often one income, or even a few incomes, are derived from the many reductions and bonuses connected to the scale of the very large farms. Thus, the convergence of different projects results in a particular ordering of market relations – an ordering that, in turn, interweaves with continuous growth as a material interest. Similar linkages can be identified in the relations between the project of 'growers' and government. These relations are

to earn a living'. 'In the 1930s . . . you'd had to look for customers

largely the outcome of the large modernisation project of the 1960s, 1970s, and 1980s. Hence, continuous growth is still tax deductible, which in practice appears to be one of the driving forces of continuous expansion. Once again, this demonstrates a particular combination of projects. On the one hand, it is a very solid combination, with its own materialisation; on the other hand, it is an extremely limited and increasingly contested combination of projects, in which the Ministry of Agriculture as expert system plays an important part.

Figure 8.7 The dairy value of Dutch milk



Source: OECD (1997)

The reality of 'growers' is constituted not only by a particular socio-technical network – that is, by a number of converging projects. This reality contains a *moral order* too. The ordering of the world imagined by the 'growers' has a highly normative content. Small farmers are 'failed farmers', who have missed the available opportunities. In this respect, they are sometimes talked about as ninnies. Hence, their expectations and interests are perceived as being illegitimate: 'They should have seized their opportunities much earlier'. In contrast, the survival and the further expansion opportunities of the farms of the 'growers' is considered a moral right: 'Efficient farms should not be punished'. From this point of view the (re-)ordering of markets and policy is scrupulously followed, commented on, and guarded. It happens with respect to leasing of milk, the high proportion of costs of purchased quota in the total cost price, whether or not to end tenure relations between government and farms in the polders, etc.

The language used in this 'moral economy' is intriguing. Incidentally, it is interesting that the 'moral economy' (Scott 1976) is thus absolutely not restricted to small farmers and/or peasants in the Third World, but is also

explicitly present among the most modern farmers in the world today – that is, the ‘growers’ in the Netherlands. They make no reference to own interests (*‘I want to take over the land of my neighbour’*). Rather, a de-subjectified language is used (*‘the mobility of the production factors should not be frozen’*) – in short, a language referring to the same presupposed laws that were drawn from for the benefit of the large modernisation project of the government at the time.

The power of the ‘growers’ draws partly on the way in which language is actively ordered. An important part is played by the terms that I will describe, for lack of a better word, as *sandwich concepts*. It works a bit like this: at a meeting someone stands up and declares that ‘development should be able to go ahead, because stagnation means decline’. The other people present can only nod in agreement to such a statement. All farms are thought of in terms of development; whatever the nature or type of farm, real development opportunities are pursued on every farm.

The point is, however, that these developments are extremely heterogeneous and that they could easily exclude each other. In contemporary agriculture, the concept of development summarises these different practices and ideas, whilst at the same time attributing a particular legitimacy to the specific project of the ‘growers’. If necessary other sandwich concepts are mobilised. For if confusion arises at the meeting, the previously quoted speaker can stand up again and say that ‘development should not occur at the expense of efficiency’ (which implies that whatever development occurs, it may not be detrimental to the large and quickly expanding farms). If necessary he or she will add that ‘there is no point in throwing good money after bad’.

The moral order and the language used by the ‘growers’ constitute an intriguing reflection of the modernisation project. Everything that diverts from the modernisation discourse is normatively rejected (and usually with emotional ferocity), whereas that which lies in the line of their discourse (further acceleration of growth at the farm level, for instance) claims the moral high ground.

‘Nothing will come of it, it’s all twaddle. Take quality production: filling seven pots of jam to improve my income? Farmer-led nature management: no tree wants to grow in our clay! You can’t work without fertiliser, it won’t make any money and it makes no sense either’. Such comments can be heard at almost every farmers meeting.²³ They are spoken mainly by ‘growers’, although they are not the only ones to voice such opinions. Of course, the inborn conservatism of the farming community cannot be held responsible for the disbelief and, hence, the fatalism heard in these statements. More important than all this is the widely shared *indignation*. An often expressed sentiment at meetings literally goes as follows: ‘Stop pissing about, it’s absolutely hopeless if you can’t earn it in all honesty and decency by milking’. What is important here is ‘by milking alone’. Reference is made often to the past: ‘In those days farmers had to take an axe into the woods in the mornings to earn a living’. ‘In the 1930s . . . you’d had to look for customers

yourself, to see whether you could sell some of your produce at a better price.' Farming women in particular can explode with rage: 'It's completely hopeless, we already have a double burden, the farm and the family, and now we have to take on something else as well, a camping site or an extra job; it is scandalous that you'd have to do something like that'. I have heard dozens of such objections (although they were often the sounds of a minority and were often refuted by others in the same room). Something different emerges through such, always well-meant, objections – something that refers, above all else, to a presumed discontinuity between past and present, to the stranglehold that can arise from previous experiences.

The echo of the earlier modernisation project resounds clearly in the quoted objections. For was the modernisation project not an attempt to finish with the past once and for all? The modernisation project would offer security, at least to those who modernised their farms. Wasn't poverty a thing of the past? According to many people, much was asked of the farming community, enormous risks were taken, hard work done, farms specialised, many investments made – all in order to create a successful and prosperous agricultural sector. Everything has been staked in the search for and construction of the optimal farm, and now it appears that it is insufficient! This is where the wrath stems from. It is an annoyance that reflects the pretences and promises of the former modernisation project, which now has become increasingly blocked. Farmers are aware of this. Never is the buzzing of voices in the room louder than when you mention that farmers nowadays have lost the art of seeing their farms through difficult times.

Deviations from, and alternatives to, the (former) modernisation project cannot be accommodated into the moral order of the 'growers'. They are unable and unwilling to countenance a shift in direction. In contrast to this unyielding position, new moral claims are unfolding left, right, and centre. 'Growers' have invested in optimal farms and have come to expect that government and society continue to create the conditions for them to continue their project. 'Government, the minister, society and consumers don't want to listen, they don't want to understand us'. The implicit criticism is obvious: they do not want to give us the room to which we are entitled.

Trust, which I have already referred to in previous chapters (see Chapters 1 and 6 in particular) was an essential ingredient of the macro-project that has been realised in the recent past. Trust presumes, in turn, 'institutional liability' (North 1989). Actions are performed on the basis of the beacons of the expert system, in the expectation that these beacons are indeed guides to the future and that recommended actions will be rewarded. This expectation has been particularly internalised by the 'growers'. The expected 'reliability' is now brought forward by them as a moral claim. Typically, one of the terms that is used most, in an accusatory sense, is 'the untrustworthy government'.

The second half of the 1990s was characterised by waves of vehement protest. At the core, they were always led by 'growers', farmers who are deeply frustrated by their expectations about the desired conditions for further expansion along the 'beaten tracks'.²⁴ If 'growers' were initially, and I use an expression of my colleague Eizner, 'the best pupils in their class' and were the embodiment of trust, they are now the group of farmers that is most opposed to government.

8.3 The erosion of trust

Farmers and their partners are generally pleasant and friendly people. In contrast to the established image, which often suggests dourness and distance, they are above all people who know the art of connecting with (or dissociating from) others when necessary. The active operation of actor-networks (or socio-technical networks) forms the core of their professional practice. The same goes for the Ministry of Agriculture. Compared to numerous other ministries of agriculture elsewhere, this is a rather efficient organisation, staffed by capable people. Foreigners often look with some jealousy to 'our' ministry and to 'our' expert system. And yet something is fundamentally amiss in the relationship between the two. Farmers and the Ministry of Agriculture appear to have reached an impasse, a paralysis in which rage, anger, and dissatisfaction mount left, right, and centre. Neither party is solely responsible; the problem lies in the link between the two.

If trust, and hence the convergence of projects into one comprehensive macro-project, existed in the heyday of the modernisation epoch, the *lack* of trust has now become the predominant structural feature of Dutch agriculture. Figures from a survey conducted in 1995 (Ettema *et al.* 1995) emphasise this dramatically. Farmers were asked the question from whom they expected support in practical changes. They were also asked whether they were satisfied with the actual support they received. The (national) government stood out as the institution with the widest gap between expectation and satisfaction. Eighty one per cent of farmers expected support from the government in The Hague; only four per cent (!) were satisfied by the support actually available.

Numerous elements and processes have played a role in the erosion of trust. I will discuss a few of these here, concentrating on two important aspects: the irreversible nature of the erosion of trust and the special role of those who used to be 'the best pupils in the class'. For although this erosion of trust is found throughout the length and breadth of agriculture (see the social map of Dutch agriculture in Figure 7.3), it is most marked amongst 'growers'. I will concentrate on one subgroup – pig farmers* to illustrate this point.

* Translator's note: they constitute an interesting subgroup, all the more as they conducted a kind of 'guerrilla warfare' against the state during the 1990s.

- 1 We have already seen how Dutch agriculture has arrived at a zero-sum situation. In such a situation the notion of common interests, which is rooted in the convergence of different development projects at the micro level, will increasingly become problematic. If proportionate and disproportionate growth patterns were able to co-exist within the productivist era, they now collide head-on. Hence one of the pillars of trust has been swept away: interests perceived at the micro-level no longer follow automatically from interests defined at the macro-level. 'The' interest of the agricultural sector is, at least in the eyes of many of the parties involved, no longer the obvious sum of interests at the farm level. Moreover, the different micro-interests are at odds with each other. Or rather, the political economy of the sector is subject to several broad movements, collectively implying a further undermining of trust. If in the past the benefits of the modernisation project ended up with 'growers' and costs were localised in 'small, non-viable farms', a reversed flow of income takes place nowadays. 'Growers' have to pay the farms that were once defined as non-viable in order to obtain the necessary room for further expansion. This occurs directly, through the leasing of milk quotas, the renting or purchasing of environmental space (regardless of its operationalisation), the purchasing of pig rights, and indirectly through shifts in subsidy flows. The expansion of 'growers' thus becomes a source of revenue for non-growers (showing evidence that the supposed lack of entrepreneurship within 'non-viable farms' may be an overstatement).

The discongruity that this created (at least from the perspective of the 'growers') not only undermines the modernisation project as such, it also undermines trust – precisely because the Ministry of Agriculture and the expert system are less able to guarantee the institutional preconditions for further and successful growth at the farm level. It has become the (uncontrollable) business of others.

- 2 The process of scale enlargement has accelerated most sharply in intensive husbandry and greenhouse horticulture. In these areas and due to particular technological developments, the production process (and, hence, the development process) became increasingly disconnected from a number of, thus far, limiting factors – especially 'nature' (Van der Ploeg 1992). The internalised need for further expansion is greatest in these sectors. The large, highly modernised and highly capitalised farms in these sectors are especially at risk from bankruptcy: further growth is believed to be the only way to prevent this from happening. The involved entrepreneurs believe to be involved in a competition with others revolving around the 'future as limited good', i.e. in a battle for the future.

The notion of the 'top farm' (which embodies the same idea as the vanguard farm, the efficient farm, the optimal farm, etc.) functions, in the modernisation discourse, as the link between the present and the future. Only farms with the highest possible levels of production, the largest possible size, and the most modern technology will be able to

take the leap from present to future. At the same time it should be mentioned that the top farm also functions as a sandwich concept, and therefore is a somewhat confusing concept. Ecological farmers and relatively small cheesemakers will sometimes also describe their own farms as top farms.²⁵ However, in discussions and in the language of the mid-1990s, the concept basically referred mainly to the large, modern, and rapidly expanding farms.

The figures in Table 8.2 (derived from the third *Boerderij* survey conducted as part of the *Ter Zake (Get to the Point!)* debate – see Ettema *et al.* 1995) show that 40 per cent of entrepreneurs in agriculture claim to pursue a 'top farm'.²⁶ This percentage is significantly higher in greenhouse horticulture and intensive livestock husbandry (59 and 54 per cent, respectively), especially in comparison to dairy farming (30 per cent). The strategy of continuous expansion (further scale enlargement) has been internalised and institutionalised significantly more in greenhouse horticulture and intensive livestock farming than in other branches of farming, whose production processes are much more dependent on natural circumstances and the quality of labour. If we concentrate on pig farming as such, we can see that large pig farmers in particular (those over 50 NSU) opt for development towards the top farm, whereas far fewer smaller pig farmers do so (66 versus 28 per cent, respectively). Accelerated growth has been internalised to a far higher degree amongst large pig farmers.

The remaining information in Table 8.2 expands the picture: large pig farmers relate to their colleagues as competitors much more than small pig farmers (51 versus 26 per cent, respectively)—and more than Dutch farmers generally. They expect to be able to survive in, if not 'triumph over', an open world-market ordering much more than small pig farmers (see row 2 in Table 8.2). This corresponds with various journalistic reports of late 1995, which stressed that the mentality among large pig farmers was 'let's sit it all out, we will win in the end'. The information in rows 8 and 9 emphasise this: small pig farmers think (slightly more often than large pig farmers) that the problem is that there are too many pigs in the Netherlands. Large pig farmers, on the other hand, take the view that there are too many pig farmers (41 versus seven per cent respectively).

The events of the 1990s can be approached well from the perspective of the lack of trust. Attempts to control the manure question via co-operation and self-disciplining (including a co-operative plant for the transformation of manure) were consistently rejected by large pig farmers from the southern regions.²⁷ They did not see the advantage of collective arrangements, and saw no benefit in co-operation with those they regarded as their competitors (see row 1 in Table 8.2). They preferred individual solutions, in the expectation that they can thus both serve their own advantages and speed up the demise of their competitors – that is, the smaller pig farmers. (Incidentally, the same large pig farmers from the southern provinces also undermined the halt on further expansion in the

pig sector, as the then Minister for Agriculture, Braks, attempted to implement in 1987).

The pig farming sector has developed along the lines of the modernisation project more than the other sectors. This remoulding did not occur without any resistance. Smaller pig farms campaigned constantly against the emergence of what were then called 'mammoth farms'. There have also been frequent debates in politics about the possible unfavourable effects and high social costs of pushing scale enlargement to extremes, thereby burdening the Netherlands with gigantic environmental problems while offering only few economic benefits. However, these developments were regarded as inevitable by the expert system – anything else seemed unimaginable. This view coincided with the particular interests of the southern, Christian Democratic Appeal (CDA) dominated farmers, which implied that the mammoth farms could expand at will. Thus a project was consolidated that would influence radically the future course of events. Every compromise for the Dutch agro-environmental issue was rejected by the southern bloc of large pig farmers – the *outlaws* or *cowboys* as they became characterised in public debate.

This example shows how modernisation *in extremis* is able to wield powers that override every possible moderation or adjustment of the project. Again, the development of agriculture should not be seen so much as a logical unfolding of general laws, but rather an extension of that which has gone before and the interests this has created. Agricultural history revolves around the always recurring creation of 'emergent facts', emergent features that subsequently (and depending on the power relations at the time) appear as structuring elements. All this implies that history puts a leaden pressure on the present, yet, at the same time, it contains the seeds of a bizarre volatility.

Rows 5, 6, and 7 of Table 8.2 illustrate the extent to which large pig farmers regard their own project (growing, at all costs, towards a top farm) as being in conflict with the projects of the Dutch Organisation for Agriculture and Horticulture (LTO), the regional organisations (such as the Catholic Farmers Union of North-Brabant-NCB) and the Ministry of Agriculture. When the ministry confronted the pig farming sector with the (socially and environmentally no longer acceptable) consequences of continuous growth, it was those seen as the cause of the problem that were least willing to address the issue. The prospects of the large pig farmers and the ministry became *disarticulated* and a deep-felt distrust set in.

The data in Table 8.2 also help explain why the events of 1995 and '96 unfolded as they did: the large pig farmers (mainly represented by the pig farmers union, NVV) withdrew into an isolated radicalism. Neither the national government in The Hague nor the farmers organisations (nor science, for that matter) were regarded as potential allies. The NVV isolated itself by disputing the competence of anyone with an opinion about the agro-environmental question. It was looking for a radical confrontation.

Table 8.2 A few comparative data about pig farmers and greenhouse farmers (affirmative answers only)

	total sector	dairy farmers	greenhouse farmers	intensive livestock farmers	small pig farmers	large pig farmers
1 Do you think that it will be necessary in the coming years for farmers to take an increasingly competitive stance?	26	20	32	34	26	51
2 Do you think that the Minister for Agriculture has to establish an international market that is as free as possible?	35	22	55	50	33	59
3 If there are conflicts of interest between top farms and the remaining farms, do farmers organisations have to choose for the interests of top farms?	9	8	12	13	11	24
4 I aim to have a top farm in 5 years time (highest possible production, largest possible size, with modern technology)	40	30	59	54	28	66
5 LTO provides insufficient support (in its representation of interests in politics and policy) for the practical plans that I pursue on my farm	42	33	49	47	46	57
6 Same, but for regional organisations	33	31	31	45	40	54
7 Same, with regard to national government, including Ministry of Agriculture	79	78	86	86	84	86
8 Do you agree with the statement: there are too many pigs in the Netherlands?				68	74	62
9 Do you agree with the statement: there are too many pig farmers in the Netherlands?				26	7	41

Source: Eitema *et al.* (1995)

Note: *LTO: Dutch Organisation for Farmers and Horticulturalists

However, because these farmers chose to turn their backs on the democratic process and because they neglected to build alliances with other farmers in similar situations (in the north, in arable agriculture, in dairy farming),²⁸ the NVV's protests amounted to little more than a fire in a carbide container: flaring up and rapidly burning itself out. Though it seemed spectacular at the time, in the long term it was probably inconsequential. The problem, though, is that some are very afraid of the next bang.

The 'outlaws' constituted (and still constitute) the hard core of an otherwise more inclusive protest against the environmental policy of the Ministry of Agriculture. Even though much reference was and continues to be made of the emotions of small pig farmers and their partners, the emphasis on an optimal agriculture and, particularly, the embracing of the Plan Martens (which envisaged a reduction of the number of pig farms from 22,000 to 6,000–7,000) shows a continuity of opinion that can be traced from the large, highly specialised pig farms to the environmental protest that swamped the Netherlands in 1995.²⁹ This environmental protest was one of the most radical expressions of the erosion of trust, which in the past connected the growth pole of the sector with the expert system. The best pupils in the class are today's outlaws and cowboys. The same pattern recurs in other sectors. The dairy farmers union (NVM), comprising large dairy farmers, is a shining example of this. Internationally parallel movements can be found too: the COBAS, which fought the *guerra da latte* (milk war) in Italy, emerged out of the very large dairy farms of the Po plain (see Bussi forthcoming).

- 3 The disarticulation between expert system and the 'growers' is not just a temporary phenomenon. It is the expression (one of many, but probably the most dramatic) of a deeper problem. A problem that also explains why not only vanguard farmers but also various other, types of farmers have lost trust.

The modernisation project not only resulted in a 'risk society' (as argued by those who reduce 'risk' to a technical expression of the environmental issue), it introduces a range of completely new risks. Modernisation discourse relates to a healthy *agriculture*. The viable *farm* is specified in meticulous detail. However, the question of *who* is able to realise such a viable farm, *who* is allowed to join in the promised land and *what* has to be done to achieve this; these questions remain essentially unanswered. An answer does exist, but it is a disembodied one. 'The viable farm', according to the discourse, 'is developed by the good *entrepreneur*'. The problem with this notion is, however, that good entrepreneurship can be established only through *ex post facto* analysis. In a period when the expert system could control 'large areas of the material and the social environment' and, hence, could effectively guarantee (self-proclaimed) 'expectations', the distinction between *ex ante* prescription and *ex post facto* guarantee was relatively futile. However, when turbulence increases, various preconditions become less controllable (Szerszynski *et al.* speak about an 'exhaustion of the

very modernist ideas of technical prediction and control' 1996, p. 2). That is, if the controllable conditions can no longer be geared to specific interests, the entrepreneurial ideology will emerge as hollow rhetoric. The provision of institutional reliability becomes, from the viewpoint of the state, increasingly more difficult. As a consequence, it becomes unclear and uncertain what good entrepreneurship entails (what seemed to be acceptable initially can manifest itself as a serious mistake after five years). In the current era, entrepreneurship no longer involves a (measurable) risk; it emerges increasingly as a risk *tout court*. The same story applies to those who have been seduced by descriptions of viable farms that reach far beyond their own possibilities. The acceleration of the modernisation project introduces a risk for them too – that of not being able to remain in farming. In short, if the modernisation project initially seemed to offer prospects and security to those who conformed to it, it now seems to result in a multiplication of risks. Inevitably, this is leading to an erosion of trust – sometimes gradually but sometimes almost explosively.

- 4 Growing uncertainty and risk have provoked a multitude of alternative responses. One of these can be described, for want of a better term, as *style consciousness*. The impossibility of relating the expert system's projections (see Figure 8.6) to one's own farm has generated a new drive among farmers to search for and make explicit their own paths and to replace the disappeared trust with rediscovered self-confidence. The rapidly growing self-identification in terms of 'farming economically' is a clear expression of this. The same applies to the many different innovations that will later be summarised by the term rural development (see Chapter 9). Of course, increased consciousness of one's own style is also an important contributory factor in the erosion of trust. The insight that there are more alternatives to farm management and development than those defined by the expert system has undermined stealthily, and later unstopably, the credibility of the modernisation discourse and its claim to represent the only viable future for farming. If farmers would say semi-apologetically in the 1980s that they 'no longer work by the book', by the 1990s they are exerting a newly found self-confidence: 'they can say what they like, but I have already made up my mind'.

The uniqueness of their own, strategically created, situation, the specificity of the opportunities and limitations contained within that situation, and the notion that there is more than one way to move forward, form a new starting point for the actions of, an increasing number of, farmers. Prescriptive guidelines ('a farm is only viable with over 400,000 kg of quota', 'it is essential to keep on growing', 'the real entrepreneur is only concerned with the main branch', 'it is impossible to take over a small farm', etc.) are treated with increasing scepticism. Increasingly they are parried by alternative development projects that are made viable. Thus, farmers' own projects are becoming increasingly disconnected from the macro-project of the Ministry of Agriculture.

Trust is not only being eroded, but the real basis of and for trust, that is, the links between, and hence the congruence and synergy of projects, is also disappearing.³⁰

- 5 Attempts have been made from within the expert system to suppress the diverging tendencies within Dutch agriculture by means of a rapidly expanding set of regulations, that meticulously prescribe the practice of farming. The range of these regulations can, *inter alia*, be illustrated by the amount of time (and hence indirectly by the costs) spent by the average Dutch farmer in completing the many forms and paperwork that these regulations create (see NSS Agrimarketing 1996). Current regulations are highly centralised and bureaucratically implemented. They involve a generic prescription that *has to* collide with the diverging development tendencies that are emerging in Dutch agriculture.³¹ Uniform (that is, generic) rules cannot but have different, highly contrasting consequences in this context. In early 1996, research was conducted into the question of over-regulation (see Frouws *et al.* 1996). The regulations that had already been set up appeared indeed to be oppressive left, right, and centre, as well as inefficient and counterproductive. Even the selective preferential treatment that existed before the zero-sum game had disappeared. Every dog feels bitten. However, the reasons why this is the case are highly variable, which is, in fact, the most important research result. This is emphasised by the demand for alternatives. What could be a solution for one implies a deterioration for someone else, and vice versa. Everybody is dissatisfied, but a uniform answer can no longer be provided. The modernisation project has created its own cul-de-sac, in a twofold sense. Not only has trust disappeared, but it is also unlikely that it might be re-established.
- 6 If the previous point illustrates how the *modus operandi* of the Ministry of Agriculture results in increasing levels of distrust, I want to point out in this final argument, that the Archimedean point on which the expert system is founded – that is, contemporary agricultural science – has also become increasingly discredited. Science can be used less as an arbiter; the claim that something is founded in science no longer commands the respect that it used to. At least two elements have played an important part in this process of *delegitimisation*. First, a critical gap emerged between the determinist agricultural sciences and the social *deconstruction* of this determinism in practice. If science defines only one optimum, the multitude of farming styles that is developing in practice are an expression of the *undetermined* nature of socio-technical processes. Thus, the importance and value of agricultural sciences are being called into question and they are being seen as providing relative rather than absolute answers. The second element arises out of the contestation of environmental policy. For a long time, the political choices about goals, norms, procedures, prescriptions, regulations and rules were legitimised by the expert

system, as being founded in science. On closer inspection, it became increasingly apparent that this involved modelling studies and simulations based upon contestable assumptions. Since environmental policy touches upon a considerable (although internally divergent) complex of interests, many groups have become involved in attempts to open the black boxes of environmental regulations. As a consequence, the determinist character of agricultural science became disputed. Typically, the expert system (basically because of the extent to which it is trapped in determinist opinions) had no adequate response to these criticisms and was brought increasingly into discredit. What little trust there was left disappeared almost completely.

8.4 'Tripartite world'

In the autumn of 1994, I was involved with a number of colleagues in a comprehensive survey of farmers' worldviews, the results of which were published as *De crisis (The Crisis)* (Van der Ploeg *et al.* 1994).³² This research painted a picture that emphasises, and in a way summarises, many of the issues discussed above.

The research showed how the world of farmers is changing into a *tripartite world*. A world in which three categories can be identified: groups³³ that not only distinguish themselves from each other, but also dispute and/or oppose each other on a number of important issues. The tripartite world is a one in which a complex battle is fought over scarce resources: over production space, expansion opportunities, markets, recognition, the representation of interests, and regulations.

The first of these three groups largely coincides with the 'growers'.³⁴ It includes those who expect that the number of farms in Dutch agriculture will fall dramatically and who consider this to be a good thing. They believe, more than others, that there are too many weak farms in the agricultural sector. The 'growers' represent the project of further acceleration of scale enlargement. Only 17 per cent of all respondents fell into this category.³⁵ Greenhouse horticulture and intensive livestock farming were more highly represented as were farmers in the south of the country.³⁶ The second group was characterised as *innovators*. These farmers believe that redundancy will take place at a much slower pace than everyone else thinks. They expect that many more farms will remain and that there will be considerable differences in farming styles and sizes. They regard these trends in a positive light. The group of innovators is proportionally larger than the group of growers: 26 versus 17 per cent, respectively.³⁷ It will not be surprising that this group pays a lot of attention to, and takes a lot of interest in, new developments such as farmer-led nature management, high-quality production, reintegration, diversification, new organisational solutions such as environmental co-operatives, etc. The last and largest group that could be distinguished was the one of the *pessimists*. They expect a continuation if not an acceleration of structural development, but do not support it. This group amounted to

49 per cent, which reflects the atmosphere of crisis amongst farmers. Depression is most likely to be experienced in this group. These farmers want to continue farming but expect this to become increasingly difficult if not impossible. They are disoriented, finding it difficult to connect their own project (to stay farming) with the projects of those around them.

Table 8.3 Tripartite world (n=753)

	crisis		
The crisis will pass automatically.	no: 64%	no: 71%	no: 54%
The crisis occurs mainly on weaker farms.	yes: 44%	yes: 29%	yes: 27%
It is disastrous that 3000 farms disappear annually.	yes: 47%	yes: 85%	yes: 74%
My own income is very good / reasonable.	64%	52%	58%
My own farm will still exist in 10 years time.	yes: 60%	yes: 59%	yes: 79%
There is only one way of farming: supply a large stream of products as cheaply as possible.	no: 61%	no: 68%	no: 80%
Cooperatives have to put good prices for their members before their own profit development.	yes: 51%	yes: 66%	yes: 62%
Current environmental measures can be fitted into my farm.	yes: 77%	yes: 60%	yes: 73%
Our leaders should, just like the French, not avoid political conflicts.	yes: 48%	yes: 60%	yes: 64%
Proportion of total population	17	49	26
	'growers'	pessimists	innovators

A more comprehensive summary of the tripartite world is presented in Table 8.3. It shows that the pessimists score the lowest when asked to define the adequacy of their own incomes. Innovators and growers regard their incomes much more positively.

This tripartite world is illustrative of (and provides an explanation for) the paralysis that has gripped Dutch agriculture. This was illustrated in *The Crisis* by way of an illustration represented in Figure 8.8.

Figure 8.8 The creation of paralysis



It is as if agriculture represents a team of three horses, each pulling in a different direction

Growers, innovators, and pessimists each represent an identifiable development project. The growers opt for further concentration. They are, at the same time, the ones who occupy key positions within farmers organisations: their influence is inversely proportional to their relative number.³⁸ Innovators represent a completely different development project; one that revolves around the reduction of costs connected to the former modernisation trajectory and around increasing revenues by utilising new markets. Finally, there is the development project of the pessimists, which can be characterised as standing still and to trying to manage for as long as possible (and that can be a very long time). Collectively, these projects compose a constellation dominated by paralysis and futility. Synergy and mutual reinforcement, which occurred largely in the heydays of the modernisation period, no longer exist. If winners and losers constituted a consistent combination at the time (with the latter group creating room for those who wanted and had to grow), 'growers' are nowadays confronted by pessimists who try to stay in agriculture for as long as possible and by innovators who try to set up various new activities in order to achieve this. It is not only growers who find their aspirations thwarted by the other groups. Innovators, for example, who try to develop new quality products find themselves generally, and on numerous practical issues, frustrated by 'growers', who consider this to be a direct threat to the value of their own products. The paralysis has taken hold at every level. It occurs at the national level, especially since the generic nature of agricultural policy and the

corporatist structure of interest representation repeatedly attempt to find a common denominator, a *modus operandi* acceptable to all parties involved. If one of the groups is marginalised from the discussions, the group in question is usually still able to undermine the emerging proposals. The same issue might be encountered at the local level. If a group of innovators is interested in farmer-led nature management or farm campsites, growers can and will usually attempt to block this, for example because they fear so-called planning repercussions. On the other hand, growers may suggest a restructuring of land use at the local level, but pessimists will do everything in their powers to prevent this, since they consider the resulting distribution of benefits and costs to be unacceptable.

It has become increasingly impossible to make one perspective, or one project, dominant. Even compromises between the groups will be experienced as unsatisfactory – usually by all three groups. Thus, the Ministry of Agriculture is no longer able to operate as an expert system. The necessary basis of trust and mutual interest is absent. The acceleration of the former modernisation project will lead to increased distrust of innovators and pessimists alike, while growers will want this process to speed up even more. A new route, building on the practices of innovators, on the other hand, will be distrusted by growers. Thus, the conflicting projects create a structural setting that produces paralysis and hopelessness. Attempts at setting up something, at creating a breakthrough, are constantly frustrated.

Structure (the particular interaction of different projects) is active here in a very special way. Structure functions in such a way that it is impossible to create a breakthrough.³⁹ Sicco Mansholt's diagnosis of the situation, contained in one of his last interviews, describes it perfectly: 'On the whole, you could say that "organised irresponsibility" exists in the sector; no one wants to, or is able to, do what is so very necessary' (Mansholt 1995).

It is worrying that the emerging distrust and inability become, in turn, the ordering principles with which the organised irresponsibility becomes more deeply entrenched. Let me offer one illustration, that of farmer-led nature management. (I will discuss this in more detail in the next chapter). A large part of Dutch farmers are now quite interested in certain types of nature management, because they see that it is interesting from a purely agricultural point of view (for example, it can result in a better animal feed content) and it brings in revenue. However, a large part of those potentially interested drop out at the start, precisely because of distrust. 'I won't start this', many say, 'because you'll see that when we have it all in order, the ministry will say: Thank you, this is great nature, we don't want any more farmers here, and then we'll have another millstone around our neck.'

There seems to be only one way out. It is a radical choice for a multiple trajectory policy, replacement of the generic policy by legally conditioned, local self-regulation, a corresponding replacement of corporatist

consensus by more adequate interest articulation and a far-reaching decentralisation of policy implementation. Within this framework, a clear redefinition of the goals of Dutch agriculture is indispensable as a starting point for the construction of new alliances, instruments and consultative structures. It goes without saying that the core of such a redefinition relates to a highly differentiated agricultural sector.

Notes

1 One of the remarkable features of the Dutch expert system is that 'scale' is usually equated with total output. Increase in production is thus identical to scale enlargement. Hence, the essential difference between intensification and scale enlargement is cancelled. In this respect the Dutch definition deviates sharply from the ones used internationally (see Hayami and Ruttan 1985). Provincialism appears to be a feature of the 'expert system' that is impossible to eradicate. Moreover, a remarkable, but doubtless highly useful, confusion occurs in a sociological sense: it is a truism, especially in the countryside, that production per enterprise has to be increased every now and again. Every farmer will endorse this. By linking this axiom to scale enlargement, the latter notion is manoeuvred beyond the domain of the discursive. The second concept hitches a ride with the first one, as it were.

2 Scale enlargement cannot be understood as a simple multiplication of the farm. New technologies are required in order to change the relation between the number of labour objects and available labour. The relation between capital, labour, and 'non-factor inputs', and hence between the total costs per unit and the output price will change drastically (see also Chapter 5 of this book).

3 For a more extensive analysis, see Van der Ploeg and Nieuwenhuize 1986. An interesting series of comments on this analysis was included in subsequent issues of the journal *Spil*.

4 These scenarios were developed by the National Reference Centre (IKC).

5 Apart from the enormous transfers of income (in connection with the purchases of land and quotas), other considerable (social) costs are involved. I refer to the necessity of re-allocation of plots, of increasing the carrying capacity of the soil everywhere, etc. Moreover, the standardisation of natural conditions generates more expenses in terms of nature management and development.

6 At the end of Chapter 5, I pointed out that this situation becomes more pronounced at the interface of the old and new millenniums.

7 I realise that various issues representing life-size question marks at present, will have been settled in the meantime. Formulating extensive arguments against the issues of today (that is, February 1996) seems superfluous to me. What is much more suitable for observation, analysis, and commenting is the way in which this new version of the former modernisation story ('on to 800,000 litres per farm') was received, contradicted, and reaffirmed.

8 I use quotation marks because it involves expectations that are presented in ever changing ways. In and around agriculture, however, these expectations are constantly selected and presented as facts, that appear to stress, above all, the necessity of further scale enlargement. This applies *a fortiori* to the 'expert system'.

9 In addition, (a) I had made a stand in the media against those who wanted to boycott the environmental policy; (b) I had published previous research results in these media, showing that an adjustment of the apparently inevitable rural exodus could readily be imagined; and (c) I was, in spite of my intentions, promoted to one of the advocates of the notion of rural renewal or rural development. All this made the discussions into interesting confrontations, in which the 'flipside' of the many axioms that paralyse everyday discussion were investigated.

10 One of the worrying aspects is that, by operating within the already created virtual knowledge markets, research institutes tend to create as distinct a profile of themselves as possible. Projections that are more extreme than those of others receive extra attention and value and raise the profile of the institute.

11 It is as if the modernisation project ends in a Bacchanal, a drunken orgy in which everyone eventually loses completely the few sober insights they once had. The last glass is drunk *ad libitum*. This is precisely what we are experiencing today. Scale enlargement is preached left, right, and centre. This does not even sound strange in the current state of intoxication. Anyone investigating the details will realise that sobering cannot be avoided indefinitely.

12 The effects of a critical comment of mine in a weekly, *Boerderij*, were remarkable. I was told by various directors that such comments were not appreciated at all. They thought that I should share the axioms of the 'expert system'. I have had the opportunity to taste such experiences many times more since then.

13 The plans aim at forced state intervention into existing relations (including property relations). There is already speculation in the horticultural sector about statutory regulations to *compel* small farms to closure. For even though the superiority of larger farms is constantly praised to the skies, it is still the case – in both sectors – that smaller farms are not closer to bankruptcy than larger farms. Sometimes it seems as if the opposite is true. Hence, smaller farms have to be *coerced* out of the sector. This brings a rather ugly, if not completely unacceptable, quality to the current projects of scale enlargement.

14 A different dynamic will be initiated in private financing from banks or investment funds. Here the question arises of why the investment should be located where the prices of labour, land, environmental space, and production rights are about the highest in the world. Transfer of production elsewhere (to eastern Europe, for instance) becomes obvious.

15 A remarkable difference exists around these figures with regard to the current farm sizes of the respondents. Thirty-five per cent of large arable farmers (over 50 NSU) answered affirmatively, as against only seven per cent of the smaller farmers.

16 Again, these are the larger growers in particular (41 v. 23 per cent).

17 This is a remarkably low percentage compared to the degree to which this development is regarded as realistic.

18 It is remarkable that smaller pig farmers in particular regard this a realistic estimate more often (39 per cent) than larger ones (17 per cent).

19 These and the following data are derived from *Agrarisch Dagblad* (1997).

20 A remarkable phenomenon in the second half of the 1990s was that a number of very large farms of over 1 million litres quota were closed one after the other in the most large-scale dairy region in the Netherlands, south-east Friesland. It is also remarkable that more and more very large farms are offered for sale in the agricultural media.

21 Again, a crucial difference exists between size and scale. The size of a farm refers to the absolute number of labour objects (for example, operationalised as number of Standard Farm Units (SFU) or NSU per farm), whereas scale refers to the relation between the number of labour objects and labour input (for example SFU/labour unit or NSU/labour unit). A farm of over 1 million kg managed by four brothers is a small-scale farm.

22 Tracy (1997) arrives at a similar conclusion regarding the EU as a whole by the late 1990s.

23 The notion that 'something that is good is good for everyone or for no one at all' can be heard in the counterarguments as well. The idea of a multi-track development is emphasised increasingly within the general discourse on rural development. Where is it suitable? Where is it possible? Where is it enjoyed? Is it right to do this or that (cheese-making, setting up a farm campsite, and so on)? The idea of multiplicity, and hence of flexibility and one's own choice, appears increasingly in empirical studies about emerging forms of rural development. However, many in the countryside find such views difficult to handle. I regard this as a reflex of the former modernisation period. At that time it was clear what everybody had to do. One had to be a 'good entrepreneur'. 'Deviations' such as the 'postman farmer', biodynamic farmer, small farm, etc. were ruthlessly delegitimised. A hard core of highly defined parameters existed: a good entrepreneur had to act in a well prescribed way (build a cubicle shed, pursue high milk yields, buy the newest machines, etc.). This gave them something to hold on to – on their own farm as well as in their contacts with others. Those who could not, or did not, want to conform to this withdrew from public discussions. Hence, only one opinion was heard – and conformism became dominant.

24 This was and still is clearly the case in the unions of pig and dairy farmers (the NVV and NMV, respectively), driven by the very large farmers. The desire to be able to expand further unconditionally is also voiced their programmes. This does not alter the fact that these unions have been able to recruit many smaller farmers into their rank and file. The NVV also counts on the support of one of the most 'parasitic' categories of the working population: the livestock traders, manure distributors, and jacks of all trades in the feed circuit. Time and again, the latter groups provide the heavy materials in campaigns (such as lorries and other means that pig farmers do not own themselves).

25 This means that the survey results presented below should not be understood in an absolute sense. The relative differences between sectors, subsectors, and size categories are particularly significant.

26 This percentage seems to collide data to be presented further on, i.e. the 17 per cent of Dutch farmers who believe that further scale enlargement and reorganisation are both inevitable and desirable. These are the 'growers' who will be discussed below. The difference can be explained easily. The 40 per cent presented here include those farmers who pursue a level of production that is as high as possible within their own conditions and who pursue a farm that has the size to fit their own labour supply. In other words, this is an 'inflated' figure. However, this does not present an insurmountable problem to the further comparisons made in the text below. We are looking not so much for the absolute level of a certain response percentage, but rather for relative differences.

27 An additional element is that the former tradition of co-operation and solidarity has been undermined, particularly in the pig sector by an influx of newcomers: builders, smart farm advisors, etc. who saw pig farming as a remunerative opportunity. At the same time there were numerous large pig farmers who held different views.

28 Partly because further adjustment of political-economic relations is expected and feared: even though pig farmers claim that theirs is the world's cleanest production sector, they will increasingly have to pay arable farmers in order to dispose of their manure.

29 An important detail here is that a number of chief officers of the NCB, all large pig farmers, formed an important bridge between NVV and NCB.

30 It is typical of the Ministry of Agriculture as 'expert system' that it was the last institution that granted 'recognition' to the actually occurred differentiation. This very late reaction increased the disconnection between theory and practice and further undermined trust.

31 The problem of a generic approach appears also in a geographical sense. If an intolerable situation arises due to local misgovernment of the pig sector in a certain location (for example, Ambt Delden), a set of rules (in this case the Temporary Act on Ammonia and Livestock Husbandry) is designed that is applicable at the national level. As a result, new chains of problems are generated.

32 The research was conducted as part of the national debate on agriculture organized by the Stichting Ter Zake (Get to the Point!). A critique of the debate as a whole, and our research in particular, was formulated by Koning and Weerkamp (1995), to which we subsequently wrote a response (Van der Ploeg and Van Broekhuizen 1995). Two similar surveys were organised after the first one. They were published as *De vernieuwing (Renewal)* (Ettema et al. 1995a) and *De toekomst (The Future)* (Ettema et al. 1995b). An Italian translation of *De crisis*, containing comments by Sicco Mansholt and Vito Saccomandi (former EC Commissioner and former Minister for Agriculture in Italy, respectively) was later published.

33 In strict sociological terms it is not correct to speak of groups. For the sake of convenience I will do so anyway, also because they are 'emergent groups'.

34 Incidentally, this category is defined in the publication in question as *saneerders*. It should be clear that these are not the farmers who want to become redundant themselves. They think that others have to leave agriculture in order to make way for further growth on their farms. I will use the more neutral term 'growers' in this text.

35 Few systematic data are available to situate this slice of (on average) 17 per cent within a long-term trend. This seems to be a very low amount figure, highlighting the extent to which Dutch farmers have bid farewell to at least a number of important elements of the former

modernisation project. It is interesting to point out that the number of 'growers' fell even further in the first half of the 1990s (see Ettema *et al.* 1995).

36 This geographical and sectoral division is also reflected in numerous other questions. For example, the preference for maintaining the quota system is highest in the north of the country, lowest in the south, and so on and so forth. See further Ettema *et al.* 1994, 1995.

37 Of course, this involves temporarily confined indications, which relate to the nature of the questions. Later surveys confirmed not only the general proportions as shown here, they illustrated also the further increase in the group of innovators (see Boerderij 1997).

38 'They are moving fastest', as farmers tend to say. In addition, their opinions are often reinforced by identical positions taken in policy, science, and the agro-industry.

39 I am increasingly struck by the 'everyday language' used to define the presumed 'structural setting'. I have noted them down for a while after lectures: 'it'll never work', 'it'll soon come crashing down' . . . These are all statements that (a) reflect and summarise the fruitlessness of former attempts, (b) provide a striking summary of prevailing power relations, and (c) offer some of the vehicles for the continuation of the existing paralysis.

9 The Battle for the Future: Current and Countercurrent

The last years of the 20th century have been years of great confusion. The once self-evident axioms of the expert system are no longer universally shared; at best they are claimed, by the expert system, to be unavoidable. Yet, their exclusive nature has led them to become increasingly contested. Hence, the potential for conflict in and around agriculture increased exponentially. At the same time new perspectives, new forms of rural development (RD) have emerged and unfolded. These forms of rural development have manifested themselves through an endogenous process,¹ one that is defined and controlled by the actors involved and that is largely based upon resources at their disposal. This new perspective is increasingly seen as a threat by those who favour accelerated scale enlargement.

Most strikingly, the new RD perspective has been taken up by the expert system: by the end of the 1990s it had been incorporated into a new macro-project. Rural development and multifunctionality, which were once rejected or treated with indifference, have now become key concepts (Vos *et al.* 1998). This embrace is characterised, however, by two remarkable facts. First, RD is imagined in juxtaposition to conventional agriculture (LEI 1999). According to the new idea, space should be provided for new RD activities alongside the conventional type of farming and agricultural development. The notion of niche markets is one of the key connecting, theoretical links here. Alongside the competitive, large-scale, high-tech agriculture producing for world markets, the potential of a diversified agriculture producing for various niche markets has been recognised. Thus two separate worlds are conceptualised, as existing in a ratio of about 80:20. The real thing, as it were, supplemented by 'something nice for the people'. *Voilà*, a new moral order beginning to influence the expert system in the late 1990s. Secondly, the increased institutional attention to rural development has been, and remains, highly disconnected from the practices of diversification and innovation.² Hence, the Ministry of Agriculture appears relatively powerless in this field. Powerlessness and inability have become, in fact, important ordering principles.

9.1 The new current

Diversification of the agricultural economy has grown into a considerable movement in the 1990s. An ever growing number of farms have expanded to become *multifunctional* enterprises. This takes on many forms (for a

summary, see Van Broekhuizen *et al.* 1997). Management and development of nature and landscape is now an established practice on numerous farms. New organisational relations have appeared, such as societies for farmer-led nature management. Similarly, new programmatic formulas emerge, such as the so-called 'loose-coat approach' and the 'flying hectares'.³ Accordingly, it has been discovered that the adaptation of farmer-led nature management can, when well-done, result in a considerable rise in revenues (Van der Ham in LEI 1998; Van der Ham in IBN-DLO and LEI-DLO 1998; for a further discussion of the macro-economic implications, see Slangen 1994; for an example of an impact study elsewhere, see ADAS 1996). Agri-tourism has developed in a dynamic and innovative manner: there is a growing number of locally rooted arrangements, which offers a multitude of facilities to tourists and holidaymakers, which have created a strong identity and market position for agri-tourism. On-farm processing and direct selling of products, activities that had never disappeared completely, have been taken up again and built up in many places as part of the diversification of agricultural practice. Another important development is the emergence of new types of *quality products*: the generation of high-quality and distinctive products with a high added value. Alongside organic products and almost classic phenomena as farmhouse cheese, there is an extensive list of new products, often developed, produced and marketed individually, but sometimes collectively.

It is interesting how various product alternatives and features, unnoticed and/or unexplored until then, are identified and used in the search for new alternatives. Rural development emerges as a laboratory in which a continuous stream of novelties are generated.⁴ It is typical that Dany Jacobs (an expert in the field of the knowledge economy) has pointed to this very aspect of rural development (Jacobs 1998, D7).

Another expression of rural development is the *care farm*, on which the reception of, and care for, the needy (however defined) is integrated and interwoven with the (usually adjusted) agricultural activities. Interestingly, the therapeutic value of staying and working on a farm is discovered (or perhaps I should say rediscovered) as part of this. Furthermore, there has been a rapid development of new, short supply chains (see Van Broekhuizen *et al.* 1997, pp. 43–68) and the establishment of new, economic carriers (*ibid.*, pp. 189–220), as well as new types of diversification that are as yet at the research stage, such as combining agriculture with water storage, water treatment, energy production, waste processing, and so on. The DTO (Sustainable Technological Development) project based in the town of Winterswijk has yielded numerous new perspectives, which are now being tested for feasibility (DTO 1997). Importantly, this has made the possibility of a rise in agricultural employment subject for discussion again (Saraceno 1996a; Van der Ploeg 1995a).

There was much speculation about the importance of the emerging multifunctional farms in the second half of the 1990s. Scepticism, disbelief, and disapproval initially dominated the discussion. This applied to the

direct environment of the farm: innovating farm women pointed to ignorance in their own social environment as one of the most important obstacles (De Rooij *et al.* 1995; Bock 1998). It also applied to farmers organisations, agricultural policy and agricultural science. Multifarious diversification is perceived as a 'deviation' from real farming, as the beginning of the end, as a last resort to prolong the suffering of those farms who are doomed to vanish anyway. However, the 1998 farm survey, conducted by Statistics Netherlands (CBS), confirmed that which insiders knew all along: the farms that diversify are not the 'failed' ones. Remarkably, larger farms also play an important role in this new paradigm. These farmers often are young, enterprising, determined to actively create continuity, prepared to invest heavily (but not along worn lines), and accepting new gender relations. These diversifiers and innovators believe in themselves and approach their tasks with a sense of *bonheur*. However, all this does not alter the fact that the majority of scientists and (in their footsteps) the majority of policy-makers persist in the belief that this is a short-lived 'single generation phenomenon'.

What they overlook is, first, that maintaining competitive advantages on bulk markets is, in the medium term, an impossible option: land, labour, and growth opportunities are more expensive in the Netherlands than anywhere else in the world. Therefore, new responses, new development opportunities are badly needed if farming and the countryside are to survive. This leads to the second point. For however fragile it might seem sometimes, a new range of farm development patterns is developed and tested in situ. New *development opportunities* are created. The changeover from a low-cost strategy, based upon accelerated scale enlargement, to a strategy in which differentiation, focus, and high value added per unit of end product are the key words (see Porter 1985, Van der Ploeg 1998b; Jacobs 1999)⁵, is omnipresent in today's diversification. As explained in more theoretical terms by Saccomandi (1991, 1998), the creation of synergy can result in considerable cost benefits: the 'multipurpose enterprise' is characterised by lower risks and lower costs per activity than the highly specialised farm (see also Scherer 1975).

In the previous chapters, I referred frequently to the indestructible longing for the continuation of the farm. During the latter half of the 1990s, farm diversification – that is, the unfolding into a multifunctional rural enterprise – has become the primary expression of this longing. It represents a healthy self-interest, and results in a range of new development opportunities. I will discuss the current size of this new movement and its potentials below, but first I will focus on a few other types of diversification and innovation.

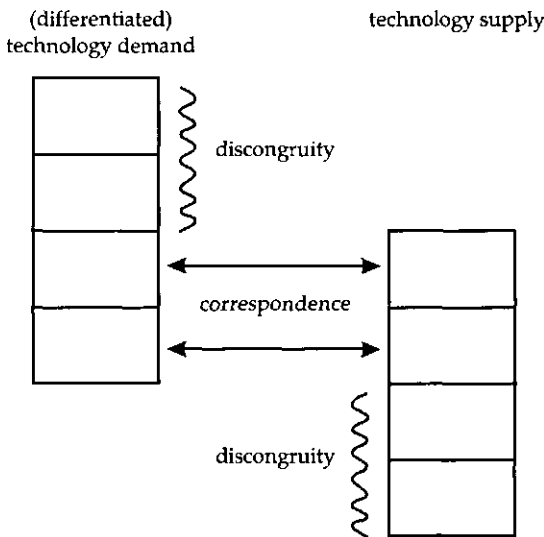
The search for new types of cost reduction

The diversification of the agricultural economy (or rural development) is not only geared towards the generation of new goods and services that can be used to break through the problem of stagnating gross output of agriculture (see Figure 7.2). The process also includes numerous elements

and practices which constitute new types of cost reduction: the art of *farming economically* is being further unfolded and expanded.

A certain amount of institutional support is involved here, particularly in recent years. The strategy of farming economically has been taken as the basis for formulating and developing new designs at the Research Institute for Animal Husbandry in Lelystad. The Dutch Dairy Cattle Syndicate has purposefully broadened its bull supply in order to provide the genetic features required for this farming style. Thus, at least part of the discongruity between demand and supply of new technologies (summarised in Figure 9.1) is being redressed.⁶

Figure 9.1 The discongruity between supply of and demand for innovations, rules, technology, etc.



Various other types of cost reduction have been developed alongside, and as a continuation of 'farming economically'. One of these is known as *reintegration* – that is, the reconstruction of mixed farming at the local and/or regional level in order to re-establish (and even introduce for the first time) various ecological cycles at a scale broader than that of the individual farm. There are a number of different examples of reintegration. Collaboration between livestock and arable farmers (through mutual supply of straw and manure) is one of these.⁷ The 'travelling bulb stall' is another. This is a type of tenure through which dairy farmers and/or arable farmers lease plots of land to bulb growers. Hence, the latter are able to transcend the limitations of their own farm size and the need of crop rotation, whilst the former are able to share in the high profits. The same principle is increasingly applied to the cultivation of seed potatoes in Friesland. Reintegration enables an important extension of rotation schemes and makes possible a considerable reduction in the use of pesticides.

Finally, I would like to refer, in terms of cost reduction, to the emergence of *environmental co-operatives*. These are associations of farmers, who have developed contractual agreements with the government. To understand this phenomenon some reference should be made to the background from which they arose and to which they, potentially, form a powerful response (see NRLO 1997c). This background is characterised by the prevailing agri-environmental policy, which (a) still contains a remarkable confusion over objectives and means (for a general characterisation, see Van der Weijden *et al.* 1984) and (b) is highly generic in terms of the means prescribed. With respect to the on-farm implementation of agri-environmental regulations, the combination of these two factors results in high costs, while the effectiveness is often dubious.

Farmers often are able to identify courses of action (other means) that fit more closely with their practice and still meet the intended objectives. The costs are usually considerably lower and they are more effective. However, the development, implementation and further unfolding of such alternative approaches is usually ruled out by the inflexibility of the prevailing technological regime. Current regulations simply exclude any 'deviation'.

Environmental co-operatives have challenged the monolithic nature of agri-environmental policy. They are based upon a fundamental reversal of the generic prescription of means. Central to the notion of environmental co-operatives is their acceptance of specified environmental *objectives* and the associated demand for the necessary room to develop and apply the *means* that are locally most appropriate. In sociological terms an environmental co-operative is a 'protected space' (Schot *et al.* 1996; Lente and Rip 1998), a niche in which 'novelties' can be developed and perfected. In legal terms, an environmental co-operative is a manifestation of legally conditioned self-regulation. The prevailing regulations are partially lifted within a specified area, and for a given time period, and the co-operative has the opportunity to show that they can meet the environmental objectives more quickly and more efficiently than the prevailing regulations are able to do. Environmental co-operatives enable progressive movements and the development of innovations that would have remained blocked otherwise. In synthesis: environmental co-operatives are given space provided that they realise additional environmental value. What is important is the *exchange*: government provides space, the environmental co-operative in turn exceeds the general environmental objectives (in terms of emissions, nature, landscape, recreation, water conservation, etc.; for a daring example, see VANW 1997). If the co-operative is not successful, the agreement is terminated by government and the generic regulations apply again in full.⁸

During the term of office of Van Aartsen (1994-1998), at first five and later three more environmental co-operatives were given the green light: they were granted a number of exemptions to help them better realise the

environmental objectives. This move drew a lot of attention, both nationally and internationally, even gaining recognition from the OECD:

'the more or less spontaneous formation of farmer-led eco-cooperatives in the early 1990s, and their subsequent evolution into laboratories of government policy, are both consistent with Dutch institutional and democratic traditions' (OECD 1996, p. 56).

One feature of these co-operatives that is interesting is how the initiators have been able to interest and mobilise networks outside the Ministry of Agriculture. The prospects of this new approach were supported by some agricultural researchers (Hees *et al.* 1994), the Standing Committee on Agriculture of the Dutch Parliament (VCL), the Ministry of Housing, Spatial Planning and the Environment (VROM), provincial governments and by national environmental movements. They provided support, both materially and symbolically. The (potential) importance of environmental co-operatives was also discussed at length in the agricultural media. The Minister for Agriculture (Van Aartsen) committed himself personally to the scheme. It was largely due the combination of his positive attitude and the strong support in society, that the first experiments were started. The mobilisation of support elsewhere in society – that is, the building of new networks – appeared more useful than betting endlessly on changes within the ministry itself. The ministry as an institution only moves if it is urged by more comprehensive developments; and then it only operates with reluctance, if indeed it is not actively involved in sabotaging the projects.

In any case, environmental co-operatives developed in spite of considerable oppression. This is not the place to develop a comprehensive assessment of their practices (for such an assessment, see Horlings 1996; VEL *et al.* 1997; IKC 1998; Hees 2000). I will limit myself here to the simple picture of the progress made by two cooperatives: the Easternmars Lânsdouwe Society (VEL) and the Society for Agrarian Nature and Landscape Management Achtkarspelen (VANLA), both situated in the northern Frisian Woodlands. Table 9.1 shows that remarkable results were achieved after only a few years of experience of self-regulation. The number of dairy farmers whose pollution indicators fell below the norms set for the year 2000 increased from 28 per cent in 1994 to 35 per cent in 1995 (compared to only 14 per cent for dairy farmers in the Frisian sand region as a whole). The figures were much higher for those who participated in experiments with manure additives: 43 and 63 per cent, respectively. The most recent figures (Jaarverslag 1998 VEL, VANLA) indicate that the average N surplus (of 120 members) had already fallen to 261 kg N/ha in 1997. This means that the area as a whole operates already *below* the norm for the year 2000.

These figures in themselves only tell half the story. Underneath them was an enormous breakthrough. At that time farmers' unions were claiming that it would be impossible to meet the targets. The first environmental co-operatives proved this claim to be false and misleading.⁹

Table 9.1 Progress made along the environmental route by VEL and VANLA, compared with developments in the wider region (percentages)

	VEL 1994–1995	VEL 1995–1996	VANLA 1995–1996	VANLA 19 participants experiment 1995–1996	VANLA 19 participants experiment expectation 1997	average farm Frisian sand region
N surplus < 275 kg/ha	28	35	27	42	63	14
P ₂ O ₅ surplus < 35 kg/ha	22	40	38	53	?	21

The results in Table 9.1 were achieved through a number of mechanisms. Important in this respect were technical breakthroughs such as the development of a new, 'regionally specific' machine for the application of manure and the introduction of additives such as Euromix and EM organisms (see also the exposition by Hoeksma in Chapter 4). Equally important were field experiments; the negotiated licence to spread manure above ground; and the creation of an intricate web of study groups (see Verhoeven *et al.* 1998; for a very recent account, see Renting *et al.* 2001). Perhaps of equal importance is the change in the relationships that occurred between government and farmers. Environmental policy changed from a series of, mostly misunderstood, restrictions into a challenge, in which farmers took centre stage as serious innovators. The notion of *kreas buorkje* (farming gently) was thus revitalised and extended into a new area (the handling of manure and nutrients). *Kreas buorkje* (*net grieme mei mineralen* – that is, not to mess with nutrients) has once again become a generally shared norm in this part of Friesland, due to the environmental co-operatives.¹⁰

The common denominator: the return from rûch to kreas buorkje

All these multicoloured initiatives, from farmer-led nature management to environmental co-operatives, are connected by two factors. These are, first, the search for new responses to the squeeze (as described in Chapter 7) and, second the development of new responses to new social needs. The Council for Rural Areas points out in its first programming document that 'the urban and rural counterpoints presuppose and need each other (. . .) The rural areas constitute (. . .) more than simply 'the remainder', they are more than still 'barren' urban areas (. . .) The more society urbanises, the more the need for, and value of, rural areas will increase' (RLG 1997, p. 15). Today's highly urbanised society requires tranquillity, open space and green areas. More generally, we can say that there is a need for a 'counterstructure' (Turner 1974; Lengkeek 1994), for a place where that which is absent in the city can be found. In this respect, rurality represents co-production, i.e. the ongoing encounter, interaction, and mutual transformation of human beings and the living world.

The urban need for the rural is expressed in numerous ways. It is evident in the enormous number of day trips and overnight stays in rural areas. It is evident in the strongly increasing preference for living in the countryside. It is also expressed in the increasing worry about food: in the need to consume high-quality, organic and/or regionally-specific

products. And finally, there is the ubiquitous need for maintaining, if not further embellishing, many cultural landscapes, for protecting and developing the multiple ecological values inherent in them, and for a general revalorisation of the environment.

The RD current that has come to dominate Dutch agriculture from the second half of the 1990s onwards, gained power because it combined two large movements: the increasing social interest in the rural and the search from within agriculture for solutions that would take it beyond the squeeze. The multifunctional farm is the link that connects the two.

In the latter half of the 1990s, it was increasingly emphasised that agriculture was facing a completely new task. Agricultural production would have to be made socially acceptable. In this respect, a new 'contract' was often mentioned, a new agreement with society – that is, a 'licence to produce'. Thus, a goal was introduced that received widespread public support. However, the idea that farming would have to follow a normative pattern is something *new*, is mistaken. It happened in the past too, but in an almost taken-for-granted manner. *Kreas buorkje* (farming gently) which was discussed in Chapter 2, was a clear expression of such a normative order. It defined the way that one should treat others: the wife, children, neighbourhood, community,¹¹ but also nature, animals, the landscape,¹² and the products supplied. Thus, agriculture was normatively connected to the rest of society.

Kreas buorkje was a concrete and normative axis connecting the two. Even though the norms were local ones, agriculture was connected to society as a whole in an acceptable way through the relationships and material processes defined by these norms. Since then, ruptures have appeared. The material aspects can readily be identified. Think about landscapes that have been rationalised out of existence; the assault on ecological integrity; the rapidly increasing pressure on the environment; the series of food scandals; and the greatly changed treatment of animals, seen by many as an infringement on animal welfare.

What is more important is what is hidden *behind* the widely felt dissatisfaction about these ruptures. This is a very essential issue. Co-production, i.e. the encounter with nature, will never be indifferent to society. It is an intrinsic and important aspect of what we call *civilisation* (Van der Ploeg 1997). The nature and dynamics of agriculture are to be in line with society and its values. They are a mirror of the level and consistency of civilisation. Ramshackled pigs, the need to electrocute millions of piglets,* chickens that are only thought of in terms of their efficiency in feed conversion, disfigured landscapes, destroyed nature – all provide indications about the lack of civilisation, in the places where we expect to find it (Van Zomeren 1997).

The width of this gap became evident through the behaviour of, at least some of the pig farmers, particularly those that formed the NVV. They turned their back on civilisation in a drastic manner (see Figure 9.2).

* Translator's note: This occurred during the epoch of swine fever in the late 1990s. The Foot and Mouth Disease that later struck Dutch agriculture underlines the analysis made here.

'Society', according to their argument, 'politics, science, the environmental organisations (and so on) do not understand pig farming, and, therefore, they have no right to meddle in it'. In subsequent actions, including physical threats, denying others the opportunity to speak and mounting blockades, they showed the degree of their own incivility.

Figure 9.2 Turning their backs to civilisation



How could the gap between agriculture and society grow as deep as it turned out to be in the 1990s? How, and why, has agriculture as co-production become so far removed from the civilisation that it should be a part of? There is no point in looking for the answer to this question in the individual incidents themselves. Again, it involves something that lies much deeper, something that is much more essential.

I think that we have to look for the answer in the extensive modernisation project and in the 'scientification' of farming that was part of it. Scientification is the reorganisation of farming according to the schemes that were, and are, designed in the sphere of the agricultural sciences. To achieve this reorganisation, agriculture was cut out of its normative context (out of its set of social relations, values, and norms) in order to be able to optimise it as an isolated, technical-economic constellation. *Modern* farming became the new norm. Scientific developments, irrespective of their nature, were the guiding compass. This has resulted in many bitter fruits, from a 'Silent Spring' (Carson 1962), to the *Holocausto al Progreso* (Van Kessel 1980), to 'Soveso' and to 'Bhopal', to genetic modification and 'terminator genes'.

The currently suggested remedy is a reintroduction of ethics into agricultural sciences (Veerman 1999). Such a response, however sympathetic it may sound, is likely to be insufficient.

What, then, would be more appropriate? Certainly, a sense of ethical awareness needs to be reinstated and reinstitutionalised within agriculture. As for science, a threefold integration is necessary. First, the technical and social disciplines need to be interwoven systematically – that is, made into one undivided whole. Second, institutionalised research has to be consistently connected to on-farm research and experiments, which implies that research is to be conducted consistently along different tracks. Such a change of approach is necessary in order to secure a wide array of alternatives from the outset. As long as only a few of the many development opportunities are investigated, a particular division of knowledge and ignorance will emerge almost inevitably – a division that, in turn, will have a very direct and coercive ordering effect. Third, agricultural research will have to be reconceptualised so that it is seen as operating within the social values of our civilisation (which implies that it is partly to be directed by farmers but also, and especially, by social organisations). Hence, the inevitable conflicts arising during the implementation of agro-scientific research will at least be anticipated and early enough to make a difference.

The RD current that has come to be defined more precisely throughout the 1990s has grown in spite of opposition and oppression. It has not been encouraged by the expert system. The very reverse has happened. In consequence, new nuclei have appeared, outside of the expert system, where new knowledge and new skills have accumulated. And as the RD current grew stronger, the more inevitable a collision between these nuclei and the expert system became.

9.2 A quantification of rural development

In the course of 1996 and 1997, a multidisciplinary research team made a first assessment of the size and socio-economic implications of the diversification of the agricultural economy (Van der Ploeg *et al.* 1997). Different types of diversification were identified and the number of farms involved and the associated benefits and costs were estimated. Thus, for the first time, it became possible to begin to estimate the extra net value added.

The results of this exercise¹³ are summarised in Table 9.2. The results drew a lot of attention. Few were aware of the size of rural development as its importance had not previously been empirically demonstrated. Rural renewal suddenly appeared not only as a political construction, it was also alive and kicking as a practice (as was illustrated also in Broekhuizen *et al.* 1997).

Table 9.2 The impact of rural development (1995 situation)

A provisional assessment of the current impact of rural development (extra value added in million NLG per year)	
1 management and development of ecological values	
– via management agreements of BBL ^a	33
– via provincial arrangements	4
– via landscape maintenance agreements	4
2 the production of high-quality foods	
– 600 cheesemakers (600 x 300,000 kg x 0.5 x NLG 0.20)	18
– 25 small-scale processors	8
– 600 organic farms (x NLG 40,000)	24
– 300 affiliated preparers and processors x 0.5	4
– successful cases of product innovation, resulting in new jobs	15
– 2,000 other farms working at some form of self-processing (x NLG 20,000)	40
3 marketing, direct sale of farm produce	
– 30% of NLG 500 million	150
4 farm campsites and agritourism	
– 2,000 x NLG 20,000	40
5 cost reduction	
– two examples	1.5
– remainder	p.m. ^b
6 reintegration	p.m. ^b
7 the 'seedbed'	
– 1,000 cases at NLG 100,000	100
8 care provision	p.m. ^b
Total per year	440

Notes: BBL: Government Service for Land Management; p.m.: *pro memoria*.

What significance can be read in an estimated additional income of NLG 440 million, generated through different RD practices? The figures can be read in different ways.

- a Assuming that a number of new jobs would have to be remunerated solely by means of diversification (or that a number of jobs would have to be maintained solely through diversification), the effect of diversification (assuming a remuneration of NLG 70,000 per labour unit) is equivalent to 6100 jobs.
- b Assuming, on the other hand, that mainly additional revenues are involved (combined with revenues from conventional agricultural activities), about 22,000 farms and related jobs would be maintained – whereas they would probably disappear otherwise (assuming an additional income of NLG 20,000 per farm).
- c The total available income (to use as family income and/or as savings for the benefit of the farm) of the whole of Dutch agriculture amounted to NLG 7.5 billion per year in the latter half of the 1990s. We estimated the potential impact of rural development at the time at NLG 1.2 billion. Judged by the annual sector income (under pressure from

Agenda 2000, the World Trade Organisation negotiations and constant cost increases), it demonstrates that diversification can never take the place of the conventional production (of, e.g., potatoes and milk), but that it can be an attractive compensation for otherwise falling sector incomes – that is, a means to actively parry the ‘squeeze’ (see Figure 7.2).

A lot has happened since the publication of this first estimate. Many subsequent studies have appeared in which close attention is given to specific types of diversification. Van den Ham and other researchers discussed further the management and development of ecological values (IBN/LEI 1998; LEI 1998). This showed that a sensible adaptation of the rest of the farm can generate further-reaching improvements of income than we initially estimated. Furthermore, the number of farmer-led projects to manage nature and landscape has increased rapidly due to institutional innovations and increased political support.

Three recent developments have taken place in the generation of high-quality products. We succeeded in improving our methods for identifying such enterprises and have been able to build up a more comprehensive database. At the same time, the practice of quality production gained momentum: the number of regionally-specific products, farmhouse products, new products, and so on increased considerably in a short time. And finally, we became acutely aware of various practices and types that had escaped our attention initially or that were left out as they were thought to be ‘borderline cases’ (in order mainly to avoid that our initial estimate would be too controversial). A good example is horse farming – a practice that had never completely disappeared, but has expanded rapidly over the past 10–15 years and, above all, changed in character. It can justifiably be stated that horse farming represents a concrete axis between agriculture and society (since it is often city people who keep their horses on the farms involved) and, furthermore, provides substantial additional earnings. It is estimated that horse farming represents a gross output of about NLG 1.3–1.4 billion and generates about 7000 jobs in the Netherlands. This puts it on a par with the bulb sector or the table chicken sector. In the same manner as traditional cheesemaking, horse farming represents a type of rural development *avant la lettre*. Furthermore, it is a type that is rapidly growing once again. This is the case not only in the Netherlands but also in the US (Broadway *et al.* 1994) and in Spain.

As a side issue, I would like to refer here to one of the interesting aspects of socio-economic research, particularly when it occurs at the interface between changing paradigms and rapidly evolving practices. Initially, the *idea* of rural development only referred to one particular aspect of the agricultural sector. However, as a result of the rapid growth in diversification, the expansion of similar analysis to other European agricultural areas, and the deadlocking of the modernisation project, the necessity as well as the possibility of extending the diversification of the agricultural economy (or rural development) grew into a *comprehensive*

model. That is, a new paradigm of rural development arose, one which contrasts with the former modernisation paradigm in almost every relevant way and at different levels of scale.¹⁴

Just as *congruence* and *coherence* need to be created in farms and in the networks that support agriculture, they need also be created in research and the development of theory. Congruence between (a rapidly evolving) practice and (equally rapidly evolving) theory; coherence between the many dimensions and fields of attention. This gave rise to the development of new, more consistent responses to the apparently simple question: *what is rural development?* It also led to the re-evaluation of various empirical constellations that were thought to exist initially *sui generis* – that is, disconnected from rural development.

Rural development is, first of all, a set of new income-generating activities that extend beyond the conventional generation of semi-finished products for commodity markets. Rural development comprises all those activities that result in the generation of supplementary revenues (through new outputs and/or through new cost savings) in order to maintain the farm. Rural development is, therefore, a new expression of what I described earlier as resistance capacity, of the 'culture of survival' (Kuypers 1996). Rural development is a new development opportunity to bypass today's adverse circumstances. Rural development enables farms to continue which would otherwise disappear – not so much because rural development is a last resort, but because it embodies timely anticipation. *At the same time*, rural development represents the creation and continuation of new relations between society and agriculture. Rural development is the active response of (parts of) the farming population to the changing needs of contemporary society. Rural development is the creation of an attractive countryside and an attractive agriculture – of a countryside and an agriculture that are 'loci of consumption' (Marsden 1998b).

In summary, rural development comprises a diversification of the agricultural economy that takes place via the creation of new axes between itself and society. Only when both of these conditions are met, can we speak of rural development.¹⁵ In turn, rural development requires a different view, as well as a radical reorganisation of, the way in which resources are mobilised, combined, applied, and developed.¹⁶ On the one hand, this involves a certain amount of socialisation: resources become increasingly a public good, 'common-pool' resources (Ostrom 1994) that are managed by farmers but which have to be utilised in such a way that the (multifarious and potential) benefits can also be enjoyed by others. The ever-present possibility of the 'tragedy of the commons' (Hardin 1968) has to be avoided. This creates a completely new problem that can perhaps only be approached à la Ostrom.

The definition of rural development provided here implies that important parts of empirical reality (such as pluriactivity, the style of the economical farmers, the re-emergence of horses, the re-use of farm buildings, etc.)

have to be rethought. Furthermore, rural development has to be theoretically distinguished from the former modernisation paradigm. In essence, the latter intended to provide equality of income by means of the generation of products for commodity markets alone. Additional revenues were taboo. Farmers who needed them were seen to be failing in their main concern. Furthermore, modernisation followed its own, undisputed course: farming was 'cut loose' from former normative frameworks and driven exclusively by technology and economics. Rural development is a decisive step beyond these restrictions (for a more recent discussion, see the special issue of *Sociologia Ruralis* 2000, vol. 40, no. 4). In summary, rural development is a practice that contains within it the seedbed of a new paradigm.

Table 9.3 attempts to summarise the most noticeable paradigmatic differences between the development perspective of modernisation and the new development opportunities entailed in rural development.

Table 9.3 Paradigmatic differences between the modernisation process and rural development

Modernisation process	Rural development
1a mobilising extra resources via markets for maintaining/improving incomes	1b build upon one's own resources in order to keep the income at the same level or increase it
2a highly prescribed application and use of resources	2b flexible and multiple application and use of resources
3a continuous scale enlargement (disproportionate growth)	3b gradual development (proportionate)
4a small margin per unit end product	4b higher margin per unit end product (and per 'service unit')
5a high degree of specialisation	5b diversified output
6a exogenous growing capacity	6b centre of focus on local innovative capacity
7a 'turnkey' projects	7b gradual increase and 'learning by doing'
8a predominance of prevailing technological trajectory and TATE ¹⁷	8b labour, family, and new networks are central
9a output prices and markets are given	9b output prices can be influenced; markets are actively constructed
10a substitution of labour by inputs and technology	10b low level of application of external inputs; low financial costs
11a sustainability based upon 7a and 8a	11b sustainability based upon 6b, 8b, and 10b
12a disconnected from local ecosystems and surrounding social environment	12 explicitly reconnected to local ecosystems and surrounding social environment

Note: ¹⁷ TATE: Technological and Administrative Task Environment.

These differences do not of course involve black-and-white demarcation lines. Collectively, however, they do define different ordering patterns. The internal relations are decisive here: 1a and 10a lead to 4a; while 4a together with 2a and 5a push onto 3a. And *vice versa*, the combination of 10b, 9b, and 5b set the conditions for 4b, while 4b contains the possibility of 8b. And in reverse, 5b is supported by 1b, 2b, and 3b.¹⁸

A clearer view of rural development as new paradigm brings about a revaluation of various empirical fields. Taking the notions summarised in Table 9.3 as a starting point, horse farming, for instance, emerges as a coherent element of rural development (more specifically: it is an expression of 12b, 8b, 9b, 5b, and 1b).

The same holds for the strategy of farming economically (an entry that was initially claimed carefully as *pro memoria*, see Table 9.2).¹⁹ It is an expression of 1b, 2b, and 5b *avant la lettre*. *Sunig buorkje* (farming economically) is, more generally, not only often the starting point,²⁰ but also the *basis* for the development of the multifunctional farm. In addition, farm development is modelled by *sunig buorkjen* into a process that differs radically in practice from the classic modernisation pattern.

Similarly, it appeared that various other aspects of the estimate in Table 9.2 had to be adjusted. Van der Vaart's Ph.D. thesis about the re-use of available farm buildings in Friesland appeared in 1999. He presented a convincing case that re-use (partly by former farmers) often leads to the emergence of various new types of activity and new income and employment opportunities (which is in certain respects reminiscent of the *mezzadri* (share croppers) who developed the small and medium-sized enterprises in northern and mid-Italy; Bagnasco 1988).

The phenomenon of 'pluriactivity' or part-time farming also deserves reconsideration. This phenomenon has been considered marginal for a long time²¹ (for the *virtual farmer* does not need additional revenues, nor does his wife; she would always be ready to step in). Yet, the figures suggest otherwise. Farm men or farm women earn additional revenues on about 60 per cent of Dutch farms (De Vries 1995).²² On the average dairy farm, 37 per cent of income originates from off-farm revenues (Silvis *et al.* 1998). On the average arable farm in the province of Zeeland, 57 per cent of income is derived from activities other than arable agriculture (Wiskerke 1997). In numerous situations, additional revenues are crucial to either the take-over or the continuity of the farm. Two serious considerations should be added. First, it can be said that the (increased) importance of additional revenues corresponds with the more general tendency towards dual-income households. More specifically, a (part-time) job outside of the farm has become already a self-evident goal for many farm women. The utopian phenomenon that was described almost poetically by Marx at one point does now exist: farmer in the morning, labourer in the afternoon, poet at night. The vice-chancellor of the University of Twente, the chairman of the board of Wageningen University and Research Centre, one of the senior researchers of ILEIA, the member of the provincial Executive for agriculture of the province of Utrecht, a top civil servant of the province of Overijssel, the chairman of the Board of Trustees of the Rabobank, and thousands of others occupy this privileged position.²³ And their number will undoubtedly grow further.

In summary, additional revenues are not marginal, neither are they 'additional'. They constitute one of the important mainstays of Dutch agriculture. Additional revenues do not constitute one of the embarrassing black swans – additional revenues illustrate the increasing interweaving of agriculture and society. They are not an outpouring of a past that has not passed yet – rather they are a forerunner of an unfolding future.

Second, a combination of hairdresser and professor does not make the university a diversified enterprise, as Gerard Doornbos (chairman of the Dutch Organisation for Agriculture and Horticulture, LTO) pointed out. This is true. However, there is one strategic difference between a university and a contemporary farm. The hairdresser's activities are not necessary in order to work as a professor and/or to keep the university going. On the farm as a family enterprise, the revenues of the farm woman and/or the additional revenues of the farm man are almost always crucial to the continuity of the farm.

Research into the nature of rural development is much more developed in the European context than in the Netherlands (see Delors 1994; Kayser 1995; Cork Declaration 1996; Fischler 1996; Iacoponi 1996; Saraceno 1996b). Applying the insights entailed in these overviews to the Dutch situation, it is estimated that the diversification of the agricultural economy in the Netherlands generates an additional income of at least NLG 2.5 billion per year (a rough summary of the calculations can be found in Table 9.4 below).

Table 9.4 The quantitative impact of diversification of the agricultural economy at the end of the second millennium (1999)

a 1000 organic farms, at NLG 40,000 ²⁴	NLG 40 million
b 15,000 farmers involved in nature management, at NLG 7000 ²⁵	NLG 105 million
c pluriactivity, 50,000 farms, at NLG 20,000 ²⁶	NLG 1,000 million
d farming economically by half of the sector ²⁷	at least NLG 530 million
e processing and marketing	NLG 260 million
f agritourism	NLG 50 million
g reintegration	NLG 100 million
h seedbed ²⁸	NLG 200 million
i care tasks	NLG 5 million
j horse farming	NLG 200 million
Total	NLG 2490 million

More important than these exact figures (which no doubt will have to be adjusted according to changes in both practice and theory) is the underlying argument, which I have outlined already: *All* practices that deviate from the model of the specialised, full-time farm as prescribed in the modernisation paradigm, and which are intended as ways to continue one's own farm and that use, therefore, new development opportunities that exist at the interface between society and agriculture – *all* these practices are to be understood as components of the new RD current.

Some of these practices occurred before 'rural development' existed at all. In other words, Dutch agriculture has never been totally modernised. Modernisation was and is a local and differentiated process. What is more important, is that the repertoire of already existing practices (e.g. on-farm cheese making, pluriactivity, horse farming) becomes revalorised and at the same time extended, renewed, and deepened within the framework of current rural development.

The tentative indication of NLG 2.5 billion – the extra income generated by a set of diversifying activities – should not be treated in isolation (a mistake I too initially made). It is an *additional* income:²⁹ it should be combined with the classic income generated via milk and potatoes.

Assuming that about 50,000 farms are somehow (and often in multiple ways) involved in the diversification process and that these farms account for about NLG 4 billion of the total annual sector income of NLG 7.5 billion, this implies that diversified agriculture generates a total income of NLG 6.5 billion on an annual basis. In addition, there are highly specialised farms, which follow the conventional development track of scale enlargement and intensification in order to realise income. Following Chapter 7, I estimate the size of this group at 25,000 farms. These specialised farms generate NLG 3.5 billion in income.^{30,31}

That which was initially considered to be unusual has meanwhile become the main stream in the Dutch countryside. The RD current is quantitatively (both in terms of the farms involved and the income generated) considerably larger than its countercurrent, i.e. that what is thought as mainstream agriculture.

There are – and I am acutely aware of this – various sources that produce a *different* picture. For example, the 1998 farm survey, conducted by Statistics Netherlands (CBS), indicated that less than 10 per cent of Dutch farmers are involved in innovation and diversification. And the Agricultural Economics Research Institute (LEI) in its *Atlas ontwikkeling landbouw* (*Atlas of the Development of Agriculture*) (1999) identified only '53 environmental co-operatives, nature societies, and organisations involved in regionally-specific products' (LEI 1999, map 6.4). I think that a series of distortions is present in both cases. The LEI only identifies 'four environmental co-operatives, nature societies, and organisations involved in regionally-specific products' in the province of Friesland. This was a severe underestimate. At the time there were, in Friesland, 27 nature societies, two environmental co-operatives, eight organisations involved in regionally-specific products, and one umbrella organisation for the latter.³² At national level there were at least 300 farmers' organisations (instead of 53) actively engaged in rural development activities. The expert system and the CBS database simply do not have the necessary overview nor the methods to obtain such overview. Hence, systematic distortions occur in the representation of Dutch agriculture, especially as far as the emergence of new realities is concerned.

9.3 The why and how of rural development

The involvement in rural development is rooted in a combination of driving forces. First and foremost there is the sheer indestructible desire of farmers to continue their own farm, if even under difficult conditions. This usually involves attempts to generate more income from the available resources, through far-reaching particularisation and recombination (see 1b in Table 9.3). This search becomes the inevitable choice as the practical possibilities to do this along the lines of the modernisation project (1a in Table 9.3) become exhausted and/or blocked. By doing so, the technical efficiency of the farm is increased, in an original manner. What was possible with cows and fields is now extended into new 'fields of activity': into agri-tourism, nature management and development, generating and marketing new products, engaging in care tasks, and so on.

This extension of activities leads to a second group of driving forces, the need for extending one's own craftsmanship and entrepreneurship beyond the ever tighter boundaries arising from the modernisation project (and especially beyond the boundaries currently arising from, for example, 'integrated supply-chain' guidelines). For many of those involved, rural development also implies rediscovering the joy of work, increasing their insight into, and the overview of, the relevant whole and building new socio-technical networks that reach beyond the isolation and alienation seemingly inherent in the modernisation project.

According to surveys, there is a third group of driving forces, concerning the, apparently, intangible question of self-identity. For many people, rural development represents a possibility to develop and distinguish themselves. It involves their own work, their own initiative and their own personality – it involves the possibility to particularise farming into something that both has the right to exist in contemporary society and also bears the hallmark of individuality.

The interrelations between these driving forces vary between places and particularly over time. One frequent starting point is the search for more craftsmanship and more entrepreneurship (that which farmers used to define as 'joy in the hobby') and/or the search for an identity of one's own (especially by farm women), after which the first group of driving forces becomes dominant in a process of professionalisation.

Thus emerge those amazing enterprises that are unthinkable in the conventional view. These are enterprises that realise a milk price of at least NLG 2 per kg (compared to NLG 0.70 in conventional agriculture); these are enterprises that provide work and income for 8 to 10 labour units, whereas usually only 1.65 labour units would work on farms of similar size. Once they were refrigerator anomalies or black swans that no one wanted to see; now they are the anchors of a new paradigm (Broekhuizen *et al.* 1997).

Yet it should not be forgotten that generating new types of rural development is, in practice, always extraordinarily difficult. Diversification or rural development is not simply engaging in something

new. It does not revolve around filling seven jam jars. What is of essential importance is the building of new socio-technical networks, that produce a precise coordination of activities over time and in space, and which adequately connect production, processing, distribution, and consumption. Let us examine two examples to illustrate the complexities of rural development processes: the ongoing unfolding of organic agriculture and the construction of the first environmental co-operatives. Both examples involve the coordination of various projects *vis-à-vis* each other to create the required coherence.

The ongoing unfolding of production, processing, distribution, and consumption of organic products raises a wide range of challenges, which essentially revolve around the adjustment and coordination of different practices and projects, both spatially and temporally. Durk van der Schaaf of *Soune Groun* (the Frisian association of organic farmers) illustrates this in a quote from 1996:

*'We [the organic farmers] produce too much by now for the small circuits we have always used, but too little for the large supermarket chains.'*³³

The linking of different projects is the core of, and represents at the same time the greatest challenge for, organic agriculture.³⁴ Everything that is taken for granted in conventional agriculture (because it has become institutionalised), is a source of constant worry in organic agriculture. According to Van der Schaaf, it is not only the link between production and consumption that is important (via various interlinkages, since 'shop keepers have to back it up'). Organic agriculture implies also the need for an often radical change in cropping plan, for example from a 1:3 to a 1:5 cultivation. This implies, in turn, that more products have to be grown, more knowledge needs to be developed and more supply channels have to be found, since a wider range of products is provided: from summer greens and salads to winter root crops. More land is required in order to plan and coordinate cropping plans collectively. The latter is also to 'prevent everyone from choosing the easy crops'. Overproduction should be guarded against, whilst a shortfall in production needs to be avoided too. Thus, knowledge of the market and sufficient flexibility to anticipate changing circumstances are crucial. If the market is an 'invisible hand', organic growers still have to anticipate its moves and to direct them. The market asks for adequate directions, interventions and arrangements (North 1990; Ostrom 1994). Production quality, continuity, accessibility, and reliable prospects cannot be guaranteed without them.

The issue of scale becomes important, since many farms appear to be too large during or after conversion. A lot of labour is needed to produce organic crops; the relevant technology is not, or hardly, available. Thus, crop improvements and/or the re-adaptation of existing machinery become necessary. Farmers have to do this themselves or find others who are sufficiently interested.

In short: the unfolding of organic agriculture (or more generally, the renewal of the sector) requires *agency*, the capacity to actively and

effectively influence the course of events and adjust it to own insights and interests.³⁵ In other words, the often vague concept of agency emerges here as *the capacity to connect and coordinate various relevant (or potentially relevant) projects in order to create convergence and synergy*.³⁶

An additional complication here is that the different projects (for example the demand for, and supply of, organic products, the processing capacity, the intermediary structures for distribution and supply, etc.) have to be attuned to each other *over time*. Decisions about conversion, and the level of ecological production next year, presume an assessment of the sales opportunities in two years time and beyond. The extension of facilities for processing, distribution and storage presume at least minimal certainty about future production and consumption levels. Et cetera.

This means that agency also involves the capacity to handle uncertainties, to plot a course of action in situations where not everything is clear. At the same time, another, probably essential, feature of agency emerges. Agency involves not one single intervention but is a continuous process, which also has to be multi-dimensional: the necessary (but as yet uncertain) convergence and synergy need to be realised through different lines of communication – to create clarity where there is presently uncertainty. Uncertainty and lack of clarity initially dominate. They are reduced gradually as a result of the creation of certainties along various lines: experiments take place with initially unknown techniques, through which new knowledge is gained. Relationships with consumers become consolidated, again generating new knowledge and forging new alliances.

A striking and intriguing contrast can be made with the highly formalised approach, embodied in the field of planning and project development (Long and Van der Ploeg 1990, 1995). In institutionalised planning procedures, the objectives are clearly defined and mostly exactly quantified. The same applies to the steps that have to be taken in order to reach these goals. However, in the (endogenous) practice of rural development neither the one nor the other is possible. ‘The most important thing to do is to define the boundaries’, according to Henk Brouwer in Chapter 1. The institutionalised planning approach suggests a high degree of precision and accuracy, and is more easy to be subjected to external control than the more ‘internally-driven’ development processes. On the other hand, if (pseudo-) precision and controllability are absent to a certain degree, the creation of a *social basis* is an essential ingredient of practical renewal. A solid social basis leads to the emergence of faith (I see faith here as the opposite of trust). Social basis increasingly provides support for and generalises the expectation that projects can indeed be brought together.

This can be illustrated through the example of another practical innovation: the founding and unfolding of one of the first environmental cooperatives in the Netherlands, the Easternmars Lânsdouwe Society

(VEL) in Oostermeer, Friesland. According to Fokke Benedictus, the chairman of the VEL,

'it is very important to us that research in this area showed at a certain point that 90 per cent of the farmers were interested in farmer-led nature management, provided it would not result in additional planning restrictions and provided there would be reasonable compensations. We knew then that there would be support in the area; that was a very important, maybe the decisive, impulse for us to get to work'.

Support from the majority of farmers does not however imply that the social basis was completely in place. Social support implies the interlocking and mutual reinforcement of various projects. Support also presupposes that the government agrees with the developing project and is willing to create the necessary conditions for the plans. If such a prospect had been absent, VEL would have faced, according to Pieter de Jong, one of the founders, the problem that

'our willingness would have turned out to be mere foolishness; in that case we would be making the area more beautiful and more attractive, after which government can say 'gotcha! Thank you very much, and here are some additional restrictions because the area is so beautiful''

This objection deserves additional emphasis. Past experience has taught the farming population that today's good behaviour can too easily become tomorrow's millstone – if not around your own neck then around your neighbour's. The erosion of trust (see Chapter 8) appears clearly here. And conversely, the value and importance of other 'preparatory'³⁷ activities can thus be recognised.

With hindsight, an earlier visit (1986) by the initiators of what was to become the VEL, to the European Commission in Brussels turns out to have been very important. It provided insights into the expected changes in the Common Agricultural Policy (CAP). The construction of a social basis will always cross 'borders'. Support cannot solely be attributed to 'internal' or 'external' factors. Only if the two come together, the so-called 'social basis' will begin to consolidate. In other words, the social basis is the *virtual network* as discussed in Chapter 1. This is particularly true in the start-up phase.

Furthermore, it should be stressed that a social basis is never completed – it has to be reproduced and extended continuously in order to convert existing uncertainties into certainties. Thus, it was very important for VEL that the initially hesitant attitude of the farmers organisation was transformed into concrete support. The coalition with environmental and nature organisations was also important. The granting of the Frisian Environmental Award to the VEL and the winning of the national prize for exemplary plans (given by the National Institute for Spatial Planning) gave the growing social basis a solid recognition. The final step in all this was the recognition of the society by the Minister for Agriculture Van Aartsen who gave VEL, in early 1996, together with four other environmental cooperatives the green light to realise their plans. Thus it was recognised that the government's generic policy had to be adjusted

(by means of exemptions) in order to provide the environmental co-operatives with the necessary room for manoeuvre to achieve the general goals facing the sector.

However, the initiators first had to play a game that was sometimes dazzling, at other times very risky. Support in the area could only be transformed into active participation in the VEL if government would actually create space (in the form of exemptions, in the form of regionally specific modalities for general nature and landscape programmes, etc.). Conversely, government was only willing to think about providing this space if the VEL would orient the expected support towards the realisation of various government objectives. From a distance, this is a perfect catch-22 situation (or a prisoners' dilemma; Elias 1972). Operating successfully in such a situation is only possible by presenting something (in this case the notion of a well-functioning environmental co-operative) that does not yet exist, but which might be achieved. Something that those (potentially) involved know it is better to be involved in, than standing on the sideline. This means operating with the possibilities inherent in the current situation – possibilities that can be realised if interlocking takes place. However, the danger of a prize blunder is never far off: the initiators know that they are sticking their necks out. Still a social basis emerges, as an initially fragile construction relating to something that could happen; as a construction that becomes gradually consolidated.

This fragility is illustrated by an as yet unrevealed episode. In the week before the foundation of the VEL, all farmers from the area were invited to a closed meeting in the church of Heechsân in order to confirm the social basis and its solidity. The opportunities offered at the provincial and national levels had been explored explicitly. The crucial point at this meeting was to adopt a strong position that involved all the farmers in the area. At the last minute, however, there was threat of a hitch. The embargo on publication was violated in the farming press; as a result, on the eve of this pivotal meeting, the public (or at least the farming public) was already aware of the founding of an environmental co-operative in Eastermar. This could have been interpreted in the wrong way: 'It is already in the papers when we still have to discuss this!'. However, thanks to the authority of men like Fokke Benedictus, Hedzer Bergsma, and Pieter de Jong this pitfall was avoided. During the meeting, support was further consolidated. In fact, the VEL was established there and then (spring 1992), but nothing was allowed to leak out (what again almost went wrong). VEL was officially founded in the following week, in the presence of Members of Parliament, a solicitor, and the press.

The VEL is now a thriving local organisation, and it is copied in numerous places. The area obtains considerable additional income through the VEL, as well as legal and administrative space to combine agriculture and nature management. The VEL has now almost become an obligatory passage point to all policy units that have plans for the area.

With hindsight, this story can be told as a chain of smart moves and prudent steps that collectively compose a success story. However, such a

story would be patently untrue – precisely because it would overlook the considerable agency expected of the initiators and later managers. It would also be untrue in so far as it would bypass all uncertainties that occurred in the process (you can *be* right, but it still has to be *proved*). And finally, such a story would be untrue if it would suggest linearly growing support. Support (as a network connecting various projects) has to be continuously reproduced. Immediately prior to, and even during the finally successful encounter with the Minister for Agriculture, support was put under extreme pressure.

Agency is crucial to the creation and reproduction of support. The leaders of environmental co-operatives often have to anticipate expected events. They have to describe to their members possibilities that are not yet reality. Furthermore, they have to find ways in which to obtain from their supporters a mandate to negotiate further. Subsequently, the leaders also have to anticipate the outcomes of their discussions with governments and other organisations: 'if you do this and that with our consent, we will make sure this and that will happen in our area'. In short: they have to play chess on two boards simultaneously and coordinate the results of both games in a very careful way.

On various important issues, the leaders reach beyond existing arrangements and institutional patterns in order to explore the possibility of new connections. This requires much effort. As Peter Bol, one of the leaders of the environmental co-operative of growers in the Westland, puts it: 'You can go a long way, but there are limits . . . you are, and remain, responsible and accountable . . . you must always be very careful not to put a rope around your neck . . . and vice versa, even if the work is about to become a success, you'll still have to be careful'.

In times of change, it holds even more true than at other times that practices have to be assessed by what they are *becoming*. Many practices are, to use an expression of Woody Guthrie, 'prayers for the future'. I emphasise this because several scientific publications that appeared in the first years of the founding of environmental co-operatives such as the VEL gave them a bad press (see for example Driessen *et al* 1995, who took environmental co-operatives for what they *were* at the time, not for what they were *becoming*.)

Such a position is exemplary of the expert system as a whole: development opportunities contained within the present are ignored. Only *grand designs* count – that is, the reordering situated in the future, by which everything can be imagined *separate* from any practical restriction. It goes without saying that the *lack of support* (or social basis) is an almost chronic phenomenon in this.

Whether we are talking of the production and marketing of white cheese or the establishment of an environmental co-operative, the difficulty always lies in developing adequate networks. This also defines a boundary. The unfolding of agency usually involves high transaction costs: everything has to be followed through; interventions, decisions, and adjustments have to be made. The development of new socio-technical

networks can be likened to a stone falling into the water: the ripples spread concentrically. When one problem is solved, another one appears. If in existing networks everything interlocks seamlessly, those involved in the building of new socio-technical networks are confronted by a chain of frictions. Therefore, innovation extends up to a point when everything becomes too much, when transaction costs (time, effort, as well as money involved in the realisation of something) exceed the expected benefits.

A simple illustration can clarify this. A number of firms operating in the flower and vegetable sector specialise in the generation of vegetable matter that is further processed on a global scale. I know a few daisy growers who supply almost the whole world with plant material. These farms are exceptional because they combine the global and the local in a fascinating manner. Parts of the production process are realised in Poland and India; refrigerated trucks and planes are part of this socio-technical network. These enterprises (all situated around the town of Aalsmeer) usually employ 2–5 people who do nothing but liaise with buyers (of which there are between 20 and 60 per farm). These people fly constantly around the world to consult their customers, to explore regional markets, to explain which new lines are being selected, and subsequently to report the necessary adaptations to the holding company.

To speak of a market would, in this respect, be a very extreme abstraction. It is a socio-technical network with which, and as a result of which, a market is *created* and reproduced. At the same time, it is clear that this socio-technical network implies resources: two to five people per firm who make this network into a reality. In short, time, effort, and money are involved – embodying and representing agency.

This is precisely where innovation can go wrong: the marketing of a new product, getting a new solution accepted by both government and one's supporters – all these activities are limited, because of the extensive demands that are made on agency.

It is perhaps the tragedy of our time: an incredible amount of new prospects, new development opportunities, are emerging as a result of our capacities. At the same time, the realisation of those prospects demands so much agency that, by implication, most of these new development opportunities remain missed. Because of the ubiquitous nature of the prevailing technological regime, many opportunities become inhibited.

These inhibitions may spring from many mechanisms. One mechanism is the high level of specialisation that exists within the complex state apparatus, as a result of which the design, interpretation and application of particular rules fall to one or a few specialists. In such situations, every trace of a *trias politica*s, every possibility of 'checks and balances' is by definition absent. Another mechanism through which the realisation of agency can be blocked is the attribution of absolute primacy to the prevailing expert system in all questions involving knowledge. In these situations, the expert system (which has elaborated only one type of

development into a technological trajectory) will tend towards extreme conservatism. Openness to new approaches and 'countervailing mechanisms' are crucially absent. Recent years have provided poignant cases of this.³⁸

Against this background, it is not surprising that an important part of the practice of rural development follows the lines of a search for autonomy. It is as if the creation of *freedom from* is again very topical (now not so much *vis-à-vis* markets but above all *vis-à-vis* the institutional framework), in order to achieve *freedom to* generate innovations. The use of one's own resources (irrespective of their nature), a gradual, step-by-step extension enabling learning-by-doing (Dosi 1988) and early adjustments, the ongoing re-evaluation of activities, and the slow but gradual creation of profitability are essential elements in this. Consequently, transaction costs can be kept at a low level and, above all, spread over a longer period of time. All these elements empower the process of rural development; and they are essential in the discussion of the *how* of rural development (see further De Bruin 1997b).

9.4 The impact of rural renewal revisited

In Table 9.5, I have summarised a number of characteristics of an innovative farm on one of the West Frisian Islands in comparison with a larger group of average farms in the Frisian countryside. The farm in question (run by Getje and Piet van Zwolle) exemplifies the almost classical lagging position of the West Frisian Islands. The output per 100 kg of milk is, due to high transport costs, *lower* than in the reference group (NLG 69 v. 72). Fertiliser costs are *higher* (NLG 8 v. 4 per 100 kg milk). They are not used excessively, but the costs of transport from the main land to the island are considerable. Lower revenues and higher costs: a classic and almost inevitable foundation for marginalisation.

However, the farm has developed particular innovations to counteract this 'structural handicap'. About half the farm is under nature management. The associated payments are included in the entry 'other revenues' (NLG 11 v. 3 per 100 kg milk). High-quality beef cattle are kept on this natural land which find their way to local restaurants. Local and high-quality products are in high demand on the tourist market, which is very big in summer. As a result, the entry for 'output and change in volume dairy cattle' is NLG 21 per 100 kg milk as against NLG 9 on the main land.

The net effect of this combination of innovations (each of which generates only a modest income effect) creates, due to synergy, a margin per 100 kg milk that is significantly higher than that of the reference group: NLG 73 v. 63 per 100 kg milk. This is the well-known 'ten cents in the milk' (as it is called in the countryside) that make all the difference.

Table 9.5 Farm data of an 'innovative' farm on a West Frisian Island compared to a reference group

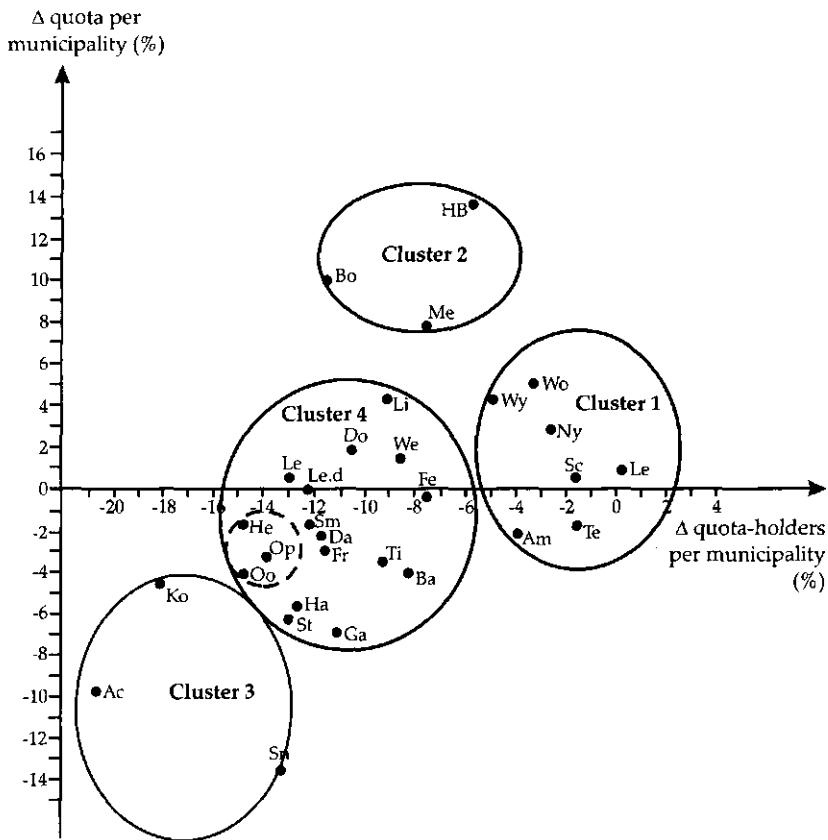
Indicator	Innovative farm	80 farms BEAG
Total land	40	
Grassland (ha)	33	
Maize (ha)	7	
Milk quota	330,000 kg	
Dairy cows	45	
Calves and beef cattle	82	
Quota / ha	8250	12,800
Milk / cow (kg)	7591	7344
Butterfat (%)	4.32	4.48
Protein (%)	3.36	3.49
Output and change in volume dairy cattle / cow	1645	679
Concentrates / cow (kg)	2546	2035
<i>Revenues in NLG per 100 kg of milk:</i>		
- from milk	69	72
- output and change in volume dairy cattle	21	9
- other	11	3
<i>total</i>	101	84
<i>Costs in NLG per 100 kg of milk</i>		
- total feed costs	12	12
- AI/vet/other livestock costs	8	5
- fertiliser costs	8	4
<i>total</i>	28	21
<i>Margin in NLG per 100 kg of milk</i>	73	63

But does the importance of the figures in Table 9.5 have a significance that reaches beyond the individual farm? Do they have a wider applicability? My experience suggests that they do. As a member of the Langman Commission,* which had to draw up a plan for economic and spatial interventions in the north of the Netherlands (Langman 1997), I obtained detailed data from the Central Agency for Quota Registration (COS) in the spring of 1997. These data relate to the development of the milk quotas per municipality and the number of 'quota-holders' (a new term that corresponds closely, although not exactly, with the more widely used term dairy farmer) for the 1990–1995 period. The developments in the province of Fryslân are summarised in Figure 9.3.

It can be seen at a glance from Figure 9.3 that different development processes occur. Even though quotas are falling and the number of dairy farmers (quota-holders) is decreasing sharply at both the provincial and national levels, this tendency is not universal. There are municipalities that buck the trend. I have clustered the municipalities in four groups in Figure 9.3.³⁹ In one group (cluster 1) both the number of quota-holders and the volume of quota remain *grosso modo* the same. More generally, the production potential in these areas is maintained at such a level that the associated employment remains stable.

* Translator's note: The Langman Commission was an independent entity, operating on request of the Dutch government, that had to search for ways to strengthen the economy of the North of the Netherlands.

Figure 9.3 Development over time of the total quota and the number of quota-holders per Frisian municipality, 1990–1995



Why are there such differences? It is remarkable that all three of the West Frisian Islands on which farming still takes place (Schiermonnikoog, Ameland and Terschelling) fall within this group. Diversification of farm development has taken place on these three islands to a much higher degree than on the main land.⁴⁰ Alongside agritourism (for example, all dairy farmers on Schiermonnikoog have a mini campsite and old sheds converted into a series of charming apartments; on Ameland too agritourism has been an important fact through the ages), the generation of special, high-quality products (on all three islands), farmer-led nature management (sometimes in combination with the generation of quality meat – as in the example described above) and direct selling play an important part. In recent years, this diversification has been extended further. The Waddengroep Foundation (Roep 2001), a network of tens of producers and processors from the islands, constitutes an important carrier for this further development.

The position of the three West Frisian Islands in Figure 9.3 demonstrates that diversification can make an important contribution to the rural economy. In this way, the quota (which would otherwise flow out of such

zones), can be maintained and, moreover, extra employment can be created. In other words, Figure 9.3 provides evidence of the regional impact of innovations at the micro-level as summarised in Table 9.5.

We have thus encountered one strong example out of a broader range of potential strategies⁴¹, that can maintain or create employment in the agricultural sector. These are strategies that have proved their value in practice. They are also strategies that, one would think, the Ministry of Agriculture as an expert system, would take note of and try to encourage elsewhere in order to create the 'vital countryside' that the ministry has spoken of. Strangely enough, this does not happen.

9.5 The Ministry of Agriculture as non-agency: a case study

In the spring of 1995, the then Minister for Agriculture, Van Aartsen, placed rural renewal and rural development on the political agenda for the first time (a development, which came about, interestingly, *outside of* the official channels). *Dynamiek en vernieuwing* (*Dynamics and Renewal*) was the title of his political manifesto. It was the first in, what will become later, a long line of reports. The stream of reports swelled especially during the term of office of Minister for Agriculture Brinkhorst and State Secretary Faber. The intentions that they articulate are honourable. However, despite good intentions, an enormous disconnection remains between policy and practice: between the *intention* to encourage rural development effectively and the *practice* of rural renewal. Thus a sheer *virtual* world is continued: both creating and frustrating illusions. The ministry declares itself in favour of rural development, but actual rural development practices are frustrated by the same ministry. Before I will discuss this more generally, I would like to return to one of the underlying themes of this chapter.

On 3 April 1998⁴², Minister Van Aartsen informed Parliament that he 'has decided on the basis of two reports (an evaluation report of the IKC and the own interim evaluation of the environmental co-operatives)⁴³ to continue the experiment, in a reinforced form'. The minister refers to 'the success of the environmental co-operatives, the increased zest, and the achieved environmental gain'. Also, 'breakthroughs have been made in the relationship between farmers and social organisations. A change has occurred in many cases in the attitude of farmers towards the management of nature, landscape, and the environment'. The minister clearly states his intention of giving the experiment 'a new impulse'. In fact, the exact opposite would happen, against the will of the Minister and Parliament.

I have been involved, at the request of Minister Van Aartsen, in the development of the environmental co-operatives, and acted as chairman in the regular consultations between them and the ministry. From this position, I have come to develop some understanding of the operations of the Ministry of Agriculture. The directorate involved in the experiment was the, then, Directorate for Environment, Quality and Health (MKG).

The directorates of the Ministry of Agriculture each have their own *domain*, a field of activity that is regarded by the directorate in question as its own. The directorates guard their own domains carefully; other directorates are regarded suspiciously and border disputes arise regularly – even between the directorates and the management board (the highest political unit within the ministry). The experiment with the environmental co-operatives was experienced from the outset as a threat to and to a certain extent an assault upon MKG. It was an idea that originated in the *outside world* – it did not match MKG's own project. It was also a risky project, certainly in the eyes of MKG staff. Hence, there was no real commitment.

It took MKG six months to study the plans that were submitted, on time, by the first five environmental co-operatives. However, at their first meeting the MKG director advised the co-operatives 'to make a start at specifying their development plans', illustrating that not only had he not read them, but that he was not even aware of their existence. In the same meeting, the farmers involved stressed that they had had frequent discussions with the Standing Committee for Agriculture of Dutch Parliament (VCL), which supported the plans. The response of the director in question was that 'Members of Parliament do whatever comes up, one day they want this, the next day it's something else, you cannot take them seriously'.

Further policy preparation by MKG continued in the same vein. Normally directorates summarise current issues in well-organised files, and present the minister with suggestions for action and decisions. The same happened here. However, the minister rejected most suggestions made by MKG and decided to create substantial opportunities for the first environmental co-operatives. This involved great conflict with MKG, who saw that its own domain was being threatened.

From discussions with Ministry personnel I have come to understand 'that it is quite a job to organise something if the directorate is not inclined towards it'. The director of MKG confirmed this, when, towards the end of Van Aartsen's term of office, he started to act as if 'this minister is leaving anyway . . . we can return to business as usual'.

At any event, with the active support of parliament, the minister, the farming press, and a few regional directorates of the ministry (the Directorate of Northern Regions in particular) the green light is eventually given. The environmental co-operatives get to work and achieve a number of considerable successes. MKG plays a minimal role in these successes. The environmental co-operatives are constantly confronted with the prevailing technological regime when seeking to realise their plans. Granted some space through some exemptions, they almost immediately ran into new barriers. Confronted with new obstacles, the environmental co-operatives developed additional proposals. MKG's response was simply that the proposals did not correspond with prevailing procedures and routines, and were, therefore, unworkable. No effort was made whatsoever to attempt to solve the many practical

problems in the relationship between government and co-operatives. This is not only due to unwillingness, but also due to a lack of power. MKG has to operate alongside other directorates. The Ministry of Agriculture, in turn, has to share decisions with, for example, the Ministry of Housing, Spatial Planning and the Environment (VROM). Other matters fall in the sphere of competence of the Provinces. All these actors are connected by a network, which can only function by the grace of a high degree of consensus, which, in turn, has to be formalised and confirmed time and again by an uninterrupted chain of approvals: a decision is only made when every authorised actor has approved the document.

Consensus and network make the government apparatus into a well-oiled machine, i.e. an integral and important part of the prevailing technological regime, geared to continuous structural development and the centralisation of decisions related to this. Environmental co-operatives potentially collide with this regime. They represent (a modest degree of) local self-regulation and a (careful) diversification of farming, which is in stark contrast to the notion of structural development. Inevitably, frictions arise when environmental co-operatives became a reality. Although these frictions could easily be solved, MKG refused to develop the required agency. More generally, proposals could not proceed through the network of directorates, ministries, research stations and provinces, faster than the most conservative link would allow. Ten approvals can be negated by a final, eleventh, disapproval. Innovation has to be geared to the lowest common denominator. In practice, nothing at all can be changed.

This episode teaches us that there are limits to democratic political control. A minister can deal with the details of a case twice, or three times, but not on a weekly basis. He must be able to rely on his civil servants. The same applies to parliament. In the end, only irritation remained: *'have they still not dealt with that job properly?'*

In the first chapter of this book, I introduced the notion of non-agency. On the basis of the experiences with environmental co-operatives, it can be said that the current Ministry of Agriculture embodies this principle through its inability to move beyond the prevailing technological regime.

The new impulse mentioned by the minister in April 1998 (in his last month as Minister of Agriculture) was effectively dismantled by MKG. The environmental co-operatives were told that no 'proposals for real self-regulation are under discussion' (after MKG had rejected them one by one). Meanwhile, over 300 agricultural societies involved in the management of nature and landscape have been founded in the country. Many aspire to similar agreements than the ones created by Van Aartsen for the first environmental co-operatives. MKG remained conspicuous by its non-agency: it has failed absolutely to develop any policy, not even three lines of text. At most, MKG made outflanking movements: commissioning small research activities, organising meetings, consultations – in short, everything necessary to put non-agency into

practice. The potential that has presented itself in the country is effectively frustrated.

Discongruity

Considerable discongruity exists between the process of renewal that is occurring in practice and the change that the Ministry of Agriculture wishes to supervise, facilitate, and support. In the report *Kracht en kwaliteit* (*Power and Quality*) of the then Minister for Agriculture, Apotheker, much is made of the role and importance of environmental co-operatives. In the meantime, the ministry has largely alienated itself from those who built up these co-operatives. Similarly, no effective instrument for providing the necessary space for the new associations is yet in place. Once again, innovations are suffocated; all which remains are hidden novelties. Thus emerges an almost hallucinatory dream-world. Judged by reality, the images sketched by the ministry are nothing but an illusion, *virtual* images: deceptively real, but non-existent.

The same tension between rhetoric and reality can be found in the relationship between rural development as practice and the work of the Commission Van der Zwan, charged with implementing the *Stimuleringskader* (intended to encourage rural development). Here too, a rupture emerged between rural development as government project and rural renewal as practice. The West Frisian Islands bubbled with innovations and island entrepreneurs were awarded an innovation prize by the minister, yet the Commission Van der Zwan rejected all submitted proposals as they did 'not possess enough innovative potential'. The same fate met the pioneering proposals of the Dutch Western Farmers and Horticulturalists Union (WLTO) and tens of other proposals of innovators who were seeking to deepen and extend the existing processes of renewal. Pressure behind the scenes from Members of Parliament, from the Council for Rural Areas and from the Provinces was to no avail. The stronghold of the ministry increasingly withdrew. The same occurred to the development of regionally specific products, in the search for new environmental solutions, with the proposals of the Commission Langman, and so on. Discongruity was everywhere.

What are the reason for such discongruity? As far as I am aware, there are a number of interlocking factors:

- a The new RD current is not regarded as endogenous development, as something that is already underway and which the ministry could and should join. Rural development is understood, both at the ministry and within the expert system, as a new project, as something that still has to begin. The key word is *direction*. The Ministry of Agriculture feels that it needs to give direction to rural development, just as a play needs to be staged. Rural development, as it exists at present, is regarded as a chaotic process lacking a preconceived blueprint.

Coordination is indeed very much needed. The innovators themselves did and continue to ask explicitly for a framework. But in the shuttered wheelhouse of the expert system, there is so little connection with, and

knowledge of, the practice of agriculture that any direction it could possibly provide would become a vehicle for the opposite.

Giving direction presumes a script. This script (what is rural development, how does it take place, who plays which part, who are the spectators, and what do they expect?) is not derived from the autonomous processes that have already largely changed the nature and identity of Dutch agriculture. The ministry wants to write the script itself in order to be able to claim, and effectuate, an appropriate directional role. Simplicity of prescription and simplicity of control remain the rules of thumb here, which conversely also emphasize the centrality of the *director*.

- b Subsequently, the development of the script is delegated to the various agencies that collectively comprise the expert system. To this end, vast flows of money are oriented towards the new theme of rural development, producing various programming studies, explorations, and analyses of supply and demand (AB/DLO and SC/DLO 1998; NRLO 1998; Vos *et al.* 1998; LEI 1999). Yet the independent researchers and institutes, which had accumulated a considerable knowledge about rural development as practice, are excluded from conducting the aforementioned studies, explorations, and analyses. Thus the expert system as the collection of institutional interests attempts to regain the lost territory. It is prepared to put up with doing an incredible amount of work twice, if not three times. It is apparently of little importance that the work produced is sometimes of painfully low quality.

Further down the line, the knowledge agencies involved find that they have to distinguish themselves (to prove their right to exist). In many discussions the message is heard that 'it is time to make something out of rural development that is of real use'. Usually, it is held in social life that one has to look after the pennies and the pounds will look after themselves. In the agricultural expert system the reverse seems to apply. The search is for the 'pounds'.⁴⁴ Finding the pounds provides the opportunity for the knowledge agencies to distinguish and present themselves. It is important *to make a difference*, to display agency (at face value at least).⁴⁵ Yet, by neglecting the pennies the empirical process of rural development is overlooked. Hence, the writing of the 'script' is completely disconnected from the real RD current.

- c Once provided, the thus constructed ruptures reinforce the opinion that direction is indeed necessary. The ministry is presented with new tasks, which demand its active involvement.

A, b and c define a *network* – a network which clearly and indisputably defines who is authorised to talk about what; a network in which there is consensus about which sources to tap. In that sense, there is undeniably an *agenda*. It is a network in which messages, symbols, and texts circulate – texts that (irrespective of the question whether they are actually right or wrong) become the point of reference for the trajectory ahead.

What are the distinguishing features of this network? First, it is essentially disconnected from the networks that have already been developed in the

practice of rural renewal. Second, it contains a considerable degree of incapacity. Since rural development is imagined in terms of juxtaposition – that is, in addition to continuous structural development – it cannot be but an immature, half-hearted notion, especially for the agricultural population. Juxtaposition also implies that rural development is a not a comprehensive new set of tasks to be shared among the directorates that comprise the ministry – it can be allocated to just one directorate.

Thus, rural development becomes the domain of one particular directorate, which is consequently engaged in boundary conflicts with other directorates and which cannot progress beyond the lowest common denominator as defined by the surrounding directorates.

- d Subsequently, and I return here to the sketch of the interlocking moments that collectively result in discongruity, new budgets are created for rural development. This in itself is remarkable. Rural development requires not so much additional funding but the removal of the most restricting regulations. This could result, directly and indirectly, in gigantic savings and hence in a powerful incentive for rural development. Typically (or perhaps typically Dutch), this is not the route chosen; instead, the preferred option is to buy off problems.⁴⁶ In any event, the provision of new funds introduces new formal rules (and new views of those who have to oversee the application of the rules). Thus a new tier of formalisation emerges, a further clustering of the rules, and a further stifling of rural development as a new development opportunity.

All in all, rural development is thus transformed from a meaningful practice with its own dynamics into a new macro-project that, because of the way it is constructed, is more likely to severely curtail the practice of rural development.

9.6 The countercurrent

At the same time that the future of rural development is frustrated by administrative incompetence, a new countercurrent is emerging. It revolves around the perspective of a rapid industrialisation of farming, which implies a simultaneous acceleration of scale enlargement. This new development opportunity is expressed in numerous studies and it is driven largely by agribusiness which see it as the beginning of a new macro-project. At the same time, a significant process of scale enlargement is taking place in parts of the agricultural sector. Although there are very few mega-farms (apart from the intensive livestock and greenhouse sectors), they constitute, together with the dominant technological trajectory and the perspective of liberalisation and price reduction, an indisputable indication of the future. At least, according to some.

One of the new mega-farms, emerging in the dairy sector, can be found in Witmarsum, Friesland.⁴⁷ In April 1996, 100 cows were being milked on this farm. Milking happened thrice daily, which was not that unusual at the time. In June 1998, this farm had 330 dairy cows. In the winter of that

year, the number had risen to 600, which were milked by ten milk robots. Further expansion was being planned by spring 1999. The farm has about 200 ha of land, but a lot of roughage needs to be bought in (incidentally, the dairy cattle are kept indoors all year round). The cattle needed to realise the expansion are been bought in. The farm employs four full-time workers. In other words, the *degree of commoditisation* is very high. The owner, who lives in Monaco, regards this dairy farm as a 'thoroughly relaxing' activity, an accompaniment alongside his main job: director/owner of the TAS software company. Considerable purchases of quotas and land are necessary for the constant expansion of this mega-farm, which collides of course with the growth needs of other farms. 'They just buy everything', is a much heard complaint in the area. The allocation problem implied by this case can be illustrated by estimating the quota of this farm. This quota amounted (by early 1999) at least to 5.5 million kg milk (*Landbouwbld* 1998). Compared with the average farm (of about 350,000 litre) this implies that the creation of one of these mega-farms displaces 16 farms and that 24 jobs are replaced by four new ones.⁴⁸

Structural development represents, above all, a reversal of general socio-economic relations and the implied principles of allocation. This had already become clear before the mega-farms actually manifested themselves in the dairy sector.

For the sake of brevity, I would like to refer to Table 9.6 in which (starting from the different output–cost relations implicit in various farming styles) the size of farm quota has been estimated that is needed to realise an annual labour income of NLG 70,000 per labour unit.

Starting from the total provincial quota for Friesland, it is possible to calculate the amount of space available for farms if different farming styles were to dominate. It follows from the data that the Frisian milk quota could be met by between 4600 to 6300 farms. The total agricultural income earned in the Frisian dairy sector would vary from NLG 490 to 630 million per year. Within the range spanned by the empirically distinguishable farming styles in the Frisian dairy sector, the choice for a larger number of farms cannot be understood, as many would argue, as a 'redistribution of poverty'. Instead, it implies an increase in regional agrarian income. It is structural development that would lead, at the provincial level, to a reduction of employment and of income.⁴⁹

These results emphasise the extent to which structural development at the micro-level can go together with the opposite trend at the macro-level: employment and income are actually reduced. The current development of mega-farms is nothing but an ulterior deepening of the problem: only 320 mega-farms, like the one found in Witmarsum, would be needed to meet the total Frisian milk quota. This is less than 10 per cent of the present number of farms. Employment in the primary sector would thus be reduced to about 1200–1300 jobs.

Table 9.6 A comparison of various farming styles in relation to the provincial quota

	<i>intensive farmers</i>	<i>breeders</i>	<i>large farmers</i>	<i>cowmen</i>	<i>economical farmers</i>
Amount of milk needed to realise a labour income of NLG 70,000 per labour unit (kg)	402,000	351,000	406,000	396,000	297,000
Number of farms needed to milk the Frisian milk quota	4650	5325	4605	4720	6295
Provincial agricultural income if the Frisian quota is milked by one style alone (in NLG million)	488	522	580	628	617
Dairy cows per ha grassland	2.0	1.4	1.7	1.7	1.6
Milk quota per ha grassland (in kg)	14,370	9770	11,660	12,212	10,090
Area needed if the Frisian quota is milked by one style alone (ha)	130,660	190,714	160,290	153,197	185,233
Environmental pressure in kg N surplus per ha	550	348	469	399	354
Total N surplus in Friesland (in million kg N)	71.9	66.4	75.2	61.1	65.6

In many ways, the development of mega-farms represents an *involution* (Geertz 1963). The mega-farm embodies the modern variant of *rûch buorkje* (farming roughly). Their establishment would lead to a loss of income, employment, and quality of life. Landscapes and ecological values would be degraded. The scale of farm management demands a far-reaching rationalisation of fodder production and, hence, a homogenisation of the landscape: large plots, optimal mechanisation opportunities, an elevated carrying capacity and hence deep drainage, the absence of interfering elements such as isolated trees, wooded banks, contours and so on. The implications for food quality should not be forgotten since routine use of preventive medicines (such as antibiotics) will certainly prevail over early observation and specific curative interventions.

9.7 Is juxtaposition possible?

Can mega-farms and family farms, such as the ones we know at present, really exist alongside each other? Or are there too many tensions? Close observation shows that current and countercurrent (rural development and the creation of mega farms) are becoming involved in an increasingly bitter fight, a few aspects of which are described below.

- a First, a fierce struggle is taking place over the scarce development opportunities. The growth of the mega-farm described earlier (from about 1 million kg milk in 1996 to 5.5 million kg milk in 1999) implies

that 90 dairy farms have been deprived of the opportunity to expand their farm by about 50,000 kg milk. In many situations the opportunity for *gradual* farm expansion can be critical (especially at the take-over stage). Moreover, there is not a level-playing field. Tax-deductible quota purchases favour large farms more than others.

- The struggle for development opportunities takes place in numerous fields. It involves not only quotas, but also land, manure distribution options, emission rights, and, interestingly, the struggle for subsidies. This became clear in a somewhat surprising way when the regulation to encourage conversion to organic agriculture was implemented. During the short time that this regulation was active, 135 applications were submitted, collectively involving NLG 30 million. However, only NLG 10 million was available. After a lottery (i.e. a notarial draw), it appeared that the former state farm ERF (an enormous arable farm of about 1000 hectares) was among the fortunate ones. Thus, NLG 5 million of the available NLG 10 million went to one applicant; the remaining 16 farms drawn shared the remaining NLG 5 million. The vast majority of farms (118) received nothing at all. More generally, the development of a diversified agriculture is regarded with suspicion from within the countercurrent: diversified agriculture is seen as a restraint on structural development. Land, quotas, etc., which are needed for a rapid expansion of mega-farms, will not become available.
- b A second arena (where things are tough too) is spatial planning. The key concept here is the 'shadow effects' of planning. Initiatives to rural development are blocked in hundreds of places (sometimes having to go as far as the Supreme Court of the Netherlands) because it is feared that they could form a hindrance to the further expansion of large farms or mega-farms. A proposed farm campsite could hinder the expansion of a neighbouring farm in the future (as regards increasing stench, for instance). Thus, the plan for the campsite is blocked because of the feared shadow effects.
 - c The next arena involves the institutional framework around agriculture. For what reason, and for whom, do experimental farms operate, for instance? For an agriculture with 'future prospects' (as it is stated rhetorically) or as a sideshow? Only one farm (Aver Heino) in the national network of experimental farms was oriented towards organic agriculture by as late as 1998–1999.
 - d More generally, a heated debate rages in agriculture, in farmers' organisations and within the aforementioned institutional framework (including the agro-industry and the ministry) about how to conceptualise the agriculture of the future. Is it the so-called 'world-market agriculture' (this term was introduced into the debate by the Agricultural Economics Research Institute; see LEI 1999, p. 31 ff),⁵⁰ or is it an agriculture moulded to Dutch proportions? Regional farmers organisations such as the Dutch Western Farmers and Horticulturalists Union (WLTO), the umbrella organisation In Natura, which assembles many farmers societies for nature management, the GLTO (regional organisation for farmers in the provinces of Gelderland, Utrecht, and

Overijssel), and the LLTB (for farmers in Limburg) make a clear stand for the latter perspective. However, the perspective of, and for, a 'world-market agriculture' has already been consolidated. This struggle is also expressed in other ways: who is authorised under which conditions, for what reason, and for what purpose, to use labels such as quality, health, regionally specific, traditional, and so on?

- e The final arena involves the *future* spatial organisation of the Netherlands. The debate around this issue takes place at numerous levels, but hinges especially around the Fifth Report on Spatial Planning, which addresses the question where the best place is to situate which kind of agriculture?

Indicative of the growing tension between current and countercurrent is the application of a new type of spatial development – that is, a type of compartmentalisation of the Netherlands. Broadly speaking, this option involves putting certain zones aside for 'world-market agriculture' (these are the zones in which various environmental and planning restrictions can be lifted, in order to make this world-market agriculture competitive), while other regions are assigned to diversified agriculture.

I think that the effects of this type of spatial development will be catastrophic. I had to deal with this issue during my work for the Langman Commission. The ministry and the agribusiness proposed parceling out the north of the country into two large zones: the so-called Northern Shell (the northern peat region, the northern arable region, and the Frisian clay region), where space should be provided for accelerated scale enlargement, and the Drents Plateau (the province of Drenthe, the Frisian Woodlands, and the Zuidelijk Westerkwartier), where agriculture should be diversified. However, the crucial issue is of course that socio-economic development processes cannot be confined to lines on a map, let alone that they can be conducted by them (for a more general explanation, see Van der Ploeg 1995d). In other words, a considerable conflict will be generated in both zones.⁵¹ A really systematic solution to this issue (for example, through extensive farm relocation) will fail on its sheer uncontrollable costs and, beyond that, it will only be a short term solution. Moreover, two more principle questions remain: why is it not possible to redesign scale enlargement in such a way that it fits into the small-scale landscape of the Drentse Plateau? And why do the qualities and values of, for example, the Frisian grass region have to be sacrificed to unlimited scale enlargement?⁵²

Throughout this, another episode is taking place. This is the fight waging in the pig sector in particular – first against the manure and minerals policy, later against the solution to swine fever. This episode is no one-off incident; it is interwoven into the struggle between RD current and countercurrent. On a direct level it involves whether a sector that is largely disconnected from the society in which it operates has the right to exist. Indirectly it concerns the application of government finances: the billions of guilders required to control swine fever rendered the ministry somehow powerless in other domains.

9.8 Current and countercurrent: unmanageable tension

I have been a supporter of a multi-track policy for a long time. In essence, a multi-track policy reaches beyond the selectivity built into the modernisation project of the time: development opportunities were attributed to certain farming styles, whereas other farming styles became trapped and were curtailed (see Figure 9.1). Diversification beyond the confines of the limited blueprint seemed more than desired, particularly since numerous solutions to the many large problems with which agriculture and countryside were confronted, were slumbering in the many ignored farming styles.

I now incline towards a *different* view. Various development opportunities are inherent in Dutch agriculture. The associated competition (which I have tried to describe above), as well as the increasingly acute call for an agriculture that corresponds with more general social desires and needs, necessitates that choices are made. The development opportunity contained in a radical industrialisation of farming and its related acceleration of scale enlargement should be rejected because it results in an agriculture that does not fit with a highly urbanised society, and *also* because it shuts out and excludes other, more attractive types of farming. The two types of farming cannot happily (or otherwise) co-exist. Choices have to be made and these need to be made at the political level.

Debates take place and doubts are expressed at every kitchen table in the Dutch countryside: what is the right thing to do? Should we take out large loans, buy quota, and expand the farm? Or should we prepare the farm for heavy weather: accelerate redemption and try to keep costs as low as possible? Should we diversify? Or specialise? A normative choice is needed given all the uncertainties. Of course, every choice, whichever one, will be disputed – this does not alter the fact, however, that it will be experienced as a relief at the kitchen table.

Blocking the industrialisation of agriculture is definitely not a new theme. I remember the heated debates of the 1970s about what were then called mammoth farms: the large-scale, intensive livestock farms, from which the current mega-farms have grown. Obscured by the ‘sandwich concepts’ used within the sector (‘there should be ample development opportunities’, ‘scale enlargement remains necessary’),⁵³ an undercover operation has taken place: while the argument was put forward that family farms have to have growth opportunities at their disposal, mega-farms were founded that are a severe threat to these family farms at present.

In abstract terms, it is possible to imagine how restrictions could be implemented. Danish legislation, for example, does not permit a farm to have more than a certain number of livestock units. There is to be also a certain relationship between livestock units and the labour used. *Qua* tenor, this savours of Italian legislation about land reform, which resulted in the large boom in North Italian agriculture in the early 1950s. Another

option is a flexible upper limit: those farms that significantly exceed the average size lose the opportunity to acquire quota and/or land. Thus, growth opportunities will be limited to the smaller and average-sized farms. When the latter grow, both the average and the upper limit will shift. Hence, the very much feared stagnation will not occur: after a certain time larger farms will be able to grow again. What is avoided here is that growth opportunities are purely monopolised by the large mega-farms (as is increasingly the case today). Judging by the prevailing ideology, such an option is probably impossible: 'the free play of market forces would be disturbed by it'.

Some research experience gained in the course of 1998 and 1999, provides insights into such questions. The management of the Twickel Foundation and its tenancy commission requested the elaboration of a development plan for the agriculture on the estate. Twickel is a large estate. It comprises 6000 ha, 2000 ha of which are agricultural land. Over sixty tenants live and work on the estate. From the outset it was our impression that Twickel is a fascinating microcosm of Dutch agriculture, in which all the problems and conflicts that typify Dutch agriculture can be found. Farming on Twickel is variegated. Different farming styles exist; the development projects of the tenants vary greatly. Some opt for a gradual, step-by-step expansion, others would rather build up a million kg farm as soon as possible. Overall, growth expectations exceed the amount of land and quotas that are likely to become available.

On an estate such as Twickel there are unique circumstances: land is rented and quotas can be obtained at half price (the other half remains in hands of the leasing society). Access to land and quota are not mediated through the market here, but through a regulating agency: the Twickel Foundation. Hence, specific rules for land and quota allocation might be introduced and, eventually, be re-adapted.

The 'Flevofarm' is a favourite point of reference for some tenants in Twickel ('world-market agriculture' is apparently too far removed from the region of Twente). The Flevofarm stands not only for a large farm, but above all for a farm that can be worked unhindered by regulations, landscape values, and ecological obstacles. The notion of the Flevofarm contrasts with the situation of the tenants' own farm. The protection, management, and further development of ecological and landscape values take in a prominent place in the policy of the Twickel Foundation. Some farmers experience this as an enormous disadvantage, if not an unjust barrier to structural development. Other tenants, on the other hand, easily come to terms with it. Many look for diversification opportunities although this ran, initially, counter to the policy of the Foundation. Careful registration of each individual tenant shows that diversification (irrespective of the type) is the rule rather than the exception.

Eventually we succeeded in designing a development plan that was supported by all parties (for details, see Van Broekhuizen and Van der Ploeg 1999). The issue is not so much the details as how and why a

consensus could be reached here. Three issues are important. First, the notion of landscape played a highly important part.⁵⁴ If you farm at Twickel, you enjoy a number of advantages; however, the ways of farming have to fit into the landscape and the local ecological values – again this constitutes an exchange,⁵⁵ an exchange principle that was further elaborated in the development plan. Second, as a result of the procedure *every* tenant was taken seriously (interviews with each individual tenant was at the heart of our approach), after which the first designs of the development plan were discussed in meetings at the tenants' homes. These appeared to be crucial: arguing here for a jump to a 'Flevofarm' at Twickel implied outright that they had to tell the neighbours that they were no longer welcome. This was impossible given the existing local relationships. Hence, a third issue could be discussed. It is the search for those types of agricultural development (including diversification) that fit into the landscape and that do not exclude others (that is, they fit into local society). The role of the Foundation became redefined too: the Twickel Foundation will support those farm development plans (by means of quotas, land, and financial support) that fit best into the general objectives of the Foundation – that is, maintenance and reinforcement of agriculture and nature through a strong agriculture, in which the guiding principle is multiformity, multifunctionality and a broad basis (i.e. more, rather than less, farms).

Of course, the Twickel experience cannot be transferred easily to Dutch agriculture as a whole. The crucial meetings at people's homes (about 10–15 tenants, their partners, and successors at the time) cannot be repeated at the national level (although it would be a good idea if the regional farmers organisations would put the allocation problems, inherent in so-called structural development, on their agendas). Typically, Dutch agriculture has, until now, presented its bill to others. The south presented the bill of its environmental problems to the north. Dairy farmers pursue extensification at the cost of arable farmers. Arable farmers, in turn, threaten to change over to vegetable growing, which will disrupt activities elsewhere. The 'winners' are unconcerned about the supposed 'losers'. Exclusion of the latter is a prerequisite for the survival of the former. So-called competition among farmers is an old mystery. Farmers are not each other's competitors when it comes to output prices of products. Off-farm prices are usually determined elsewhere. Farmers compete over *future possibilities*,⁵⁶ except when a collective momentum, such as an environmental co-operative or a farmers' society, is created; everyone's existence is at stake in those cases. However, this demands a momentum, a programme that goes beyond mutual competition.

The relevance of rural development re-emerges here once again: rural development can be the framework within which, and as a result of which, competition can be controlled; in particular if new connecting frameworks can be found (the national food supply was a similar connecting framework in the post-war reconstruction). I will investigate in the next section the extent to which the notion of landscape can fulfil the role of such a connecting framework.

9.9 Landscape as ordering principle

Landscapes are the outcomes of co-production. Similarly, landscapes were and remain one of the mechanisms that regulate the further unfolding of co-production. Landscapes are objectified labour, which, in turn, partly regulate living labour, that is, the labour process. A particular ordering of space is implicit in all labour and production processes. Different farming styles result in different spatial constellations, just as a particular spatial constellation lends itself to certain development patterns and hampers others. Not for nothing is the struggle for accelerated scale enlargement translated into the compartmentalisation of rural areas, in the creation of 'free havens' or enclaves.

For a long time, the agricultural landscapes of the Netherlands became more and more particularised *vis-à-vis* each other. This was the logical effect of co-production, of the ongoing encounter, interweaving and mutual transformation of the social and the natural. During the modernisation offensive, a sea-change occurred. An unmistakable process of homogenisation took place as a result of land development and land consolidation; numerous landscape and ecological values disappeared. Rural areas were rationalised and standardised in pursuit of a farming style, designed by agricultural science. Due to the resistance of humans, materials, and nature (Roep 2000), this homogenisation process was never completed. However, the economic and technological possibilities that we now have at our disposal make possible a completion of what remained unfinished during the modernisation offensive. The further functionalisation of landscapes for the benefit of accelerated scale enlargement is still possible. Pleas for such a refunctionalisation are still being actively put forward. Ironically, these pleas are sometimes reinforced by nature conservation organisations: give us the 10 per cent that belong to nature, the remaining 90 per cent can then be allocated to agriculture to do with it what it chooses.

I think that the notion of landscape (and I define landscape also as the carrier of ecological and cultural-historic values, space for economic activities, etc.) can and should be used as the defining framework within which agricultural development should take place. Existing landscapes would thus become the touchstone which inform decisions about which developments can take place and which cannot be allowed. This would also result in the activation of a new design capacity: intended developments are to be designed in such a way that they do fit in with the existing landscapes.

Of course, this position conjures up a simple, although not easily answerable, question: what is landscape? Numerous documents have struggled to satisfactorily answer this question (Bouma 1994; De Haan 1998b; De Jong 1999; De Klerk 1999). Conventional descriptions only raise a corner of the veil. The Ministry of Agriculture states in its 1992 Policy Document that 'landscape is the visible part of the earth – that is, the part determined by the interrelations and mutual influence of climate,

morphology, soil, water, flora, and fauna, as well as human action'. I would like to try to extend this definition a few steps further.⁵⁷

A landscape is not only a visible aspect. A landscape represents a *typical ordering* of many elements: of ecosystems, buildings, types of land use, ecological values, patterns of opening up areas, visual experience, accessibility, town–countryside relations, transitions, water management systems, history and so on. The areas of reclaimed land contain different forms of ordering than the more recently created polders. The ordering of both contrasts with that of, for example, the Frisian grassland region. The Beemster is different from the Wieringermeer and these two are different again from the large triangle between Leeuwarden, Franeker, and Sneek. Tuscany is completely different again – because of the forms of plots of land, different because of the placement of trees in the fields, different because of the presence of cypresses, different because of its architecture, different because of the way in which the vines are pruned. In short, landscapes are never accidental sets of loosely gathered elements. They always have a typical ordering, their own connectivity,⁵⁸ that reflects the multi-dimensional and integrated character of co-production; a certain coherence that gives both identity and beauty to the landscape as a whole and to its constituent elements.⁵⁹ Second, a landscape never exists as an isolated aspect of the earth. Each and every typical ordering is recognisable and gains uniqueness through *context* and *contrast*. A visit to the Lage Vuursche* will represent an encounter with nature to the average citizen from Amsterdam, an oasis in striking contrast with the city environment. To the field biologist the Lage Vuursche is a desert, a gloomy pine forest.

This raises two important notions for evaluating landscapes: the *comparative* and the *normative*. It is comparisons between one landscape and the other that often create a sense of value. Few Dutch people would recognise this, but, from an international perspective, the *Holocene* Netherlands (the set of former land reclamations, peat lands, and polders – in short, the provinces of North Holland, South Holland, Flevoland, and part of Friesland) constitutes a fascinating, unique, and informative landscape: it tells the story of twenty centuries of struggle against water in order to create what exists today. At the same time, it points, at the national level, to the high value of the *Pleistocene* Netherlands: apart from the typical, unique, and always different values of Zuid-Limburg, the Achterhoek and Twente, the Frisian Woodlands and the Zuidelijk Westerkwartier, the value of these landscapes lies in particular in their evocative contrast with the *Holocene* Netherlands. Without the contrast, we would probably be hardly or not at all aware of the uniqueness and beauty of the polder landscapes and land reclamations. Just as, conversely, the scenic landscapes and their closed character form an attractive counterpoint to the openness and extensiveness of the polders.⁶⁰ This leads to another issue. The experience of observing and valuing

* Translator's note: Lage Vuursche is a well-known pine forest 25 km from Amsterdam.

landscapes always contains a *normative* moment. Zuid-Limburg will be like 'a Van Gogh' to some, whereas the Flevopolder will be like 'a Mondriaan' to others. Noord-Groningen will probably conjure up an association with 'a Werkman', whereas the extensiveness of water and pasture will evoke an association with the work of J.W.M. (William) Turner to some.⁶¹ Not everyone will like the same paintings, tastes differ. The same applies to landscapes. The experience and valuing of landscapes is highly subjective and normative.

The conclusion is simple but important: the countryside should provide, both literally and figuratively, room for different values. It is also important to develop the social capacity to particularise different landscapes *vis-à-vis* each other.⁶² Finally, the creation of a hierarchy of landscapes, from lower quality to high quality, is inconceivable, although it is often done.

A final observation concerns the way that landscapes enrich our lives. Landscapes are one of the most important outcomes of co-production: of the continuous encounter between and mutual influencing of humans and nature. Humans and society get to know their limits in, and through, this co-production. In other words, in landscapes we recognise the things that rise above us, we experience the limits of what is possible. Landscapes are associated with a desire for beauty, for liberation. They can be mysterious or command respect: '*N'aime que la beauté / et qu'elle soit pour toi toute la vérité*' (Charles van Lerberghe and Alphons Diepenbrock, 'Berleuse').

Just as hundreds of thousands of Dutch people create a microcosm for themselves in which they can enjoy co-production on a small scale (allotments, home gardens, parks, the keeping of pets), individual landscapes, but especially the rich array of contrasting landscapes, offer the Dutch population as a whole and foreign visitors the opportunity to enjoy co-production on a large scale. In summary, our landscapes are and remain essential. We should cherish our landscapes, in the same way that we cherish the Rijksmuseum in Amsterdam.

While it might be obvious that landscapes are the outcome of co-production, this point still needs to be reinforced because of the nature of current debates, which threaten to destroy parts of it. Policies towards landscapes and their ecological values should not seek to eliminate economic activities. Landscapes are a particular outcome of multiple human activities. Without these activities, landscapes fossilise and we will become alienated from them. The real art is in embedding human activity in such a way that the typical ordering inherent in landscapes is further enhanced and strengthened – that is, developing co-production in harmony with the available landscapes.

Landscapes are also characterised by a remarkable *slowness* and *solidity*. They evolve, but at a very slow pace. A comparison of topographical maps of the Frisian Woodlands from 1850 with those from 1990 shows that much has changed; however, the indelible impression is one of continuity. It is remarkable how much has remained stable. This does not

alter the fact that our current technological capacities (and, alas, the often considerable cultural indifference towards landscapes) are such that we have at our disposal the concrete possibility to wipe out landscapes in one fell swoop. The heritage passed onto us by previous generations can be damaged irrevocably.

Connection with and attachment to landscape certainly do not have to lead to conservatism. As Van Mansvelt (1999) has made clear in a recent publication (continuing previous work by Vos and Fresco 1994), landscapes can and should be understood in dynamic terms: they contain certain development opportunities (just as they can be embellished and particularised), and exclude others.

Thus we have arrived at an issue that has received a lot of attention particularly in the Anglo-Saxon literature: landscapes (as part of the countryside) are increasingly part of a debate, they are contested (Marsden 1998b). These are 'controversial landscapes'. In the Netherlands, the most dramatic manifestation of this occurred in Gaasterland, where not just farmers but the complete rural population resisted plans to take 550 ha of agricultural land out of cultivation and to transform it to nature reserve for the benefit of the national ecological network (Nijhoff *et al.* 1996).⁶³ The direct everyday living and working environments (including the landscape) do not leave people unaffected. On the contrary, they become increasingly important.⁶⁴

In the Netherlands we do not have just one, or a few, landscape pearls. The whole of the Netherlands is one large, and well-filled, treasure trove comprising a set of contrasting landscapes. The treasure includes pearls, indeed, but also diamonds, crown jewels, emerald, pieces of jade, and so on. Some of these are heavily bruised and need speedy restoration (many urban fringes have become little more than dumping grounds), other areas need preservation, some further polishing.

I think that we should not only relate the notion of *kreas buorkje* (farming gently, or the *license to produce*) to environmental dimensions, to food security and safety, and/or to issues such as animal welfare. *Kreas buorkje* implies also the license to farm in such a way (and to develop the farm in such a way) that the concrete values and qualities (that is, the typical ordering) of the landscape (and its ecological values) are reinforced. Develop your farm however you want, as long as it is *kreas* – that is, as long as it fits into the landscape, into the type of nature that goes along with it, into the other activities localised within it, and into the wishes and needs of others that enjoy it. This is what the Council for the Rural Areas describe as 'new land boundedness' (RLG 1998, 1999).

Is this a utopian option, especially in a situation in which the countryside has become increasingly controversial and contested? I do not think so. The very fact that the countryside has become controversial indicates that certain democratic forces are concerned about the countryside. It is important (a) to build arenas in which the democratic debate can take place (see also Tjallingii 1996),⁶⁵ (b) to make explicit the dimensions along,

and the concepts with which, the characteristic aspects of landscapes can be defined,⁶⁶ and (c) to create effective guarantee systems to avoid, as much as possible, the potential derailments at the local level.

9.10 The immanent decline of Dutch agriculture

An agriculture such as the Dutch one needs an expert system. However, the problem is that the current expert system malfunctions. Over the past decades, the only knowledge that has been developed was that which met the needs of the prevailing technological trajectory (the modernisation project). This resulted *de facto* in the creation of ignorance about other development opportunities. When new tasks became clear in the 1990s, the expert system appeared to be empty-handed. Research had not been broadened in time. Even the simplest of questions (e.g. how to increase the nitrogen delivery capacity of the soil) could not be answered. Suddenly, it appeared that there was a *missing trajectory*.

Perhaps even more dramatically, in the midst of the manure and nutrients debate, the expert system was incapable of making clear that a considerable number of Dutch farmers were already producing *below* the then controversial norms. This highlighted another failure: the expert system is highly disconnected from agricultural practice. There is little knowledge about what actually happens on farms or what farmers are involved in. It became clear that the expert system is concerned above all with the *virtual farmer*. The situation at the beginning of the new millennium has not changed. The expert system designs one future image after another. The images tumble on top of each other. Typically, however, almost all of these projections are disconnected from the present and from *constants* that have influenced agricultural and rural development through the ages (NRLO 1997b). Moreover, the expert system typically continues to explore only one, or a few, of the potential development opportunities. Alongside knowledge about these particular trajectories, the expert system remains systematically ignorant about *other* opportunities. Finally, the link to practice is still extremely fragile – especially since many in the expert system imagine future developments as expropriation of current agriculture.

More specifically, the expert system is, as I have explained in this chapter, the carrier of a self-contradictory project: on the one hand it aims for accelerated scale enlargement, while at the same time there is an intention to generate diversification. Both aspects represent a rupture from the present. Thus, two development routes are set out that are individually and collectively *made fragile* from the outset. Fragile since the two are not compatible with each other in the long term and also because opting for a 'world-market agriculture' will emerge sooner or later as a choice for a 'runaway industry'. Society can be blackmailed easily by such a runaway industry, which is what pig farmers are already involved in.

The expert system confronts Dutch agriculture with two development opportunities, which, individually and collectively, are ramshackle. It creates despair at the micro-level (at all those kitchen tables). 'Shall we do

this? No, we can't do that. How about this then? No, that'll never work.' The result is obvious: we already encountered it in Chapter 8, in the large group of pessimists.

It is not beyond the bounds of possibility that agriculture and countryside will be crushed by these complex tensions, all the more since every sign of weakness in agriculture will be exploited by powerful interests: the ongoing suburbanisation of the Netherlands and the acquisition of agricultural land for 'pure nature'.

The farmers we know in the Netherlands are largely the *virtual farmers* described to us by the expert system. They are profit maximisers distrusted by contemporary society. 'Real farmers' (and hence real farm women, real agriculture, etc.) are insufficiently represented, and insufficiently used as building blocks for an attractive future, which is still not beyond our grasp. The *real* farmer disappears behind the *virtual* farmer. We turn the virtual farmer into reality, but soon there will be nothing behind the virtuality. Meanwhile, the real farmer, in his diversity, has disappeared.

The expert system is above all geared towards the future. However, in its relation to the future its actions can be seen as little more than 'organised irresponsibility'. The self-created inability to make a difference in the future is overwhelmingly large, especially at those neuralgic points in the relevant socio-technical networks where the decisive difference should be made.

Perhaps Koos van Zomeren was right when he said, not without some irony (in the IKON TV programme 'Babylon', broadcasted 6 May 1999) that if all beautiful landscapes and agriculture are sacrificed to the issues of the day, 'we can still listen to Beethoven's 'Pastoral', read Judith Herzberg's poetry, and go to the museums and art galleries to look at those beautiful landscape paintings'.

Notes

1 A lot of attention has been paid to the phenomenon of endogenous development in comparative research at the European level in the last decade of the twentieth century. Endogenous (regional) development is development based mainly (although not exclusively) upon regionally available and/or controllable resources (Slee 1994; Lowe *et al.* 1995). Endogenous development is, above all, development that contains a, usually implicit, local paradigm in which the combination, use, and development of regionally available resources is defined in a particular way. This might sound cryptic at first. The point is of course that certain assets (a landscape, an ecosystem, certain artefacts, knowledge, networks, and so on) become a resource only if we know how they can be combined, used, and further developed with other elements. *Baldios* that are situated high up in Trás-os-Montes (stony and steep waste lands, high up in the mountains, managed collectively) emerge as a resource only if one knows how to use them. The same applies to the seemingly endless mountain sides in Central Italy, such as the *Monte Subasio* behind Assisi in Umbria. Closer to home, it applies to the mudflats on the other side of the Frisian dykes and the small plots bordered with densely grown *dykswalen* in the Frisian Woodlands. A farmer from the Frisian woodlands would feel homeless and disconcerted in Trás-os-Montes: they would not know how to use the *baldios*, let alone would they know how to make these *baldios* into a starting point for further development. (Incidentally, this Frisian farmer would not be alone in their

incapacity. In the study by the Netherlands Scientific Council for Government Policy (WRR), entitled *Grond voor keuzen* (*Ground for Choices*), a large part of regions such as Trás-os-Montes is considered agriculturally less optimal land, land that can be taken out of cultivation. But this as a side note. Conversely, a farmer from Trás-os-Montes would have no idea how to cope if he were offered land outside the dykes in the Wadden Sea (or dry land in the Frisian Woodlands). They would not know what to do with it or themselves. Irrespective of the way in which this issue is approached, the art of farming (*l'arte della agricoltura*, according to Columella) is a phenomenon that cannot be ignored, a local phenomenon that reinforces time and again the particularity of the local paradigm that defines the use, combination, and development of *locally available resources*. Currently, rural development processes taking place in the Netherlands at present can also be described as the development of new, local paradigms (local in the sense that they reflect the specificity of contemporary agriculture), in and through which the available resources can be redefined. A field is no longer only a location where silage of a certain metabolised energy content can be produced—a field becomes also part of a landscape, it becomes a carrier of different ecological values, the production locality of a mixture of grasses and herbs that result in a special cheese flavour, etc.

2 A poignant example is the functioning of the Commission Van der Zwan, which is to implement the so-called Stimulation Programme.

3 'Flying hectares' are an innovation that originated in Friesland. Also called *wjukkelbunders*, 'flying hectares' represent a flexible option of entering into nature management agreements on a specified number of hectares (at the moment 5500 ha in Friesland). What is unique about this is its free availability. No area has been marked out in advance on a map where (and hence where not) these agreements should be applied. Farmers can apply for an agreement in those areas that they think are of interest. Thus, the hectares 'fly', as it were, over the province, as 'unplanned' as the flight of a lapwing. As a result, a mosaic pattern develops at the macro-level: those 'flying hectares' can be encountered anywhere. Of further importance is that these 'flying hectares' cannot produce any shadow effects to neighbouring farmers. The agreement can be terminated by the farmer, without government being able to claim that the ecological values already developed are reason for continuation or provide a reason for applying other restrictions. Neither is it allowed to derive (planning) restrictions related to surrounding plots (including neighbours') from the plot with the developed ecological values. The enactment of this regulation (various elements of which can now be found in the national Management Programme of the Ministry of Agriculture) is also interesting from a theoretical point of view. Initially, nature organizations claimed (and they were not completely wrong) that it lacked any kind of necessary stability. A farmer could gain from the regulation, but could also withdraw at any moment. From this perspective, such temporary agreements for investments in nature management are pointless. Conversely, farmers consider the opposite—that is, permanent agreements are extremely undesirable. Entering into long-term, if not permanent, agreements was unthinkable so long as the extent to which nature management could be fit into one's own farm management was unclear. Hence, discongruity. Yet, it appears after several years of experience that continuity of agreements is very high. This can be explained partly from the experiences of the farmers involved: the management of meadow birds and other ecological values appears to fit very well with their farm management strategies and appears also to be attractive in other respects. The Frisian environmental organizations now support the measure fully. In short, congruence has been created, when it was first absent. Interestingly, the key has been an approach that initially seemed to be inadequate.

4 Numerous interesting examples, also in a strictly technological sense, can be pointed out in the practice of Waddengroep Foundation. New, unknown medical applications of certain fruit crops were found. The work of the Zeeuwse Vlegel project resulted in the reintroduction of what was deemed impossible up to that point: cultivating bread grains in the Netherlands (see Wiskerke 1997). Xotus is another pearl, a horticultural firm in the province of Zuid Holland, which developed and perfected the theory and practice of *climax crops* (see further Van Broekhuizen and Renting 1994).

5 A counterargument could be that economic laws, however regrettable, force to continuous, if not accelerated, scale enlargement in order to realise the required reduction in costs. Such an argument cannot be sustained, neither theoretically nor empirically. Michael Porter

argues in *Competitive Advantage* that 'both industry attractiveness and competitive position [of the individual firm] can be shaped by a firm'. This is, according to Porter, what makes the choice of a competitive strategy both challenging and exciting (1985, p. 2). 'Competitive strategy, then, not only responds to the environment but also attempts to shape that environment in a firm's favour' (*ibid.*). The interesting issue raised by this position is that it thus dissociates itself from the determinism that characterizes mainstream agricultural economic analysis. A determinism in which 'the market' appears (is represented) as the all-determining factor, coercively ruling the development, and fate, of individual enterprises. Or, according to a complaint of the past: the farmer considers, the market decides. Porter introduces a number of strategical patterns: cost reduction, differentiation, and 'focus'—that is, the extent to which the strategy relates to a limited or broad range of products, markets, and resources. Collectively, these patterns span a complex scheme, containing a considerable series of possibilities: different strategies with which to parry adverse circumstances. If this scheme is applied to Dutch agriculture, its potential becomes immediately clear. Alongside the well-known picture of farms pursuing a continued, if not accelerated, expansion of their production volume at constant labour input, there are large groups of farms on which cost advantages are realised through the particularisation of resources. This often results often in improved input-output relations and in a relatively high level of value added per unit product. Furthermore, a growing group of farms exists on which new types of differentiation have been developed. Some of these farms operate with a broad focus – as in the types of rural development discussed here; others operate with a more limited focus – applying strategic responses such as pluriactivity and part-time farming.

6 It goes without saying that this very discongruity – that is, the non-correspondence between supply and demand of technologies, measures, perspectives, etc. – constitutes an important mechanism in the marginalisation of some farming styles; or in more general terms, in the selective nature of the current agricultural development process. Institutional changes are of utmost importance in changing this.

7 Incidentally, this type of cooperation becomes increasingly difficult due to new rules restricting the transport of manure among farmers. Every load of manure has to be sampled and its weight determined on a weighbridge, which entails excessively high costs and much irritation. Previously, the MacSharry regulations had already created a lot of difficulties.

8 In other words, the threat of the 'big stick' remains. More generally, self-regulation movements can be imagined only as existing through the grace of an underlying generic policy.

9 VEL and VANLA gave rise to the idea of 240 monitored farms; this idea took the sting out of the parliamentary debate about MINAS.

10 As always, this involves a norm that has to be reconfirmed time and again. The conflicts that occur over deviation from the norm result in its reconfirmation. *Griemers* (literally, messy people – in this context, they are polluters and cheats) are actively tackled about their conduct by their colleagues. Their 'free rider' behaviour threatens the set of advantages at the disposal of the environmental cooperative as a whole. One of the sanctions to be applied (which has only been imposed once) is that the *griemer* in question is excluded as a member. This implies that they can no longer make use of the exemptions and other advantages. Furthermore, I noticed that *griemers* are increasingly excluded from local land transfers.

11 Numerous, at times moving, examples of this normative role can be found in Geert Mak's unsurpassable book (2000).

12 In the Frisian Woodlands, for example, someone who dug up all their wooded banks was considered contemptible. It was just not something anyone would do. This may seem anecdotal but moral codes exist in almost every agricultural system, everywhere in the world. For a beautiful sketch, see Moerman 1968.

13 This table is annotated extensively in the original publication, in which the figures are explained and substantiated in detail. For a critical discussion, see Van der Ploeg *et al.* 1997, pp. 80–87, 98–104.

14 During the Cork Conference, it became clear that a new paradigm is taking shape. At the same time, it became apparent that numerous institutional and political interests exist that stand in the way of making this paradigmatic change more explicit. The suggestion of

continuity, and the simultaneous call for 'border adjustments', is indispensable for maintaining authority and for protecting various established interests.

15 I am aware that numerous definitions are in circulation. Different opinions are described and analysed in Van Broekhuizen *et al.* (1997). An opinion in contrast to the one advanced here, claims that rural development is to take place via a type of 'expropriation' of farmers. They have to make way for new types of nature, recreation, and so-called 'thin suburbanisation'. Personally, I am worried that this opinion will be adopted by the expert system. In the everyday language spoken in large research institutes such as Alterra, the word 'de-farm' has recently come into circulation.

16 See note 1 of this chapter.

17 TATE stands for 'technological administrative task environment'. This concept, developed by Benvenuti (see 1990) refers to the direct prescription of the farm labour process from various external institutions. The empirical cases analysed by Benvenuti related mainly to agribusiness.

18 Studies of agricultural systems elsewhere (for example, the production of Parmesan cheese and Chianina meat in Italy, the breeding systems based on the utilisation of the *baldios* in the north of Portugal, the production of the *jamón ibérico* in the *dehesa* system in Spain, etc.) were an inspiring source in the clarification of the differences summarised in Table 9.5. These studies were a source of inspiration in the recognition of the development opportunities inherent in the different farming styles.

19 Even though we thought about treating farming economically as an integral part of rural development in a previous publication (Van der Ploeg 1995a, 1996a), many (international) discussions were needed before we could achieve a clearer picture.

20 I base this position not only upon my own practical knowledge, but also on studies such as De Rooij *et al.* 1992.

21 This involves an undeniable gender bias too, for farming women are often the ones who provide other on-farm and off-farm revenues.

22 Even though the study by De Vries relates only to the area of the Land van Maas en Waal, analysis of data of Statistics Netherlands (CBS) and the Agricultural Economics Research Institute (LEI) indicates that the percentage provided by her (67 per cent) can almost be used as an average for the Netherlands as a whole.

23 Besides, I would like to point out that this phenomenon is widespread, particularly in the Mediterranean part of Europe—however, I am not yet certain what conclusions to draw from this observation.

24 See *Boerderij* 84(32), 11 May 1999, p. 15; I have taken the average of the different sectors here.

25 As well as those farmers who have entered into agreements, I take into account those farmers who adopt local types of nature management and development without formal agreements. Furthermore, I have included the synergy effect, as indicated by Van der Ham. Finally, quasi-rent calculated increasingly with regard to landscape and ecological 'limitations' can be considered as an 'income bonus'. The average net effect is NLG 7000 per farm.

26 The underlying reasoning is that where income is insufficient, the farm could be closed in order to find a well-paid full-time job elsewhere. However, since both a good income and the maintenance of the farm are desired (which is the important issue here), so-called 'additional revenues' are explored. Thus, the farm is maintained (but along other lines than scale enlargement and intensification), while still realising good family incomes.

27 Based on Van der Ploeg (1995, p. 127), and subsequently generalised for the whole of Dutch agriculture.

28 I include here the development of new economic carriers on farms. Alongside the striking and well-known examples, a twilight zone exists to which the newspaper the *Gelderlander* referred in a small article in the spring of 1999, when nearly 200 'illegal farms' were discovered in the municipality of Barneveld during a check.

29 This holds at least in a macro-economic sense and, also, in most micro-situations. It does not alter the fact that the 'additional income' has now become the 'main income' in certain micro-situations.

30 I use milk and potatoes here as a *pars pro toto* for the whole range of agricultural products.

31 Again, this is a highly simplified and schematised approach. However, the important point here is the underlying argument. Theoretically, the benefits of diversification cannot be considered in isolation; they have to be combined with the benefits of the agricultural production on which they are based. These benefits of diversification would not be reaped separate from the 'strictly' agricultural basis. Synergy (or the phenomenon of the multipurpose enterprise) is decisive here.

32 From my own experience, I know the Frisian situation well. Hence I know (for example, through my engagement in the founding of the new associations) that the data from the provinces of Gelderland, Utrecht, and Limburg are wrong. The situations in Noord-Holland and Zuid-Holland can be checked in the first annual report of In Natura, the umbrella organisation of nature societies within the working area of the Dutch Western Farmers and Horticulturalists Union (WLTO).

33 Initially, this seems to be a very dated observation. Relations had changed quite dramatically by 1999. From a theoretical perspective, however, the problems are still the same.

34 Whereby organic agriculture can be understood explicitly as a 'project', as an incipient 'mode of ordering'. Crucial here is the connection with other projects – just as in other, now consolidated, modes of ordering.

35 In other words, agency is the ability to act strategically. Following the work of Giddens, I have written about this with Norman Long: 'The notion of agency attributes to the individual actor the capacity to process social experience and to devise ways of coping with life, even under the most extreme forms of coercion. Within the limits of information, uncertainty and the other constraints (e.g. physical, normative or politico-economic) that exist, social actors are 'knowledgeable' and 'capable'. They attempt to solve problems, learn how to intervene in the flow of social events around them, and monitor continuously their own actions, observing how others react to their behaviour and taking note of the various contingent circumstances' (Long and Van der Ploeg 1994, p. 66).

36 'Agency therefore requires organization capacities; it is not simply the result of possessing certain cognitive abilities, persuasive powers or forms of charisma. The ability to influence others or to pass on a command (e.g. to get them to accept a particular message) rests fundamentally on the actions of a chain or events each of whom translates it in accordance with his/her own projects [. . .] In other words, agency [. . .] depends crucially upon the emergence of a network of actors who became partially though hardly ever completely, enrolled in the projects and practices of some other person or persons. Effective agency requires the strategic generation/manipulation of a network of social relations and the channelling of specific items [. . .] through certain nodal points of interaction' (Long and Van der Ploeg 1994, p. 66).

37 I put 'preparatory' in quotation marks here as there was no purposeful run-up to the VEL at that time. Only with hindsight did these 'preparatory' activities acquire importance.

38 I will limit myself to one example here: the development of climax crops and climax cultivations by the Xotus group of Gert Jan Jansen. Careful description of this case would provide a vivid account of the arrogance of the 'expert system'. Incidentally, DWK emerges time and again as the source of arrogance and conservatism in this and in many other cases.

39 Cluster 4 comprises the municipalities that reflect the general trends. Cluster 2 comprises those municipalities where quotas increased sharply compared to other municipalities. This is related to the introduction of dairy farms from elsewhere into arable farming areas. Finally, cluster 3 represents a problem group. Ignoring Sneek (a case of city expansion), we arrive at Kollumerland and Achtkarspelen – an important part of the northern Frisian Woodlands (with an outlet into the Lauwerszee). These are areas characterised by relatively small farms (the average quotas per farm in 1990 were 269,000 kg in Kollumerland and 215,000 kg in Achtkarspelen). This indicates a delicate structure, resulting partly in quotas

'leaking away' and in a rapid reduction in the number of dairy farms. Hence, the maintenance of the local landscapes is put under a lot of pressure.

40 This can be called rightfully the 'dialectics of progress'. The disadvantageous position of farmers on the West Frisian Islands encouraged them, sooner than their colleagues elsewhere in the country, to look for what would only later be called rural development.

41 Figure 9.3 hides more intriguing secrets. I will briefly discuss a few aspects of these as they underline that diversification should not be regarded in isolation but presupposes a wider framework. There is a second group of municipalities within this first cluster which are located, roughly, between the head of the Afsluitdijk and the hinterland of Lemmer. These are the municipalities of Wonseradeel, Wymbritseradeel, Nijefurd, and Lemsterland. Closer analysis leads me to the following issues. The municipalities of Wonseradeel, Wymbritseradeel, and Nijefurd have all been subjected, recently, to land consolidations. The shortcomings of external production circumstances were removed, which was perceived as an important impetus by the farmers concerned. The Zuidwest Hoek (South-west Corner, ZWH) and Zuidoost Friesland (South-east Friesland, ZOF) are both known as strong dairy farming areas, although there is a clear hierarchy. The latter area comes first. It is considered to be the best dairy farming area of the Netherlands. There are large farms and production circumstances are optimal. Still, a sharp decrease in the number of quota-holders occurs in ZOF; it amounts to between 14 and 15 per cent in the municipalities of Heerenveen, Opsterland, and Ooststellingwerf. The development of quotas, however, is about the national average, while it is rising in the South-west Corner (Nijefurd, Wymbritseradeel, and Wonseradeel).

The most important difference between the ZWH and ZOF is their structure. A striking duality occurs in ZOF: a large group of small farms exists alongside a smaller group of very large farms. This dual structure is absent in the ZWH, it is more egalitarian. Hence, farm numbers in ZOF decrease rapidly and total quota per municipality is reduced, whereas farm numbers in the ZWH area remain more or less the same and total quota rises slightly.

A third important issue is constituted by land use security. Several years ago a large scale expropriation was proposed in Nijefurd in order to create nature reserves. Feelings were running high at the time, but after considerable protests a clear solution was chosen for the area in question. This has ensured long-term security for the dairy farmers. If we compare this with the adjoining municipality of Gaasterlan-Sleat, it appears that there was uncertainty for the whole of the period in question. This uncertainty resulted in widespread resistance towards the national ecological network (see Nijhoff *et al.* 1996). The same uncertainty also drove many farmers to relocate elsewhere, particularly in the north of Friesland and the province of Groningen. That is the reason for the strikingly different location of Gaasterlan-Sleat in Figure 9.3. Again, long-term security about the functions of the rural area seems to be crucial.⁴¹

Price effect seems to be a fourth issue of importance. Between 1985 and 1994, the Goede Verwachting in Workum was the dairy factory paying the highest milk price in the whole of the Netherlands (this difference has been levelled out in the meantime). The milk price was usually NLG 0.01–0.02 above the one paid by what was Friesland Dairy Foods at the time. This implies, at the level of the average farm, easily an additional revenue of NLG 6000 per year, or NLG 30,000 for the whole period in question. Everyone with any knowledge about farm economics knows that such a difference cannot be translated quantitatively into various investment decisions. Still, it is not unimportant. Or, as one of my informants stated: 'Now farmers have to *krimmenearjen* [complain] only once instead of twice before they take an important decision'. More generally, I would like to say that this issue pointed indirectly to the importance of realising higher prices off-farm through innovation at the level of supply chains. This can occur within existing supply chains, and it is also possible by developing new supply chains.

In summary, alongside the diversification briefly discussed above – represented by the position of the West Frisian Islands in particular – the generation of a more egalitarian production structure, the provision of long-term security about rural spaces, and innovations at the level of supply chains emerge as important strategies.

42 Letter from the Minister of Agriculture to the Chair of the Standing Committee for Agriculture of Dutch Parliament, code MKG.981020, dated 3rd of April 1998, concerning the Bestuurlijk Experiment Milieucoöperaties (TRC 98/7848).

43 The interim evaluation was accompanied by supporting letters from the Netherlands Society for Nature and Environment, Centre for Agriculture and Environment (CLM), the provincial councils of Friesland, Gelderland, Noord-Holland, and Overijssel, emphasising the broad base of support that was established at this time.

44 One of the problematic aspects of the privatisation of, at least parts of, the expert system is the inclination to formulate the answers to commissions in such a way that future commissions will follow. Thus the tendency has grown to formulate large ruptures. However, the 'ideological moment' still remains important: 'The challenge of the agricultural sciences is not in activities such as detailed descriptions of current agriculture and currently used techniques. Its most important task should be the design, development, and implementation of new techniques and opportunities on the basis of insight and knowledge' (Rabbinge 1999, p. 43).

45 The 'agency' that is sought after and created exists only within a particular network – that is, in its relation to the Ministry of Agriculture. Judged by what happens in practice, it is not so much 'agency' that exists but rather 'non-agency'. The formulated plans became rigid, paralysing, and frustrating.

46 This was, in essence, the heart of the so-called Spatial Planning and the Environment (ROM) approach that was taken in several areas in the Netherlands.

47 Incidentally, this is not the largest dairy farm in the Netherlands. The largest farm was producing 9.8 million kg milk by spring 1999.

48 Even when we repeat the comparison with available data of the larger dairy farms in Friesland (80 or more dairy cows – 22 per cent of Frisian farms fall into this category, against 13 per cent for the Netherlands as a whole; Arcadis 1998, p. 16), the allocation question appears again: 800,000–1 million kg versus 5.5 million kg milk per farm (that is, one mega-farm or 5–7 large farms), or 10–14 jobs versus 4 jobs.

49 This aspect emerges even more distinctly in a scenario study (especially because more recent data were used) conducted later on request of the Frisian farmers' organisations and the province of Fryslân (LUW *et al.* 1993). Starting from the various development opportunities implicit in the actual diversity, an image was projected that extended considerably beyond the summary of Table 9.9. By introducing assumptions about the global political-economic developments, the bandwidth could be extended into the future, which made clearly visible the effects of policy choices. To this end, three scenarios were designed and calculated (as described in Chapter 8): a policy trend scenario based on the existing and anticipated policy, a (prudent) free-trade scenario (in which accelerated growth and structural development becomes possible by means of A and B quotas), and a diversity scenario in which the contours of what would later be called rural development can be detected. The results are summarised in Table 8.2.

50 More generally, it can be noted that the development of 'recruiting concepts' constitutes an important aspect of the implied struggle for hegemony.

51 South-east Friesland, for instance, is situated in this 'Drents Plateau'. However, it is also the area with a concentration of the largest dairy farms. Conversely, numerous diversifying farms and related cooperative associations can be found in the 'northern shell'.

52 The suggestion of spatial unfolding was not adopted in the final advice of the Commission Langman.

53 The unasked question is what development opportunities (and for whom) and what type of scale enlargement are under discussion.

54 In this respect, 'landscape' was not an abstract notion: it included the area where people lived and worked and where children grew up. Most of the people involved shared a common notion of the importance of the landscape, others reconciled themselves to its inevitability.

55 See the discussion of environmental co-operatives.

56 Again, it is ironic that, depending on the particular situation, the pursuit of individual enrichment results in the impoverishment of the whole. In other words, this is the typically Dutch and very modern expression of a tragedy of which we thought we had left behind us: the tragedy of the commons (Hardin 1968).

57 I return to the position of the Council for Rural Areas (Raad voor het landelijk gebied 1999). Furthermore, I am grateful to Willem Vos for his support in the development of the following paragraphs.

58 One of the gaps in scientific research of the past decades arises here. Careful documentation and solid understanding of landscapes in terms of characteristic ordering is almost completely absent. Although a multitude of elements can be taken into consideration by using modern techniques (for example cluster analysis), this hardly occurs. Thus, insights into the significant differences between various patterns of association are missing and, in consequence, insights into the decisive elements for identifying the typical orderings are also absent. Therefore, the question of which essential landscape elements should be protected in any given landscape cannot yet be answered.

59 The issue of the typical ordering implicit in every landscape leads to one of its major threats: many contemporary activities and interventions result in the disappearance of the typical aspects. One thing starts to look like the next, especially man-made landscapes, resulting in impoverishment. From this perspective, every homogenising intervention has to be labelled undesirable.

60 This refers to the necessity to maintain, as much as possible, the uniqueness of parts and, thus, the attractiveness of the whole. Below, we will point out that a number of threatening developments take place, especially in this respect. Just as the inner cities became more and more uniform, similar homogenising tendencies are evident in the rural areas.

61 Think of his fascinating painting of the Noord near Dordrecht.

62 This points, *en passant*, to a problem that will crop up many times in this text, that is that the 'design capacity' to do this is still underdeveloped in the Netherlands. Remarkably, at a design contest ('Who is Afraid of Empty Spaces') for the north of the country, hardly any of the designs built upon the typical ordering of the individual features of the northern landscapes. The common thread was that of substitution of these landscapes (through inundation, nature development, cyberspace-like constellations, and so on). It is as if we do not know what to do with our own landscapes. This is also repeated in the contemporary practice of nature development.

63 An intriguing issue in the Gaasterland discussion was the so-called 'limitation'. Nature development had to take place within this limitation. On the contrary, the people involved in the area stated that such limitations were undesired – concrete options for further nature development had to be found for the area as a whole.

64 And in a more general sense, as a settlement factor for farms.

65 These could perhaps be environmental cooperatives and societies for farmer-led management of nature and landscape. An interesting fact is that many non-farmers are members of these cooperatives and societies. The new coalitions between farmers organisations, the Dutch motoring association (ANWB), Natuurmonumenten, the Netherlands Society for Nature and Environment, individual provincial landscapes, and so on, point into the same direction.

66 Which is a formidable design exercise for the agricultural, spatial, and social sciences.

Part V

Actor and Structure

10 Structure, Time, Knowledge, and Power

At the beginning of this book, I raised the question of the ordering moment in contemporary agriculture. Clear patterns and regularities can be identified in the period of Hemmema and Koorn, as well as in the present era of the *sunige boeren* (economical farmers) and *grutte boeren* (large farmers). Similarly, numerous regularities can be identified in the economic and agronomic spheres on the farm, as well as in the inter-relations between the state and the farming population. This¹ raises the question of structure, of the set of relations that exert a degree of ordering. What is structure and wherein is it localised?

Numerous structural notions can be identified in the contemporary (agricultural) sciences. Almost every discipline has its own favourite definition. Every discipline defines its own regulatory system (see Chapter 4). In spite of their differences, these notions are connected by the idea that it is possible to identify 'underlying' structures that bring about certain regularities and processes. There are, it is assumed, structures that underlie and determine the confusing, complex, heterogeneous, and dynamic world in which we live. Further, these structures are thought to be relatively constant and not immediately visible. The structure of something is its prime constituent, its core, its essence; hence it is *hidden*.²

The world as we experience it, is a world of manifestations, many of which are capricious and temporary and, hence, of no importance. Other manifestations are more solid and constant. They are, as it were, normal and natural. The latter are taken to be an expression of the 'underlying structure' – least in mainstream thinking and epistemology, which elevate these manifestations into important and significant facts: they inform us, as it were, about where we are going. Other manifestations (other empirical figurations) are less relevant: they are no more than *black swans*, capricious deviations of interest to one or two people at the most.

The agricultural sciences form a fascinating aspect of scientific endeavour. They can only achieve what is expected of them through the integration of a multitude of disciplines. Their object (farming) represents an integrative moment par excellence. Agriculture *cannot* be imagined but as the concrete interlocking of the agronomic, the zootechnical, the technological, the economic, the social, the historical, and the future oriented (as well as the interlocking of agriculture and society, of the normative and the practical). However, within agricultural science the constituent parts of farming are still understood through determinist

notions of structure that contrast with, if not contradict, each other. Thus, agricultural science is as yet an incomplete science.

In this book, I have tried to relativise such agronomic, technological, and economic determinism. I have pointed out that there are considerable degrees of freedom within each of these domains – degrees of freedom that emerge from the heterogeneous development processes inherent in *co-production*. Similarly, I have tried to point out that the agricultural sciences have to be reconceptualised by taking as a starting point the multiple realities contained within farming, at any time or at any place, and systematically taking into account the multiple development opportunities inherent in *co-production*. In the last chapters (6–9) I have, implicitly in part, reacted against the determinism inherent in the sociological approach to agriculture. Sociological determinism is usually defined by the term ‘structuralism’. This includes all those approaches ‘which regard . . . structure as having priority over social action’ (Marshall 1994, p. 515). These are approaches that entail an overtone of ‘necessity’ (Elias 1972, p. 178): as if developments can only take place in one way³ – that is, in the manner determined by the prevailing structure.

Many attempts have been made to answer the question: *what* is structure? I would like to discuss two of these attempts here. One because it is a pre-eminently conventional answer, the other because it embodies recent developments in sociology. Yet, from the evidence in this book, neither approach comprehensively explains the ordering moments in contemporary agriculture.

According to De Jager and Mok, structure is ‘the set of positions and dispositions and the interrelations connecting these positions and dispositions (1978, p. 134). This is true, but it is also an unhelpful definition, because ultimately it includes everything and, hence, becomes meaningless. It is not evident how various key elements identified in the previous chapters (the dominance of the future over the present, the relationship between the expert system and the other actors, the presence of trust and, subsequently, of distrust) fit within this definition. Similar problems apply to the more recent definition of structure provided by Giddens: ‘. . . structures are made up of human actions and relationships: what gives these their patterning is their repetition across periods of time and distances of space’ (1992, p. 19, see also 731). This definition crucially lacks the necessary reference to what is generated, brought forward, and rendered significant by this repetition. We encountered several examples of repetition in the previous chapters. The agricultural labourers who moved away, the small farmers who lost their particular place, the introduction of the milk tank – which presented numerous farmers with insurmountable investment costs – it were all separate episodes that became repetitions only in the context of the grand narrative of modernisation.

10.1 What is structure?

Following the quest undertaken in the previous chapters, I think that I can formulate an alternative answer to the above question – at least, an answer that reflects the empirical constellations and complexities discussed in this book.

Structure is a multi-layered concept. First, it is a *set of expectations*, a whole that indicates those actions and practices that are significant and those that are insignificant.⁴ Hence, structure orders numerous practices, including economic practices and developments.⁵ Second, structure is an *emergent* fact, since the images of what is significant and/or of what is to be expected can be disputed, modified, and/or substituted. This is possible because novelties (Van Lente and Rip 1998) are produced in practice (new production functions, new substitution relations, new types of farming sustainably),⁶ but also because various expectations of the expert system are adjusted and/or replaced. Therefore, structure is not a stable but rather an, at times, highly variable fact. Third, structure is a *concurrence of circumstances* – sometimes accidental, at other times purposefully instigated. The particular concurrence that coincides with the prevailing expectations emerges as significant and is subsequently defined as structure.

Structure presupposes a *locus*: an instance from which expectations are actively produced, communicated, and implemented (through the reorientation of resource flows, through prescriptions, procedures, artefacts – in short, through a technological regime); and an instance from which events (the concurrence of circumstances) are actively read, interpreted, and represented as the inevitable outcomes of structure, and from which adjustments are made too. This locus is constituted by the expert system in and around agriculture. This leads me to the fourth finding. Structure is not only the product of the expert system, it is also a *frame* (a set of particular opportunities and constraints) imposed upon the relevant part of society by the expert system. Thus direction emerges in practice (via prescription and control) – a depersonalised and dematerialised type of direction, as it were. Apparently, there is nothing that, or no one who, forces us to order our actions in a certain way. However, if we want to act rationally, sensibly, and/or responsibly (if we want to avoid excessively high transaction costs), we will have to orient our actions to, and situate them within, the defined framework.

All actions are future-oriented actions. However, the future is no longer an unfolding of that which we are involved in – the future is expropriated: it is the exclusive domain of the large expert systems. A 'new feudalism' (Benvenuti 1975) emerges via a future defined and controlled by others (by expert systems): we are free in a formal sense, but our actions are largely authorised by and/or made clandestine by others.⁷ This points to the fifth element: the future is represented as the *inevitable unfolding of 'iron' laws* supposedly inherent in the world (in the present and in the past, in the material and in society). In this book, I have deconstructed a number of these laws which provide the basic

assumptions from which the expert system operates. On clear examination these proved not to be iron laws but artificial constructions. This does not alter the fact, however, that referring to such laws (as is daily routine in the expert system) produces two effects. On the one hand, the operation of the expert system is objectified and can remain outside of discussion and debate. On the other hand, the developed framework becomes even more coercive as it appears to be derived from the world of irrefutable facts.

In contemporary society, knowledge development is one of the main ordering mechanisms. New development opportunities, new futures, usually emerge through knowledge development. Thus the problem of contemporary expert systems is not that they develop knowledge, but *how* they develop knowledge:

- a they do so in a highly selective manner (resulting in the systematic generation of ignorance alongside knowledge – ignorance which often becomes an ordering principle *par excellence*);⁸
- b they claim (and sometimes realise), partly through business and institutional interests, an exclusive monopoly on relevant knowledge;
- c they often avoid quality controls and withdraw from any kind of democratic debate (as is the case in the expert system in agriculture);
- d discrepancies between their own models and ‘empirical reality’ are not regarded as ‘error messages’ (Staudenmaier 1985), as indications that the models need to be complemented, adjusted, or modified – on the contrary, the ‘error messages’ *indicate at most the need to transform empirical reality in order to meet the models*. In this respect, the *disconnection* (between future and present, between theory and practice, between expert system and agricultural sector) is complete and irreversible.

John Berger has written an important essay (in *Pig Earth*) in which he characterises traditional thinking as a perception of the future that, judged by today’s variation, emerges as a reduction of possibilities for action (1979, p. 204). The future appears as a point of convergence (as illustrated in Figure 6.3).⁹ This traditional thinking is in contrast to modern or progressive thinking (the ‘culture of progress’), which implies for the future the assumption of an increasing number of, mutually diverging, possibilities for action (as illustrated in Figure 6.6, cf. Figure 1.1). It is intriguing that the future vision utilised and reproduced by the Ministry of Agriculture as expert system seems to correspond to the traditional thinking (the ‘culture of survival’)¹⁰ described by Berger. The future is a point of convergence (a vanishing point) in which only one type of behaviour, only one type of farming, would be possible. However, this thinking is not compatible with the large repertoire of farm development models that can be empirically identified and which are based, in turn, upon a set of projects contained in contemporary diversity.

The future is open. More than ever before, it is characterised by a staggering complexity. Therefore, it contains almost unprecedented risks

(for example, in the field of food quality and health) but also numerous possibilities, often hardly explored, sometimes even literally unknown.

The Ministry of Agriculture as expert system delimits and neutralises, as it were, the indeterminate nature and, hence, the open character of the future. By predicting a particular 'future' (represented as inevitable, as the unfolding of structural laws), by subsequently prescribing the desired behaviour (at different levels), and by controlling the relevant circumstances, the ministry creates *de facto* a coercive 'structure'. Consequently,¹¹ 'structural development' makes the prediction come true and, hence, it is extended, almost automatically, to the next phase.

The functioning of the expert system fails to take account of the history of Dutch agriculture and the *longue durée* inherent in it. In summarising chapters 2–5 of this book, I cannot but conclude that Dutch farmers have been as successful as they are because *they have developed more than farmers elsewhere into 'peasants'*. Throughout and as a result of history, they have actively distanced themselves from various markets – they developed their activities and resources in such a way that degrees of freedom from markets have been created. Similarly, the analysis of contemporary heterogeneity shows that the degrees of freedom inherent in the heterogeneity could become of decisive importance in the coming years. The often misunderstood multifunctional farm (that is, the farm using the same resource base to produce for several markets: the world market, national markets, different regional and/or local markets), created by the peasants of the past and present, is and remains an important promise. Yet, according to the image of the *virtual farmer*, the agricultural entrepreneur is, and should be, highly specialised: whether in production for the world market or in a farm campsite. It is not recognised that both can go hand in hand – or rather, that the one is increasingly a condition for the functioning of the other, and vice versa. Similarly, it is not recognised that the strength of Dutch agriculture lies not so much in the entrepreneurship advocated by the expert system, but is rather rooted in the capabilities of the contemporary peasant.

Of course, these are all contentious issues. At the beginning of the twenty-first century, we are faced with fundamental changes – for example, in the markets. It is possible that the expert system will seek to parry these changes in a fundamentally misplaced way, that is by assuming and promoting the *virtual* entrepreneur and ignoring farmers as they really are: peasants. Jacobs refers in *Het kennisoffensief* (*The Knowledge Offensive*) to institutions that become gradually blind to their environment: 'Changes in the environment are usually understood within the existing frameworks of interpretation'. Concepts such as redundancy, structural development, viable farms, agricultural entrepreneurs, and production functions do indeed order the perception and interpretation of development in agriculture. 'If these frameworks', according to Jacobs, 'become inadequate, they usually begin to distort the signals from the environment. They are assumed to be capable of reacting appropriately to external change, but in fact they mainly do what is best suited to them.' New developments are, or continue to be, *black swans*. Thus, what Jacobs

calls a 'strategic drift' emerges: 'one starts to drift away from reality' (1999, p. 59). This is what I have indicated in the course of this book: the expert system in agriculture represents a strategic drift. One that occurs at a critical time, when what is needed is a different approach, a different concept, and also a different vision. It is often said that 'the convincing orthodoxy of one century [will become] the historical curiosity of the next' (Bruce 1999, p. 2). Alas, there is no sign of this at present. Rather, it is possible that – as a result of this strategic drift, i.e. as a result of the discrepancy between the *virtual farmer* and today's peasants – real and very necessary development opportunities will be missed. Consequently, it may not be the current 'orthodoxy', but the real farmer, real agriculture, and the real countryside that will soon be historical curiosities.

In this book, I have described at length the way in which Dutch agriculture has been modernised. The macro-project as developed and carried by the Ministry of Agriculture as an expert system (that is, the modernisation project) was and is the key to a proper understanding of this. Trust, the institutionalised faith that 'it will be all right', was essential. The macro-project became the goal (the 'magnetic North') to which numerous projects (of farmers, of industry and banks, of researchers) were oriented. In and through this macro-project, various projects began to *converge*, generating synergy and, above all, a confirmation of the macro-project: everyone could see that things were taking shape. The poet among Dutch farmers, Max van Tilburg, described this once as follows:

Yes, you did hear more and more that things were going to go in that direction at the time, and you did see that farmers were doing this more and more. So you didn't want to stay behind . . . As a result, we did expand and put in one of those sheds in the late 1960s.

The modernisation of farming became a self-fulfilling prophecy, which leads me to the sixth aspect of structure. Structure refers to the *interlocking of projects*:

Relevant structural forms can be identified in the complex encounter of projects [. . .] and in the variable patterns of interaction actively established between the actors concerned (Long and Van der Ploeg 1994, p. 75).

As part of the large modernisation process, this was not a more or less incidental interlocking. The very convergence taking place was actively organised under the umbrella of the modernisation process and its effects were significant. The realised convergence resulted in an increase of trust, and trust, in turn, became the vehicle for the creation of further convergence. Thus, structure is not an *a priori* fact. It does not precede events. It emerges *from* the course of events as the *interweaving* (Elias 1972, pp. 149 ff; Goudsblom 1990, pp. 126 ff) of various projects.

The six previous observations can be combined into one thesis: in contemporary Dutch agriculture structure largely¹² coincides with the future expectation generated by the expert system.¹³ Structure is *emergent*.

However, it *became* a more or less coercive framework because of the increase in trust and because the course of events (that is, the interweaving of projects) seemed to confirm the future expectations that had been articulated. The knowledge monopoly of the expert system was decisive in creating this impression. *The organisation of knowledge is one of the most important sources of power in contemporary society; and together with the production of ignorance associated with it, it is one of the most important ordering principles that we use to guide ourselves, or by which we are guided.*

Yet, the same 'structure' appears increasingly fragile. The moment that trust erodes and black swans begin to swim together, the shortcomings of the expert system become evident. The iron laws that were intended to cage the uncaptured peasantry, capture the expert system instead. At the end of the day, the expert system that generated and developed the virtual farmer is now the victim of this projection.

10.2 The ordering elements of today: distrust and discongruity

The weakness of the contemporary expert system emerges from the previous discussion. Even though new images of the future have been developed within and by the expert system (without having distanced themselves from the former models),¹⁴ the trust of the past has now turned into a widespread and deeply felt distrust,¹⁵ which has reached the point constant mention is made of the 'crisis' in Dutch agriculture.

Manifestations of the crisis can be seen everywhere. However, it is important to point out that this crisis does not solely lie in the attitudes of farmers or only in the Ministry of Agriculture.¹⁶ The feeling of crisis also involves the development of, and the relations within, various markets as well as the functioning of the agencies operating within them (Ettema *et al.* 1994). It concerns the direction, the nature, and the importance of technological development. Furthermore, the sense of crisis involves interest representation. And finally, the sense of crisis is activated above all by new, apparently inevitable, types of state intervention, which are increasingly in a state of crisis themselves.

Above all, the crisis is rooted in the already existing discongruity¹⁷ between many development projects. The 'triad' identified in Chapter 8 provides an excellent illustration of this: the 'innovators', 'growers', and 'pessimists' are all in each others' way. If continuous scale enlargement is necessary, it needs to be on such a scale that hardly any farmers can contemplate it, or would require such high levels of public funding that it is bound to flounder. The dairy industry advocates the elimination of production quotas and lower milk prices; it has expected the government to support its aims but this is not a project that farmers wish to be part of. The list can be extended *ad infinitum*. The conclusion, however, remains the same: discongruity exists everywhere. Nothing seems to work. In practice, farm men and farm women are confronted by paralysing uncertainties: 'We no longer know where we stand'.

At the start of the twenty-first century, structure (that which orders) is constituted by *discongruity*, *distrust*, and *non-agency*: nothing is functioning, everything is disputed. No matter how many reports are produced, this can no longer be averted. Moreover, convincing policy positions are no longer produced as discongruity, distrust, and non-agency predominate within the Ministry of Agriculture. The various directorates no longer constitute a goal-oriented organisation. The only thing that still 'functions' is the prevailing technological regime. It 'functions' because it does not have to be directed. The procedures, rules, artefacts, and so on maintain their own 'autopilot'. But the same 'functioning' of this regime also translates into an increasing number of frictions and problems at the interface between state and sector. Thus the Titanic sails ahead, although no one knows in which direction.

10.3 On time, power, and social practices

I have described the rise of a new RD current in Chapter 9. The agricultural economy has diversified beyond the earnings from milk and potatoes alone. The survival of farms is partly based upon new markets and upon the goods and services demanded in these markets. Thus, farming has become socialised: interwoven with other sectors, interests, and perspectives. Interestingly, this process of rural development manifests itself *de facto* in a completely different manner than imagined in the expert system. In the expert system, rural development is a new macro-project, a design situated in the future that has to order the development of particular practices. Subsidies, prescriptions, procedures, norms, and designs are created to this end, after which rural development can take place as a directed process.

In the preceding chapters, I defined the power position of the expert system and of the Ministry of Agriculture in particular. It is symbolic power (the ministry as expert system defines the course to follow), yet it is also material power, as the ministry has the ability to allocate resources (subsidies, rules, etc.) according to its own views. Central to all this is the dominance of the future over the present. Only by claiming a superior insight in the future ordering of the sector can the Ministry of Agriculture achieve its power base. Of course, what actually happens is something completely *different*. The diversified agricultural economy as we know it is an outcome of the past, 'born' during and as a result of the preceding modernisation project. Part of the farming population has been effectively disassembling this project since the 1960, by developing responses such as farming economically, searching for additional incomes and by developing new types of *kreas buorkje* (farming gently).

This repertoire is being built upon in innovative ways today: the highly varied RD current described in Chapter 9 is a result of this, and contains considerable possibilities for extension. Here, the future is derived from the potentials entailed in the present. The RD current contains a considerable potential power: both symbolically and materially. In the

battle for the future, ironically, the current that takes its starting point in the past and the present stands the best chance of success.

Today's RD *current* is a powerful and self-enhancing movement. Rural development as a new *macro-project*, on the other hand, is powerless. It only generates frictions and frustrations within the current that it cannot, and does not want to, join.

Thus, a paradox emerges. On the one hand the Ministry of Agriculture and an expert system *claim* power (and try to establish this with billions of guilders and detailed regulations). On the other hand, they emerge as non-agencies since they fail to communicate with, and/or gain the confidence of, rural development practitioners. The expert system produces ignorance when knowledge and capacity are needed, and hence the Ministry of Agriculture loses its grip on events. Most obviously, the ministry is insufficiently able to join the actual innovations and diversifications that make up the RD current.

The power of the RD current not only lies in its size, but also resides in the widely shared hope that it will provide a more realistic and more attractive future. More realistic because it can be imagined as a development opportunity building upon (instead of being a rupture from) the present. More attractive because it contains concrete connections between agriculture and society as they exist now and are likely to be in the future. The new macro-project of the expert system, on the other hand, is a powerless project, especially as it requires an extent of coordination that is difficult to imagine in the long run. Rural development, as imagined by the expert system, needs to take place alongside an acceleration of scale enlargement. This project, however, is as fragile as a rural development project that does not join the existing practice of farmer-led innovation and diversification. In this way too, the Ministry of Agriculture and the expert system are turned into powerless agencies: they represent mutually colliding and individually unrealisable or hardly realisable projects.

Power is a relational concept. Power appears when different social projects are combined in such a way that they reinforce each other. By contrast, situations will exist where incapacity, and mutually exclusive projects are the main features. Associations are not formed. The necessary *cohesion* is missing, without which a society cannot survive for very long.

Principally, it is the task of politics to establish and safeguard cohesion. Generally, this involves, the balance of the economic, the social, and the ecological. More specifically, it involves the balance and cohesion of various projects. However, there is little room for the political if cohesion is informed by an expert system that has produced mainly ignorance, if the civil service keeps slavishly following the expert system, and if agriculture makes unmanageability into a principle. The recent years are evidence of this.

In the long term, it is inevitable that the superfluity of both the Ministry of Agriculture and the expert system will become obvious; the call for their abolition will become louder. Especially since those actively involved in

rural development increasingly ignore the ministry ('you can't arrange anything with them') and make the necessary arrangements with *other* partners (for example, provinces, nature-conservation organisations, and regional farmers unions).

The Ministry of Agriculture increasingly finds itself playing the role of a prim junior school teacher who thinks she can still reprimand adolescents. They laugh at her (or say 'yes, miss' to her out of respect) but nevertheless go their own way. The same applies to the (now partly privatised) expert system: it will appear increasingly irrelevant. On the whole this is a pity. A renewed countryside and a renewed agriculture deserve a world-class ministry and knowledge organisations.¹⁸ However, if the latter lack any relation to the innovative RD current, they make themselves superfluous. This is in itself not a reason for sadness. The real danger is rather that we will lose the pearls called agriculture, cultural landscapes, countryside, and good food. However invisible these pearls have been made by the image of the virtual farmer, they do exist and remain a good that should not be lost. Once they are lost, they will be lost once and for all.

Notes

1 Alongside numerous other issues that have been discussed in this book.

2 Structure is hidden behind the confusing amount of different, often contrasting, manifestations. Structures cannot be easily identified in everyday life. Academics and expert systems are indeed needed (at least within structuralist models) in order to find the real structures behind the confusion and immediacy. A rather creepy parallel with Marxism as scientific theory and the totalitarian forms of government that they gave rise to, surfaces here. Only the party could get to the very core of things by means of dialectic materialism, not the common people.

3 Marshall characterises this by speaking of the 'death of the subject' (1994, p. 516) – that is, actors no longer matter in highly structuralist approaches.

4 More precisely, structure is a set of expectations that guide actions. At the same time, it involves actions that are actively (that is, after an interpretation of selected facts) institutionalised into 'structure'. This duality can be defined accurately by the notion of 'structural development', which has played such a crucial part in Dutch agriculture. 'Structural development' is a dual concept. On the one hand, it includes the expected development of the agricultural structure: further development of larger farms (invariably called 'the leaders' in many of the texts of the Ministry of Agriculture), the elimination of 'small farms', and the unfolding of the amorphous intermediate group of 'medium-sized farms' towards the 'leaders' or redundancy. On the other hand, the same concept of 'structural development' refers to a causal complex from which the described development inevitably results. It is an expected development that is 'structurally' determined. Hence, it is an 'inevitable' development. Subsequently, the adjective 'expected' is superfluous. Both aspects are closely related: a certain development is set in motion by reference to inevitability. And the more it continues, the more the initially 'expected' inevitability is actually demonstrated. Developments that deviate from 'structural development' are kept outside of the research agendas. They concern matters that cannot take place in this virtual world – so why devote effort to (and waste time and person power on) investigating them? The answer already exists: it is impossible. In all my years of involvement with the expert system, my experience has always been that it is not able to conduct really innovative research. That is only possible via other avenues: universities, Brussels and other political circuits. Only if it becomes clear through series of publications, research studies, and

through a change in political climate that things can be approached differently, will the expert system address and subsequently look to re-capture a monopoly.

5 During the 1990s, my research group has been involved in the realisation, analysis, and publication of five nation-wide surveys among farmers (see Ettema *et al.* 1994; Van der Ploeg *et al.* 1994; Ettema *et al.* 1995; Boerderij 1997). Inquiries were always made in these surveys about the future likelihood and possible reasons for farm closure. It appeared time and again that closure is rarely brought about by an acute or expected income problem. More important, if not decisive, is the lack of prospects, the feeling of no longer belonging. What we usually call economy operates only to a limited extent via the immediate impact of market and price relations. The actual degree of market dependency and the images about expected developments in and around the relevant markets are much more important factors. It is not so much the actual (economic) situation that is used as guiding principle in decisions about continuity or farm closure – it is expectations about ‘whether the farm will be able to keep up’. These kinds of considerations become decisive in economic actions in the short term (whether to close the farm immediately, to cut back in the long term, to ‘hold out’, to grow carefully, to expand greatly, or to mark time). En passant, this emphasises again, although now at a completely different level, the extent to which socio-economic behaviour is ruled by considerations about the future. It is not so much history, or the currently prevailing constellation of relationships, that order this behaviour – such behaviour is concretised via the future. Time and again, the essential question is whether development opportunities exist, and if so which ones? At the same time, it becomes clear that it is impossible to investigate the definition of future prospects and, hence, the definition of one’s own opportunities from the perspective of methodological individualism. The ‘future’ is the most important arena within which different projects are unfolded and forged into a guiding ‘compass’, into a ‘structure’ that offers consistency, legitimacy, and prospect (or not) for today’s actions. This intriguing, ‘structuring’ role of the future touches not only at the esoteric, but also and especially upon what we usually call economics: the hard rock bottom of producing, commercialising, investing, and farm development. If this set of ‘economic actions’ is usually understood principally in structuralist terms (that is, as determined by the currently prevailing market and price relations), ‘economics’ appears above all to be dependent upon prevailing future expectations. To the extent that ‘economics’ operates in agriculture, it is through the future expectations that give direction, and lend colour, to interpretations of the current state of affairs. If certain interests, projects, and positions represent a certain ‘power’, this is because they are more able than others, to manipulate the definition of the future and arrange it according to their own models. *Voilà*, the strategic role of the expert system in repeatedly ‘predicting’ the halving of the number of farms in the coming years. One could say that ‘economics’, as understood by neo-classical economists in particular, does not exist. ‘Economics’ is a fiction, made real by exclusive claims made on the interpretation of the future (and by the widespread belief that such claims are right and convincing).

6 See chapters 4, 5, and 9 of this book, respectively.

7 Free-rider behaviour is partly caused by this: one is sometimes forced in practice to do this by the discrepancy between prescriptions and the practical situation.

8 This is one of the most serious issues of the past decades. It was clear for about 20 years that a sizable sustainability problem would arise in Dutch agriculture. However, when the problem became so manifest in the early 1990s that political intervention was no longer avoidable, decision-making and the public debate were seriously frustrated by a lack of knowledge. Only guesses could be made at various issues. The term ‘missing trajectory’ became established during this period. The expert system had generated considerable knowledge about N use between 300 and 500 kg per ha. The previous ‘trajectory’ (of roughly 0–200 kg/ha) emerged suddenly as the ‘missing trajectory’, for which no knowledge was available. A similar story can be told about numerous other issues. There was no knowledge, only ignorance about paths that deviated from the dominant development trajectory. This issue is becoming acute once again, in respect of food security and quality, as well as with respect of ‘rural development’. The first, influential studies about rural development were all produced *outside* of the expert system (see NRLO 1997). The publication of studies that later turned out to be very influential was often blocked in

the beginning by DWK (the core of the expert system). They could only be realized after political interventions by the minister.

9 Following Szerszynski, 'the future is not a pre-existing land towards which we are all moving, and which it is our task to discern through the mist and prepare for, but something which is created and shaped through all the decisions we make' (1996, p. 10). However, the opposite happens in and through the expert system. The future is 'closed off', presented as one, inevitable destination.

10 It could be said, with some irony, that the preference for 'traditional thinking' seems to support the continuation of the expert system.

11 It is probably better to phrase this as 'thus generated'.

12 There is more to this, of course. The expectations of the Ministry of Agriculture as expert system were and remain one of the most important ordering principles. Structure emerges, together with the way in which it is reacted against (the ordering principles inherent in various farming styles), as fluid, as motion, as an emergent whole. In the case of trust, structure does indeed coincide largely with the ordering principle. Distrust, however, in the future expectations articulated by the Ministry of Agriculture (and other ordering principles), leads to discongruity and non-agency, the 'organised irresponsibility' of which Mansholt spoke.

13 It is not possible to explain social developments outside of social relations and practices. Social practices can only be explained through, and from within, the social. It is remarkable, however, that developments and practices in contemporary agriculture are structured by a fixation on (and the battle for) the future. In so far as a structure exists, it is situated around the definition of the future, around the organisations and positions that (are able to) claim the capacity for formulating such a definition, and around the means with which this takes place. Structure is the 'story' (the 'discourse') that is told about the way in which to continue. And hence, structure is the degree to which this 'story' is institutionalised and represents 'authority'. Structure is the dominance of a certain *discourse*. A structure is 'stronger', more coercive (more 'structuring'), the more this discourse or 'story' is taken up and used by other actors. By attuning one's own projects to (that is, by coordinating and safeguarding them through) the dominant discourse and project, one's own 'success' becomes more assured, and the structure becomes durable, legitimized, and made into a convincing fact ('proved', not because it is the only possible structure but because it is made 'right').

14 This would collide with the expert system as institutional interest. The inability implies that the 'new' can only be imagined in terms of coordination with the already developed model. To paraphrase Latour, the expert system has 'never been wrong'. Incidentally, it should be noted that the Minister for Agriculture, Van Aartsen, has tried to create such a distance. He criticised aspects of the former modernisation project several times. However, this view has not been taken on within the ministry nor within the expert system.

15 I would like to remind the reader that this distrust is largely caused by the expert system itself, since research is increasingly disconnected from the practices, interests, perspectives, and insights that are held within the agricultural sector. Distrust is further reinforced since no adequate relationships, let alone coalitions, have been built by the Ministry of Agriculture with the growing group of innovators.

16 The widespread feeling of crisis is directed mainly towards the Ministry of Agriculture. This is not surprising. For a long time, the ministry has been the axis around which revolved both the developments of and the debates about this issue.

17 The discongruity can partly be attributed to the failings of the expert system, since the potential for combining different developmental trajectories have not been included as serious and researchable themes in the research agenda. From the outset, the expert system opted for juxtaposition. Hence, discongruity is probably a far bigger issue than it should or could be.

18 Farming is impossible without clear projects, without a more or less coherent set of notions over the questions of how farming has to be conducted, how farms should be developed, by whom, to which ends and through what means this needs to happen. This applies not only at the micro-level but also, and perhaps even more so, at the macro-level.

The relationships between farms have to be ordered as do the relationships between farms and the supply and processing industries. Through these relationships, the relations between production and consumption, between imports and exports, between agriculture and industry, between food quality, ethics and mode of production, between landscape and farming, and so on have to be actively ordered. Such a project, spanning the whole sector, is necessary to produce the required coordination between micro- and macro-levels, to create convergence, in the long run, between the activities on the many thousands of farms with more general social, ecological and political interests and perspectives.

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