Enacting standards in organic agriculture

Maarten van der Kamp

BEng, MSc

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I hereby declare that this thesis is my own work, and has not been submitted in substantially the same form for the award of a higher degree elsewhere.

Maarten van der Kamp

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Abstract

Enacting standards in organic agriculture. Maarten van der Kamp, BEng, MSc. Thesis submitted for the degree of Doctor of Philosophy, Graduate Management School, Lancaster University Management School, June 2011.

This is a thesis about the standardisation of food through 'sustainability' labels, like those signifying organic or Fairtrade status. It examines how the voluntary product standards that underpin such labels are enacted through the everyday practices of producing, certifying and marketing farmed produce.

This qualitative study of the enactment of organic standards in the UK suggests that such standards coordinate practices, forming an infrastructure which is normally invisible but which can be mobilised by producers to differentiate organic from conventional products. I describe the ways in which organic standards are enacted by farmers, certification bodies, policy makers and market actors. I suggest that standards provide process injunctions for farmers, requiring them to configure their farms in particular ways, adopt a preventative mode of farming, and a distinctive method of calculating value. I argue that organic standards are continually rewritten in the certification process, and that the multi-sited reproduction of different versions of organic standards results in markets characterised by a fragmented common space and partially maintained boundaries. Finally, I suggest that policy interventions formalise and frame organic farming as a public benefit.

I argue that a multiplicity of 'organics' coexists with global notions of a singular 'organic', implying that the diffusion of 'organic' as a coherent concept is perfectly possible, even if the enactment of 'organics' in local practices is diverse. I suggest that all site-specific enactments of organic standards are abstracted into various formal spaces where they are made commensurable, and argue that the uniformity of organic 'stuff' is a result of the way local enactments are conjoined. These abstractions remove specifics of production and certification, and allow organic 'stuff' to circulate between actors.

I conclude that the way in which voluntary product standards shape agricultural systems has political, organisational and ethical consequences for how 'sustainable' products are constituted.

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List of Abbreviations

ACOS	Advisory Committee on Organic Standards
BDAA	Biodynamic Agriculture Association
BSE	Bovine Spongiform Encephalopathy
CAP	Common Agricultural Policy
CBTWG	Certification Bodies Technical Working Group
DEFRA	Department of Environment, Food and Rural Affairs
EAFRD	European Agriculture Fund for Rural Development
EFRC	Elm Farm Research Centre
EU	European Union
GMO	Genetically Modified Organism
HLS	Higher Level Stewardship
IFOAM	International Federation of Organic Agriculture Movements
IOAS	International Organic Accreditation Service
IOTA	Institute of Organic Training and Advice
MAFF	Ministry of Agriculture, Forestry and Fisheries
MOS	Management and Organisation Studies
NAO	National Audit Office
OAS	Organic Advisory Service
OCIS	Organic Conversion Information Service
OFF	Organic Food Federation
OF&G	Organic Farmers and Growers
OFS	Organic Farming Scheme
ORC Wales	Organic Research Centre Wales
OELS	Organic Entry Level Stewardship
RPA	Rural Payments Agency
SACh	Soil Association – Charity
SACL	Soil Association Certification Limited
STS	Science and Technology Studies
UKAS	United Kingdom Accreditation Service
UKOCG	United Kingdom Organic Certifiers Group
UKROFS	United Kingdom Register of Organic Food Standards

Chapter 1 Unwrapping a cereal bar

1.1 A cereal bar loaded with labels

At first sight, the flapjack I found on the shelves of the Spar supermarket on campus in 2007 was just that: a flapjack. Costing 40p, a healthy snack to go with a cup of coffee; an inconspicuous everyday consumption item. Except, a quick comparison with some of the other cereal bars on offer revealed that this flapjack was different: the packaging indicated that this was the only one flavoured with apples and sultanas, but it also showed three separate labels specifying some additional properties. Whereas the packaging of some of the other cereal bars sported no or maybe one or two labels, the labels on the packaging of this flapjack indicated that this bar was the only one that was organic, Fairtrade *and* approved by the Vegetarian Society (see Figure 1.1).

Figure 1.1: Doves Farm Apple and sultana flapjack

I regarded these labels routinely: since the late 1980s their presence on products was an increasingly common sight in supermarkets[1]. Therefore, as a consumer I was familiar with the fact that they told me something about how those products had been produced: for clued in consumers they provided a possibility to support a more environmental and ethical way of

[1] In the Netherlands, the Eko-label for organic produce was introduced in 1985, and the Max Havelaar label for fairtrade coffee in 1988; in the UK, the Soil Association introduced its label in 1973, and the Fairtrade label in 2002.

producing and/or trading produce through the purchase of labelled products—for them, they made the products a little less inconspicuous on retailers' shelves (Cochoy, 2007).

Yet, I did not discard the packaging as the combination of three labels puzzled me. The labels seemed to take over the packaging, prominently providing different messages about the single product inside. Indeed, they almost seemed to burden the product: this flapjack complied with all of the different requirements of all these labels. Did this make the flapjack a super-ethical product, or did this only cause confusion about the claims Doves Farm wanted to make? For example, the Vegetarian label seemed superfluous to me as I would not have expected animal products in a flapjack in the first place. As such, I was curious about the multitude of labels on the packaging, and about how those three labels related and what messages they conveyed.

In fact, this bar became the topic of discussion during a supervision meeting. The quick internet search I did in preparation for the meeting revealed how different these labels were: they had radically different origins, and embodied distinctly different ideas about how food should be produced and consumed. Firstly, the Vegetarian Society was founded in 1847 by followers of Reverend William Cowherd, who advocated abstinence from flesh-eating. While that was based on a Protestant ethic, current publications of the Society position vegetarianism as being a personal moral choice which can stem from different concerns and beliefs about animal welfare, the environment and health. In 1969, the Society introduced a voluntary quality standard, which stipulates that food products should be free from animal flesh or any other ingredients resulting from slaughter, contain only free range eggs, be free from genetically modified organisms (GMOs), and be cruelty free—the standard prohibits animal testing. Companies applying for the mark provide a list of ingredients, sign a declaration that this list complies with the Society's standard, and pay a licence fee, upon which the product is approved. Currently, more than two thousand products have been approved.

Secondly, the Soil Association was founded in 1946 by a group of farmers, scientists and nutritionists who observed a direct connection between farming practice and plant, animal,

human and environmental health. This is still reflected in the ecocentric philosophy of the organisation which advocates "[r]everence for and learning from nature, and living within the limits set by the need to maintain the earth's natural resources", and "an ecological approach to conserving life on earth (not just for human needs, as in sustainable development, but to allow the integrity and autonomy of the natural environment, wildlife and kept animals)" (Soil Association, 2006: 4). The Soil Association published a first version of their standards governing organic farming in 1967, and introduced the first certification scheme in 1973. Organic farming grew slowly until some of the UK's supermarkets started stocking organic produce in the mid 1980s to increase consumer choice. Around that time, a national regulation was drawn up to harmonise standards for organic agriculture (there were other organisations offering certification according to their own standards in Britain) before the European Union adopted its first, European regulation on organic farming in 1991. Yet, until now the Soil Association has retained its own set of standards which are in some areas more strict than the EU regulations. Through its trading subsidiary Soil Association Certification Ltd, the Association indicates that it currently certifies between seventy and eighty percent of all organic products sold in the UK.

Finally, the Fairtrade Foundation, which administers the Fairtrade mark in the UK, was established in 1992 when a number of fair-trade organisations collaborated to establish one, UK-wide recognisable label for fair-trade products. Most fair-trade organisations emerged in the 1950s and 1960s when they established, often through missionary posts (mainly in Africa and South America), direct relationships with small-scale producers in the developing world to pay fair prices to producers. The underlying concept of these relationships was that a trade relationship based on equality and fairness would be better in stimulating and helping developing societies than development aid given by Western countries. Through the buying behaviour of consumers, the destructive power of large, exploitative organisations could be curbed, and trade relations would become transparent. Nowadays, products carrying the Fairtrade label have been produced by cooperatives certified by the Fairtrade Labelling

Organisation, which owns and administers a global Fairtrade standard (the international organisation of the Fairtrade movement is elaborate, with some five or six related bodies governing different parts of the operation). The Fairtrade standard refers to ten conditions, ranging from creating opportunities for economically disadvantaged producers and capacity building, to having a transparent and accountable supply chain, and striving for gender equity, improved working conditions and the abolition of child labour.

Comparing the different approaches of these labels, the Vegetarian label facilitates individual, moral choice. Based on a missionary history, the Fairtrade movement aims to reshape trade relations by calling consumers to arms. Contrasting both, the Soil Association is based on the conviction that its members want to have good produce for a healthy lifestyle, not particularly based on a religious belief. The notions of morality, wrapped around my cereal bar, therefore emphasise individual choice to act appropriately regarding one's own welfare and that of other animals (Vegetarian Society), care for the planet and everything it is inhabited by (Soil Association), and care for exploited people (Fairtrade). On an operational level, these organisations have completely different requirements and methods of verifying compliance with their standards. For example, companies applying for a label must respectively self-declare, undergo external inspections or have their trade relations monitored.

As these brief histories show, these three labels embody very different narratives and rationales of what is important in how products are produced: the organisations involved each have their own requirements for how these products should be standardised. That is, each standard underpinning a label constructs some qualities that are common to all compliant products. To standardise something is to stipulate how some elements of production should be shaped or what needs to be included or excluded; as each single product with a certain label has been produced with the same requirements, they are standardised and in at least some respects uniform. For example, all vegetarian approved products are uniform in that no animal flesh was used and that animal cruelty was avoided.

These are not the only labels available to producers to make their products a little less inconspicuous: over the course of my doctoral research I found that there are at least eighteen labels representing sixteen different standards that are routinely used on food products and farmed commodities (see appendix 1 for an overview and brief descriptions of the standards they represent)[2]. Put differently, there is a multitude of voluntary standards that can be mobilised or used by producers, traders and retailers to simultaneously organise and describe how food is produced, traded and marketed. Of course, these voluntary standards are not the only ones governing the production of food and therefore it is necessary to consider the wider field of how food standards operate.

1.2 Food, standards and sustainability

Standardisation of food products has a long history. For instance, the English court of Henry II standardised the quality of bread in the thirteenth century by means of the *Assize of Bread [1266]*. Loaves of bread were sold for a standard price for a certain quality of bread, and the weight of a loaf would vary from year to year to accommodate fluctuating grain prices. The price of grain was fixed each year by local magistrates throughout England, and on this basis the allowable weights for bread of eight different qualities were reviewed so that bakers would have a guaranteed income and consumers could rely on the quality of bread on the market (Ross, 1956; Davis, 2004). Bakers were required to stamp their products with a mark to indicate that the loaves were of the right weight. Individual marks ensured traceability in case cheating bakers sold bread that would be too light or adulterated with chalk, grit or clay, potentially resulting in prosecution. The stamp therefore protected the consumer, but it also barred others from selling unregulated bread on the market, thus providing protection for bakers (Schechter, [1925] 2000).

[2] These eighteen labels apply to the products themselves, and do not include company-specific indicators or voluntary logos about for example the recyclability of the packaging.

Nowadays, food in the UK and the EU is subject to a much larger and more complex body of regulation to protect and inform consumers and to organise industrial sectors. For instance, there is a standardised way of indicating tolerances on volumes and weights of products (DIUS, 2007), there are maximum limits for contaminants such as fertiliser and pesticides and minimum hygiene standards in processing of food (EC, 2004), and there are rules on what is allowed in terms of marketing (EC, 2006). Most food is sold packaged in regulated materials, and each piece of packaging contains several texts, symbols and marks to indicate where and to what standards the item was produced, and what some of its essential properties are (FSA, 2008). For example, my flapjack contained a complete list of ingredients, some warnings for allergy sufferers, nutritional information as well as a statement where it was manufactured and a business address—all required by law. Once the packaging is removed, different kinds of mandatory regulatory and normative standards are invisibly present: *inter alia*, ingredients are grown in environments also governed by regulation, they are sorted and graded according to various classifications which are subject to their own standards, and traded using standardised forms of transactions (Busch, 2000; Hatanaka *et al.*, 2006; Dubuisson-Quellier, 2010; see also Bowker and Star, 2000, and Lampland and Star, 2009).

Thus, grades and standards are ubiquitous in the production of food (Busch, 2000). Whereas most of these standards are mandatory regulatory requirements or normative arrangements, some forms of standards are in principle voluntary: in contrast to rules for spraying pesticides, food hygiene, use of weights and measures, etc., there are no statutory or legal requirements for farmers and producers to comply with voluntary standards if they do not actively choose to do so (Brunsson and Jacobsson, 2000).[3] Compliance with voluntary standards of the kind in which I am interested is usually monitored and certified by an independent organisation without legislative powers, which issues a licence to apply a label of

[3] For individual producers, commercial pressures may not always make this a voluntary choice though.

compliance to the certified product (Boström and Klintman, 2008). For buyers of these products, the certificate provides a guarantee of compliance with these 'extra' standards (Hatanaka *et al.*, 2005) and therefore enables the transaction in markets constituted by these additional conditions. Some such schemes offer reassurance that certain produce is safer than non-labelled produce, e.g. the Lion mark on British eggs indicates that they are guaranteed salmonella-free. Others indicate that a product is free from particular types of ingredients, such as the vegetarian label. The third category of labels signify that environmental or social aspects of the production process have been a consideration for the producer and therefore that the resulting products provide particular benefits (e.g. Fairtrade; organic). It is important to note that for this latter category, the independent certification of farming practices is the precondition for the functioning of global markets for 'sustainable' produce: only once conformity with the relevant standards has been externally verified can produce legitimately be qualified and traded as such.

In this thesis I consider standards as a rule-based mechanism for the coordination of disparate elements of practice across time and space (Timmermans and Epstein, 2010). In other words, voluntary standards—and the labels associated with them—coordinate the practices of different actors in particular ways: consumers are encouraged to change their patterns of consumption, manufacturers are offered a particular image and access to a premium market if they change their production processes, and producers of raw ingredients are offered the opportunity to reap better rewards for their produce if they alter their farming practices. Mostly, these standards are developed by organisations which present themselves as advocates for more sustainable practices and lifestyles (NGOs like the Fairtrade Foundation and the Soil Association). These organisations explicitly set out how material production processes must be structured and how living beings (humans and animals) must be treated. Underpinning the political consumerist argument (see for example Elkington *et al.*, 1990; Micheletti, 2003; Føllesdal, 2004; Boström and Klintman, 2008), these standards are framed and legitimised as a means of radically altering the way in which food is produced, processed

and marketed: they are aimed at reshaping economic, social, institutional and cultural relations surrounding the production and consumption of food (e.g. Raynolds, 2000; Hassanein, 2003; Coff, 2006; Hatanaka and Busch, 2008; see also Neyland and Simakova, 2010, on clothing).

As such, such voluntary standards do more than merely assist in the value-free and neutral resolution of technical aspects of sustainable practices. Indeed, recent studies (e.g. Schmidt and Werle, 1998; Bowker and Star, 2000; Busch, 2000; Timmermans and Berg, 2003; Bingen and Busch, 2006; Boström and Klintman, 2008; Lampland and Star, 2009; Higgins and Larner, 2010) have illustrated how standards in general incorporate social, political and economic interests, and therefore how they, as thoroughly sociotechnical objects[4], shape social and material relations. The brief histories of the three labels above already indicate how standards emerge from different ideas about personal and collective morality, and give a sense of the implications of their adoption for how producers and manufacturers go about their business. Moreover, they suggest that standards do not exist in a vacuum and that they involve different actors, for instance to verify compliance, facilitate trade and to stock labelled produce. Put differently, standards are not mere abstract knowledge (*episteme*), but require infrastructures[5] through which they are embodied (Bowker and Star, 2000; Dunn, 2009).

This implies that to include the labels on the packaging of the flapjack, Doves Farm mobilised three separate infrastructures involving application packs, standards, inspections, certain growing practices (Doves Farm produces its own cereals), certified suppliers, administration, certificates and probably a host of other elements. For each of the labels, those organisational infrastructures were already in place, they did not need to be invented

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[4] I see objects as entities which are "constructed by actors as they make sense, name, stabilize, represent and enact foci for their actions and activities" (Engeström and Blackler, 2005: 310). But these entities cannot be constructed arbitrarily: they have histories and enable particular ways of doing, but also offer resistance to change. In this thesis, objects are generally not material (although they are usually embodied in material artefacts).

[5] In this thesis, I regard infrastructures not as physical structures, but as systems which structure how sets of practices are organised.

especially for the flapjack (Bowker and Star, 2000). Yet, they do not 'just' exist: they need to be carefully maintained to do their work in the background and therefore remain invisible (Bowker, 1994; Star and Lampland, 2009). According Star and Ruhleder (1996), infrastructures of this kind enable local practices in that they constitute a supportive, larger-scale 'technology' (in a broad sense) which is transparent and ready-to-hand. As such, they argue that infrastructures are fundamentally relational and constituted in the organisation of practices. The local practice of labelling a flapjack with three labels, then, requires three separate larger-scale technologies, each of which informs the organisation of local practice in a slightly different way.

This raises further questions: What was involved in getting the labels on the packaging of the flapjack? What technologies (broadly defined) were implied? What are the properties of those standards-making infrastructures? How do they shape local practices of farming and marketing, and how do they constitute a framework that is transparent (to those involved) and yet invisible (to consumers)? The aim of this thesis is to foreground these infrastructures through what Bowker (1994) has called an 'infrastructural inversion': I examine how the normally invisible infrastructures of 'sustainability' labels are constituted through the practices which are organised by the standards on which those labels are based. This means that this thesis is about the everyday activities of different actors. It is about how these activities are shaped by the standards they reproduce, and how different practices 'hang together' to form the infrastructure.

Consequently, this is not a thesis about the Doves Farm flapjack as such. Nor is it about political consumerism, i.e. the processes through which 'sustainability' labels enable consumers to shape their identities (for such debates, please refer to Micheletti, 2003, and Boström and Klintman, 2008), or about governance, i.e. network-based systems of regulation, mostly in market settings (e.g. Tanner, 2000; Carnoy and Castells, 2001; Jessop, 2002). Rather, this thesis is about the infrastructures constituted by standards that form a precondition for both political consumption and the governance of supply chains: it is only because of those

infrastructures that individual acts of consumption and devolved regulation of supply chains can be considered as an option in the production, trade and consumption of food. This is not to say that standards and their infrastructures existed prior to or outside of these practices. Historically, voluntary product standards and their infrastructures have coevolved with ideas about consumer involvement in the reshaping of how food should be produced and how trade relations should be shaped, and ideas about how supply chains should be organised without hierarchically imposed regulations. Moreover, it is only because market actors adopt these standards, because they serve to organise supply chains, and because consumers buy labelled products that those infrastructures are maintained. At heart, my interest is in what lies behind the many labels Doves Farm applied to its flapjack, and therefore the way in which standards shape social and material relations through practice, i.e. how their reproduction in the everyday activities of farming, certifying farmers, and marketing produce also configures these same activities.

1.3 Outline of the thesis

Within the social science literature there are many accounts of how standards are made and maintained, and how they shape economic and organisational connections (e.g. Liebowitz and Margolis, 1995; Brunsson *et al.*, 2000), but there are few studies of how standards affect sociomaterial practice and, in reverse, how practice affects what standards do. This thesis adds to this small number of studies by examining in detail how standards for organic agriculture are enacted, thereby contributing to the argument that such studies are necessary to describe the social, political, organisational and ethical consequences of standardisation (e.g. Bowker and Star, 2000; Timmermans and Berg, 2003; Lampland and Star, 2009).

To examine the interrelations between standards, practices and the infrastructure constituted through them, the argument of this thesis is as follows. Situating my thesis in relevant literature on standardisation and practice, I draw on various concepts to capture the active role of how standards organise and coordinate practices. In particular, I suggest that standards 'come alive' through the activities of different actors; in turn they affect what these

actors do, thereby acting out the inescapably political and ethical implications of the organising and ordering entailed in the standard (Chapter 2). This is followed by a more detailed discussion of my selection of the site in which to study the enacting of standards; I chose to focus on a single infrastructure for which organic farming provided an especially revealing site due to its historical emergence and current constitution. I provide a brief history of the organic sector and the relevant actors in it, and a discussion of the qualitative research methods and sampling I used to generate my data (Chapter 3).

In the five empirical chapters, I examine the 'coming alive' of organic standards for the practices of distinctly different actors as separate recognisable entities. I start by examining how compliance with organic standards in farming practice is shaped. I suggest that standards provide process injunctions (Kaufmann, 1998) for farmers, requiring them to configure the temporal and spatial organisation of their farms in particular ways. I show that these configurations draw on activities and tools that are already standardised through different standardisation processes, and that they result in a preventative mode of farming. I argue that each enactment of organic standards is unique and therefore that the 'doing' of organic is characterised by multiplicity (Chapter 4).

However, these temporal and spatial configurations are not the only ones required to produce organic 'stuff': I show how the organisation of organic farming is constituted and codified in a number of calculative devices and in the prioritisation and valuation of certain elements. I show how a particular form of farming economics, the integration of enterprises, the choice of varieties and breeds and the extension of farming practices through administrative activities are shaped by injunctions which do not directly follow from specific rules in organic standards, but from the practicalities of interpretation in everyday life, and of 'doing' of organic itself. I suggest that this results in farm systems which are agronomically, economically and socially feasible and which allow the traceability of the organic status of their produce (Chapter 5).

Turning to the process through which farming practices are certified, I suggest that the activity of certification is based on an interpretation of standards and practice in the context of each other. I argue that inspectors and certification officers are not mere external observers trying to reveal how a licensee enacts certain standards, but that they are active participants in shaping this object (the standard) and therefore how a particular, 'sustainable' form of farming is enacted by a licensee. I argue that the licensee-specific knowledge object underpinning this process can be characterised as having partial epistemic properties (drawing on Knorr Cetina, 2001) which need to be managed through a standardised process to avoid paralysis or arbitrariness in the certification of licensees. I conclude that standards for organic agriculture are not only written by the standard setter, but that they are continually rewritten—re-produced—in the certification process. As such, they are alive: with each new interpretation and with each new instantiation they subtly change and reconfigure how a particular form of farming is and can be enacted (Chapter 6).

Once organic 'stuff' has been produced and certified, it enters a market. To examine how standards for organic agriculture organise these markets, I draw on the concept of a market device (Muniesa *et al.*, 2007), and argue that the multi-sited reproduction of different versions of organic standards results in a multiplicity of organics which are enacted through a horizontally and vertically segmented array of markets. I show how heterogeneous sets of standards, viewed as market devices, render organic products 'economic' in a necessarily incomplete way, and argue that the distributed enactment of standards results in a multiplicity of markets which is characterised by a fragmented common space and boundaries that can only be partially maintained (Chapter 7).

Finally, because voluntary organic standards are situated in a wider regulatory framework, I consider this arena and identify policy interventions which shape the ways in which 'organic' can be enacted. Starting from the idea that policy interventions are located at the intersection of different practices, I explore two strategies mobilised by EU and UK policy makers in their attempts to enable and stabilise organic and to turn the activities of organic

farmers into a resource for different policy objectives. I argue that policy makers are actively involved in homogenising the organic sector and suggest that this homogenisation of organic proceeds alongside, but not in the same way, as that involved in the construction of 'organic' as a single, recognisable category in terms of which consumption can be organised. I conclude that the two policy interventions for organic agriculture establish a frame in which farmers respond and to which they adjust what they do (Chapter 8).

Drawing together these different strands, I argue that standards for organic agriculture organise more than only markets or farming practices: other actors are implicated in how the practices governed by the rules in those standards are enacted. I argue that the necessarily distributed reproduction of organic standards results in a multiplicity of different 'organics', which coexists with global, homogenised and coordinated notions of a singular 'organic'—suggesting that that the diffusion of 'organic' as a coherent concept is perfectly possible, even if the enactment of 'organic' in local practices is very different. I suggest that all site-specific enactments of organic standards are abstracted into various formal spaces where they are made commensurable, and argue that the uniformity of organic 'stuff' is not located in the individual enactments through which it was produced, but in the way these enactments are conjoined: products and practices are not 'homogenised' or made the same through standardisation but rather that particular aspects of how local, sociomaterial practices are organised are configured in particular ways so that different instances can become comparable or equivalent. As such, voluntary organic standards can shape different forms of agriculture—or more precisely a related set of agricultural systems—dependent on the local practices, coordinative structures, calculative devices, mechanisms of verification and discretion and systems of valuation which are mobilised in their ordering.

Finally, I argue that the move towards the use of voluntary standards in creating a more sustainable form of agriculture (however that may be defined) has implications that stretch far beyond debates in which the relative merits of one system over another are compared in supposedly 'objective' terms; I conclude that the way in which voluntary product standards

shape agricultural systems has political, organisational and ethical consequences for how 'sustainable' products are constituted (Chapter 9).

A reading guide

The empirical material presented in this thesis describes an infrastructure, which means that all of the sets of practices considered have to be enacted simultaneously and continuously for the infrastructure to be transparent and 'ready to hand'—in effect such an infrastructure defines a 'web of practices' in which no practice has a privileged or ontologically prior position to the others. This means that there is no single possible way of reading this thesis: readers can navigate through the empirical chapters (4 to 8) in a number of different ways. While chapter 5 cannot be read independently from chapter 4, the other chapters do not build on concepts and ideas that were developed in earlier empirical chapters—they are about different practices altogether. I have chosen a sequence that reflects the social and material trajectory of the flapjack: it is grown and processed in ways that need to be certified before it can be marketed in a sector that is shaped by certain policy interventions. Yet, for readers interested in the certification process, in market organisation or in policy interventions do not have to follow this route: they can jump to the chapter that is of interest before exploring the accounts I provide of the other practices that make up the total standards-complex.

Chapter 2 Standards, practices and infrastructures

2.1 Standards through time

Standards have been around for a long time. For example, Bell (2007) describes how in ancient Egypt blocks of granite were shaped according to specific instructions at the quarry before being shipped more than a thousand kilometres down the Nile to Gizeh where master craftsmen in the royal studios finalised the statues. Grid markings were used to coarsely shape the body according to a template, thus removing excess shipping weight and reducing the work for the master craftsmen. To accommodate this, an organisational system was required with standardised measurements, material specifications (to avoid cracked blocks), and codified features of the finalised statue; furthermore, these projects were funded by tax revenues which required sophisticated accounting methods and standardised measures, land and labour classifications (Carmona and Ezzamel, 2005). These sets of standards were mobilised year after year and over vast distances throughout the territory of the Egyptian pharaohs.

In contrast, other historical examples of standardisation show a spatially fragmented use of standards: in medieval times (lasting until the introduction of the metric system during the nineteenth century), most cities in Europe would have their own weights and lengths, often confusingly referred to by the same name. These measurements were often based on local customs and instances of practice, such as the amount of work a labourer could do in a day (Busch and Bingen, 2006). Other local standards dealt with the adulteration of foods and the maximum price that could be charged for a certain quality of food, such as that defined by the assize of bread referred to in the previous chapter, or the Bavarian *Reinheitsgebot* for the brewing of beer (Eden, 1993). While these latter standards were codified by written laws, other standards did not rely on text or numerical specifications but were embodied in artefacts which could be mobilised by different craftsmen using simple 'rules of thumb'. For example, Turnbull (1993) describes how templates (wooden patterns or moulds) were used in the construction of the great medieval cathedrals to transmit knowledge both spatially (between

masons, carpenters and ecclesiastical clients both on and off site) and temporally (between discontinuous building campaigns due to fluctuating funding and between changing groups of craftsmen working on a cathedral).

In increasingly industrialised settings, new forms of standardisation emerged. For example, Adam Smith (1779: I.1.3) described the increased productivity allowed by the division of labour of pin manufacturing into eighteen distinct operations which could be reproduced repetitively. Smith argued that the breaking down of the process of making pins into standardised elements (such as cutting wire or fitting pin heads) reduced the skills required to complete each step, leading to an increased dexterity for the particular tasks of a workman, saved time lost in moving between tasks, and allowed for the invention and use of "a great number of machines which facilitate and abridge labour, and enable one man to do the work of many" (I.1.5). Put differently, the division of labour resulted in the assembly of a sociotechnical ensemble (Bijker, 1995: 12) in which productivity increased as the relations between products, labour, skills and machinery were standardised.

A few decades after Smith published his account of the pin factory, this type of standardisation was extended to include the compatibility of different components of mass produced goods such as firearms, clocks, and later motorcars. Moreover, these components needed to be interchangeable and therefore required manufacturing processes based on templates and machine tools (Hounshell, 1984). Other processes led to yet further forms of standardisation: in the nineteenth century, railroad companies were actively involved in creating and disseminating a uniform, standard time through the temporal coordination of timetables connecting cities with their own time zones (Zerubavel, 1982). The twentieth century was characterised not only by advancing technological and bureaucratic standardisation but also the emergence of professional practices which were standardised so that they could be made comparable: the comparative assessment of clinical treatments was made possible by the development of protocols for the systematic treatment of patients (Timmermans and Berg, 2003), and management standards were developed to control and

harmonise business processes (e.g. Furusten, 2000). Finally, a type of quality standard emerged to differentiate between similar products on the basis of certain additional qualities, such as organic and Fairtrade standards (e.g. Hatanaka *et al.*, 2006).

The above examples of standardisation are based on referential standards, categorisations, compatibility standards, work protocols, performance standards, material specifications, and design standards. While many of these examples were designed and instigated by public actors, i.e. (local) governments, over the past two centuries private actors (companies) have become increasingly active in the production of standards. For these actors, standardisation was connected with powerful modernist discourses of rationality-driven progress as it promised to deliver uniformity, which in turn was connected with notions of predictability, accountability and objectivity (Timmermans and Berg, 2003: 8)[6]. According to Krislov (1997), this does not mean that standardisation has emerged only as a result of a modernist project, or that changes occurred in the type of standards that were developed, but that modernist standardisation processes are characterised by "the specificity of the processes created to prescribe them, and by the multiplicity of standards, their ubiquity, and their formality" (1997: 16). Indeed, various scholars have argued that standardising social and material aspects of life "has become a central feature of social and cultural life in modernity" (Star and Lampland, 2009: 10; see also Timmermans and Epstein, 2010).

As such, it would be unthinkable to live in a world without standards organising myriad aspects of everyday life. And yet standards often remain invisible to actors not involved in their (re)production (Bowker and Star, 2000; Lampland and Star, 2009). In fact, as Star and Lampland argue, "[t]he purpose of standardizing—to streamline procedures or regulate behaviours, to demand specific results, or to prevent harm—is rarely queried because it has come to be understood as a valuable and necessary, even if cumbersome, process" (2009: 10). Only when standards seem absent, or more precisely when incompatible systems of standards

[6] In fact, Zeiss concludes from her review of the literature on standards that "the modernist claims to objectivity and universality of standards do not hold" (2004: 43).

clash (e.g. going abroad with a device with a UK electricity plug; ordering a Lipton ice tea anywhere in the world and expecting the fizzy version only available in the Netherlands) or when accommodating non-standard options is a problem (e.g. ordering a fast-food burger without onions; see Star, 1991), do they become visible: as an irritation that something does not perform as well as expected. Yet other standards—or at least some of their effects—require visibility as they are used to distinguish or grade product qualities in market transactions (e.g. grains are graded for milling or for feed; Busch, 2000).

This necessarily very brief overview of just a few empirical examples shows that standardisation and standards are have been used to organise different aspects of everyday life throughout recorded history, and indeed that they are ubiquitous: there are few, if any aspects of social interaction that do not rely on some form of standardisation. Over the past century, therefore, processes of standardisation have been studied extensively by different disciplines: initially from a technical and scientific angle to achieve mechanical standardisation in product design and manufacturing (e.g. Harriman, 1928) and to make manufacturing more efficient through scientific management (e.g. Taylor, 1911). Later, standards gave rise to a large body of literature in economics (e.g. Schumpeter, 1954; Katz and Shapiro, 1985; Liebowitz and Margolis, 1995) and have been an important element in social theory (e.g. Weber, [1922] 1978; Foucault, 1977; Miller and O'Leary, 1987). More recently, scholars in management and organisation studies (MOS; e.g. Brunsson *et al.*, 2000; Higgins and Tamm Hallstrom, 2007), science and technology studies (STS; e.g. Bijker, 1995; Fujimura, 1996; Bowker and Star, 2000), and sociology of medicine (e.g. Berg, 1997; Timmermans and Epstein, 2010) have examined how standardisation shapes the social and material organisation of everyday life.

This thesis is firmly situated in the latter two traditions: my objective to foreground the infrastructures constituted by voluntary product standards stems directly from the STS tradition of revealing the implications of normally invisible features of everyday life. Moreover, many of the concepts I will mobilise in building my argument stem from different branches of STS. Other concepts stem from branches of sociology which take the performance

of social practices as the central feature of how everyday life is composed. Jointly, this allows me to examine the interrelation between infrastructures and the practices through which they are constituted. In this chapter I outline the theoretical threads that run through the entire thesis; in some of the empirical chapters I will bring in further concepts to examine particular features of the set of practices discussed in that chapter.

This chapter proceeds as follows: in the next section I discuss a number of different notions of what standards do and how they achieve this. I start by offering a characterisation of standards with reference to three mechanisms (coordination, classification and normalisation) through which particular forms of uniformity are achieved. This is followed by a classification of standards, which leads me to suggest that voluntary product standards are design standards which are based on third party certification. I then examine how standards, as active entities, shape practices and how the resulting universalities are necessarily local due to the interpretative work that is required to make standards applicable to local contexts. Subsequently, I discuss ideas about how standards produce order and simultaneously produce the disorder(s) they attempt to eradicate. I end the section by suggesting that especially the latter two notions (of local universalities and orders/disorders) are useful for examining voluntary product standards, but that as they have emerged from the study of a different kind of standard (protocols) they cannot entirely account for how voluntary product standards shape practice. In section 2.3 I therefore introduce three practice-theoretical concepts which act as resources to understand how practices relate to the material and social circumstances in which they are situated, the ontological tensions between singularity and multiplicity in objects that follow from reproduction in situated practices, and how mutually constituted practices and orders transform each other. In the final section of this chapter I introduce the notion of a standard 'coming alive', using this idea to refer to the way in which standards actively shape practices and orders in all of their multiplicities, and how they, through this active shaping, act out the inescapably political and ethical implications of their organising.

This leads me to pose the three research questions which underpin the empirical part of this thesis.

2.2 Conceptualising standards

The examples in the previous section show that standards are pervasive: they are involved in organising (almost) all domains of life. They also come in numerous different forms and guises: some are formal, others implicit; some are set by public authorities, others by companies or other actors; some classify, others prescribe courses of action; some are mandatory, others voluntary; some are extensive and multi-dimensional, others very simple; some are abstract, others are concrete; etc. Based on this multitude and diversity, how can they be conceptualised? Many authors have tried to define what standards are (e.g. Harriman, 1928; Cargill, 1989; de Vries, 1999), but these definitions usually are either generic or limited to one type of standard (e.g. industrial or management standards). As such, their value in analysing standards is limited. In contrast, in this thesis I draw on accounts of standards which provide conceptualisations, not of what standards are or are not, but of some of their key features. In this section I explore the fundamental role of standards in organising social and material relations. I then develop a scheme for classifying standards, and use this to narrow down the type of standards that are the subject of this thesis. In the second half of this section, I examine in more detail how standards shape practices, and the relation between standards, order and disorder.

Characterising standards

According to the international standardization organization (ISO), standardisation is the "activity of establishing, with regard to actual or potential problems, provisions for common and repeated use, aimed at the achievement of the optimum degree of order in a given context" (ISO, 2004: 4). In a note accompanying this general definition, ISO indicates that this provides benefits in the form of products, processes and services which are more suitable for their intended purposes, and the prevention of barriers to trade and technological

cooperation. Therefore, to standardise something is to provide the means through which a recurring, (potentially) problematic aspect can be resolved. Not once, but again and again so that products, processes and services are better suited to fulfil their purpose. As central features to (most) forms of standardisation, standards provide rules through which this can be achieved: they consist of agreed-upon rules through which uniformities across time and space are constructed (Timmermans and Epstein, 2010: 71).

Standards have at least three qualities relevant in constructing these uniformities: firstly, they extend beyond a single community of practice or site of activity, and are positioned to make "things work together over distance and heterogeneous metrics" (Bowker and Star, 2000: 14). As such, they establish relations between distributed social and material aspects of everyday life, with enduring effects. That is, they coordinate between these aspects so that some degree of order is achieved[7]. Secondly, Bowker and Star suggest that standards are carriers of classification systems which segment the world along spatial, temporal or spatiotemporal lines. Such classifications structure knowledge and practices: they form a set of boxes which can be used to sort and organise categories of something and therefore enable the ordering of entities according to the logic embedded in the classification system. According to Bowker and Star, any successful standard imposes a classification system, "at the very least between good and bad ways of organizing actions or things" (2000: 15).

This points to the third mechanism: standards organise how actors think about what or who is good or bad (Busch, 2000). Busch contends that they set norms through which different entities can be judged on a moral basis (see also Larssæther, 2010). In particular, he argues that formal, capitalist standards simultaneously standardise, and therefore pass moral judgment on things, workers, markets, capitalists, standards themselves, those who make standards, consumers, and the environment. This suggests that, as they have the capacity to grade a heterogeneous set of entities, the reach of standards stretches beyond the actors

[7] I will return to the point of order towards the end of the section.

involved in their production and the object that is standardised. While all authors referred to in this section contend that the shaping of social and material relations by standards is inherently political (see also Hanseth and Monteiro, 1997; Brunsson *et al.*, 2000; Zeiss, 2004; Higgins and Larner, 2010), Busch's sketch of the domains affected by standards and grades emphasises the potential reach of standards in transforming these relations.

Thus, standards organise constellations of objects, activities, actors and knowledge across time and space through rules rooted in coordinating, classifying and normalising processes. Through these processes, standards shape the trajectories of actors, objects and activities (Timmermans and Berg, 1997): by ordering some of the complexities of practices carried by different actors, they close off a multitude of possible trajectories. For example, actors such as assembly line workers need to follow standardised procedures so that the products they manufacture conform to a specification: the standardised performance of certain activities restricts what these workers can and cannot do at a given time, but it also restricts the trajectories of artefacts. Moreover, such standardisations allow the management and administration of activities so that profit—as a standardised object for managers and investors—can be calculated through standard accounting practices.

As such, standards contribute to sameness and difference (Higgins and Larner, 2010): actors, things and practices become standardised and therefore, in some sense, the same—uniform. In relation to entities which are not, or differently, standardised, these entities become different. Yet, uniformity is relative: as Hatanaka *et al.* (2006) point out, there still remain possibilities for difference within equally standardised entities as no two standardised entities ever can be the same in all respects; even widgets machined by the same computerised lathe with the same tools and protocols from the same rod of material will have individual differences. These differences may not matter for the substitutability of the widgets as long as they are within the allowable tolerances: this makes the widgets uniform in relation to their function within an assembly, even if they are not entirely identical.

But as noted above, the reach of standards can extend beyond their immediate scope: Michael (2010) provides a compelling example of how differently standardised sticking plasters turn consumers into choice-makers. He argues that this is a meta-standardisation, as with the emergence of different sizes and types of plasters consumers *have* to choose; in that sense, all consumers have become standardised. While this is not an explicit objective of the standards governing the different shapes of plasters that can be used to treat different kinds of minor injuries, it is a consequence which imposes an ordering upon consumers and wounded patients alike. Thus, what is made uniform is not necessarily restricted to the relations between objects, practices and actors which are made explicit by a standard: the presence of standardised entities can establish enduring relations with aspects of social and material aspects of everyday life for which the standard did not include rules.

Classifying standards

The examples I have used so far to illustrate some different features of standards also show that there are many different sorts of constellations that are coordinated by different types of standards. To narrow down where voluntary product standards are located in relation to this multitude of possibilities it is useful to impose a classification system on standards.

A first distinction that can be made about different forms of standards is about what is made uniform. Brunsson and Jacobsson (2000)[8] provide a useful typology as they consider ideal type standards to be either about being something, about doing something or about having something. The first type contains definitions, such as scales of measurement, classifications for objects, such as the Linnean system to categorise plants, and nomenclatures, such as the International Nomenclature for Diseases as referred to by Bowker and Star (2000).

[8] Brunsson *et al.* (2000) provide a programmatic attempt to develop a theory of standardisation in organisation studies in which they consider standards to provide a form of regulation which constitutes an ideal-type social form next to formal organisation, the market and normative communities. While their contribution is widely cited, I draw on only a few insights in a very limited manner: their analysis does not provide insights into the constitution of infrastructures, but rather the way in which these infrastructures can be mobilised by actors as a tool for organised governance within institutional fields. As outlined in the previous chapter, in this thesis those considerations fade into the background.

Standards about being something, then, define things, or prescribe the intervals which are to be used to measure something; they classify objects and actors on the basis of some essential properties, which allow these entities to be integrated into a practice.

The second type identified by Brunsson and Jacobsson contains requirements for what actors or objects should do. This includes material specifications such as the elementary composition of a particular stainless steel, prescriptions of certain performances, such as how different technologies should interface (see for example Schmidt and Werle, 1998), rules about how certain practices should be carried out, such as treatment protocols (Timmermans and Berg, 2003), and specifications of how certain management processes are constituted (e.g. Furusten, 2000). As such, standards about doing something provide rules about particular performances, and therefore define structural properties of objects, actors and practices.

The final ideal type in Brunsson and Jacobsson's typology contains requirements of particular properties that actors or objects should have, such as competences, qualities and skills. This includes things such as a qualification as a chartered accountant, or for organisations to have strategic plans. This is, in essence, a subtype of a classificatory standard—although Brunsson and Jacobsson do not recognise it as such. However, it is useful to retain the qualificatory dimension of this type of standards: the difference between 'being' and 'having' standards depends on where their politics are located. Whereas the establishment of categories through 'being' standards is inherently political and precedes the categorisation of entities, the political work of 'having' standards only starts once entities have been categorised; these categories are mobilised to exclude certain entities from the integration in practices (e.g. only chartered accountants can legitimately sign off company accounts; any other actor is excluded on the basis of not having this qualification).

As such, standards can be divided according to what is made uniform: is it what entities are, do or have? However, it is possible to be more precise with regards to standards which are about what entities do. In their conceptualisation of different standards, Timmermans and Berg (2003) define four different ideal type standards, one of which is analogous to the

classificatory type described above; the other three refine the category of standards related to 'doing'. Firstly, Timmermans and Berg identify design standards as defining the structural properties and features of objects, such as the dimensions of needles and the constitution of hospital resuscitation teams. Secondly, performance standards set outcome specifications. They do not prescribe what or how something needs to be done; rather, they prescribe things like a maximum complication level for a treatment, a minimum score at an examination, and the activities occurring at the interface of different devices without prescribing how these activities should be constituted. Finally, Timmermans and Berg describe procedural standards, i.e. protocols which specify steps that need to be taken when specified conditions are met. This includes the different steps of an oncological protocol through which certain types of cancer are treated, and the specific steps of checking airway, restoring breathing functions, re-establishing blood circulation, and defibrillation and drug therapy (A-B-C-D sequence) in the Advanced Cardiac Life Support (ACLS) resuscitation algorithm (see Berg and Timmermans, 2000).

Thus, categorising ('being') standards and qualifying ('having') standards classify entities differently, and design, performance and procedural standards organise what entities 'do' in different ways[9]. But this is not the only way of distinguishing different types of standards. A second distinction can be made through reference to the actors that are involved in the setting and enforcement of standards. Not all standards are formalised: some exist as norms and conventions among certain types of actors or even entire societies (Brunsson, 2000; Star and Lampland, 2009). Indeed, conceptions of normality are standards, for example about comfort and cleanliness, which diffuse and become embedded in everyday life (see Shove, 2003). However, in this thesis I focus on formal standards which "tend to be those developed and adopted through explicit procedures that historians can trace" (Timmermans and Epstein, 2010: 71). In my conception, formal standards are based on material documents which contain

[9] There are other possibilities of classifying standards; for a comparison of different typologies see for example Zeiss (2004).

the rules through which the standards can become embodied in practices, actors and objects. Moreover, they are set and controlled by identifiable actors, and require active, deliberate implementation. Such formal standards can be set by different kinds of actors: for example, standards of measurement or of food safety are set by public authorities. Other standards are set by organisations for their own benefit or by collectives of organisations within an industry to regulate how that industry operates. Finally, some standards are set by organisations which are not directly involved in the production of the products or services to which the standards apply (third party standards). Usually, these standards are set by an organisation promoting the benefits of standardised products and services in the public domain—they are designed as instruments through which market interactions are structured (see also Brunsson and Jacobsson, 2000; Henning, 2000).

The work of verifying compliance with the rules set out in formal standards can be carried out by different actors: organisational and industry standards, and sometimes third party standards, often rely on self-assessments through which actors adopting a standard declare that they comply with its requirements. In contrast, regulatory and third party standards are usually accompanied by a regime in which compliance is verified by an external actor. For standards issued by a public authority this can be by the regulator directly, or by a body contracted to do the work of verification on behalf of the regulator. Compliance with third party standards is usually verified by an actor who has no stake in the outcome of the verification process—a third party certification regime (Hatanaka and Busch, 2008). Such regimes usually are based on processes for certifying compliance, sanctions for violation, and processes through which the certifier is accredited to ensure independence (Loconto and Busch, 2010).

A further distinction can be made in terms of where the decision for an actor to comply with standards is located: standards can be mandatory or statutory regulated requirements, making compliance a necessary precondition for operating in a certain way or in a certain industry. In contrast, other standards are voluntary: there are no statutory or legal

requirements for actors to comply with those standards if they do not actively choose to commit to it (industry or market pressures may make this not quite a voluntary choice though).

Having sorted standards into different categories, I can now identify the kind of standards behind the labels on the flapjack: they are voluntary design standards—but they are also standards about artefacts 'having' certain qualities. They are third party standards, and, at least for the organic and Fairtrade labels, they are third party certification standards. Yet, the characterisation and classification of standards does not explain how standards produce order and uniformity; my next task is to examine in more detail how standards shape practices and orders.

Standardisation in practice: 'standards at work'

So far, I have discussed standards as ideal types and in isolation. However, in everyday life the trajectories of actors, objects, material 'stuff' and practices are governed by a multitude of standards. Taking this as a starting point, Star and Lampland (2009) argue that standards are nested within each other, and that they are "increasingly linked to and integrated with one another across many organizations, nations, and technical systems" (2009: 5): standards are recursively organised as they refer to and draw on each other. Moreover, Star and Lampland suggest that they are unevenly distributed over the social landscape: how certain aspects of social life are standardised is culturally variable and historically and geographically situated. Finally, they "are also relative in their impact, meaning, and reach into individual and organizational lives. Standards, and the actions surrounding them, do not occur acontextually" (2009: 7). As such, they are relative to practitioners as the shaping of social and material relations affects actors differently depending on their setting.

This corresponds with Berg's (1997) argument that the implementation of standards requires their embedding "to coordinate disparate elements in societies already saturated with countless routines and standards" (Timmermans and Epstein, 2010: 81). To examine what is

standardised—which disparate elements are coordinated and how this is achieved—it is useful to consider how 'standards at work' have been conceptualised. This concept refers to the ways in which "standards, whether they are more or less universal, exist next to other standards, or are the dominant or the only one, have to be locally interpreted and negotiated in order to fit into a local socio-technical and political settings" (Zeiss, 2004: 59). In other words, 'standards at work' refers to the interrelation between standards and the local contexts in which they are mobilised.

Many of the studies that have explored 'standards at work' (e.g. Hanseth and Monteiro, 1997; Zeiss, 2004; Ellingsen et al., 2007; Hadders, 2009) draw on the work of Timmermans and Berg (Berg, 1997; Timmermans and Berg 1997, 2003; Berg and Timmermans, 2000), whose accounts were based on how medical protocols shape and are shaped in local settings. Their theoretical starting point is to consider standards as 'scripts' (Akrich, 1992) which specify for various users what their role is along with their skills, requirements, tools, and outcomes of the script. According to Akrich, designers inscribe a vision of the world in the technical objects they develop. This vision then pre-scribes (at least some of) the sociotechnical settings in which users are supposed to interact in specific ways with the object. However, this may not unfold in the way the designer has imagined the use of an object: there is a potential for difference between "*the world inscribed in the object* and *the world described by its displacement*" (1992: 209, italics in original). But Akrich argues that "it is only when the script set out by the designer is acted out—whether in conformity with the intentions of the designer or not—that an integrated network of technical objects and actors is stabilized" (1992: 222). According to Timmermans and Berg (1997), this (temporary) stabilisation is achieved when standards intervene in the trajectories of different actors and objects through such embedded scripts, redirecting their course so as to bring these trajectories, at least temporarily, together.

But Timmermans and Berg also suggest that the trajectories of the actors and objects are contingent on other factors, such as local infrastructures. Their argument is set in a debate

about the role of standardisation in relation to medical and scientific practice (being valid and applying everywhere and through time; see Bowker, 1993; Latour, 1993), and they argue convincingly that universality is achieved by changing these local infrastructures to conform to the standard. This achievement "depends on how standards manage the tension involved in transforming work practices, while simultaneously being grounded in those practices" (1997: 273). Since no single actor can be in control of a standard, local universality emerges from the interaction of multiple trajectories. These interactions result in an ongoing process of crystallisation into a protocol which continuously transforms itself as well as the actors involved in the constitution of the protocol. As such, they suggest that "universality always rests on real-time work, and emerges from localized processes of negotiations and pre-existing institutional, infrastructural, and material relations" (1997: 275). From this they put forward the notion that there are multiple 'local universalities', which are linked to the contexts in which they are reproduced.

This means that standards are incomplete and overdetermined *at the same time* (Timmermans and Epstein, 2010). Incomplete, as they can never pre-scribe every situation accurately and therefore that local interpretation will always be required. Indeed, as Jasanoff argues, discretionary space is co-constituted with the presence of rules: "The unruliness of the real world creates discretionary space for individuals or institutions to exert their tacit knowledge and subjective moral sensibilities" (1998: 180). But standards are also overdetermined, as they contain pre-scriptions which need to be circumvented, subverted or tinkered with to make standards work in local sociomaterial and political settings (Star and Lampland, 2009: 4). Thus, "[t]o coordinate diverse interests and activities, standards necessarily delegate some residual work that requires active participation and submission of people to the standard's directives" (Timmermans and Epstein, 2010: 81). In other words, implementing standards requires actors in local settings to articulate and negotiate them, in an active process of simultaneously transforming practices as well as the standards (Timmermans and Berg, 2003). This suggests that working with standards is not a passive act of

disempowerment, but "an active act of allowing oneself to be transformed while at the same time transforming the standard" (2003: 73). The active adaptation of the rules in the standard to a particular situation requires the use professional discretion, and results in a localised universality.

This is in line with Akrich's (1992) observation quoted above that the use of an object may not correspond to its script: its trajectory does not follow the trajectory embedded in the standards by the author of the script(s). As such, the notion of deviance (associated with the concept of a script which is acted out in particular ways) informed a number of studies of standards at work to explore the tinkering[10] necessary to implement standards in local contexts. But, as Zeiss (2004) argues, this is not always useful:

> "[...] by stressing (the negative) deviance as opposed to (positive) compliance, it limits an understanding of the multiplicity of ways in which people can deal with standards. They do not either deviate or comply; instead standards are mobilised for a wide variety of purposes. I would therefore like to add the notion of mobilisation to prevent getting caught up in an interpretation of a practice around standards as either deviance or compliance." (2004: 65)

Zeiss argues for retaining deviance as a useful device to explore how notions of non-compliance are constructed, but suggests that the concept of mobilisation can better account for how standards are adjusted to local contexts. This mobilising is an inherently political activity, as the way in which different actors mobilise standards (and their ability to do so) shapes how practices are transformed and affects the position of various actors in the local reproduction of the standards (Timmermans and Berg, 2003). Thus, the notion of mobilisation points to the multitude of ways in which standards can be used as a resource by different actors to achieve a variety of goals. Moreover, it emphasises that standards are boundary objects (Star and Griesemer, 1989): as a single object, they affect the practices of intersecting

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[10] The term tinkering refers to the ongoing adjustments which are required to adapt a practice to the local conditions of its enactment and to improve its outcomes; therefore it is integral to the reproduction of practice. It requires making do with whatever materials are at hand, and therefore is based on improvisation and sometimes innovation on existing ways of doing.

communities in different ways while retaining their specific identity within each community. Standards are sufficiently plastic that adjustments to local communities and infrastructures are possible (their boundaries can be moulded to some extent), while they retain a common identity through which the local universalities constituted by these communities and infrastructures are connected and coordinated. To examine what underpins this identity, it is necessary to examine the nature of universality aspired to by a standard.

Orders and their disorders

As indicated above, standardisation generally aims to achieve an order which is to some degree universal, i.e. applicable across time, space and communities of practice. From the discussion about local universality it is clear that in everyday life it is impossible to ever attain this order in a pure state: necessary local adjustments add and change things which were not foreseen. Yet, this discussion only referred to the universality of an order; it does not elaborate on the nature of order itself. But orders are not homogeneous, singular and unproblematic aspects of standardisation. Indeed, as Berg and Timmermans (2000) argue, orders and disorders are interrelated in several dimensions. Firstly, they suggest that standards do not create order from a pre-existing disorder; rather, they simultaneously "*produce the very disorders they attempt to eradicate*" (2000: 45; emphasis in original). Distributed objects and practices only become disorderly when a standard is deployed to achieve some degree of universality in how the relations between them are constituted. This means that orders and their co-produced disorders do not stand in opposition, with order emerging from and thereby replacing disorder, but that they are intimately connected and entail each other.

Second, drawing on empirical cases involving different sorts of orders, Berg and Timmermans argue that orders are based on particular forms of rationalities, or logics. For example, decision analysis for clinicians is based on a mathematical logic, in particular statistical inference. These logics are not purely conceptual: they are reproduced in distributed and sociomaterial performances, such as documents, particular ways of doing, calculative devices (see also Vollmer *et al.*, 2009), etc. This implies that these logics are tied to

heterogeneous infrastructures, resulting in a 'logistics' (Seltzer, 1992) through which a particular rationality is performed. Order, in the form of a rationalised practice, is a practice in which such a logistics is prevalent. Thus, a standard draws on a logistics through which an order is produced; and the reproduction of the standard in local settings ('standard at work') results in a local universality of this order.

However, as Berg and Timmermans show, the heterogeneous infrastructures through which particular logistics are constituted incorporate elements which draw on the specific disorders which should be eradicated: absence of quantitative links and of rigorous calculation in statistical inference requires solutions which draw on guesswork and estimated rather than quantified probabilities; too many rules prescribing how to resuscitate patients reduces the uniformity of how resuscitation is performed as practitioners fail more often to reproduce the prescribed sequence, etc. Therefore, orders can only survive by actively incorporating—'parasitically' including—the disorder it coproduces (Singleton, 1998). This implies that orders cannot overcome their disorder by gradually increasing their scope at the cost of their disorder:

> "Every order necessarily envelops the disorder it has brought into being [...] It invariably contains its Other—both in its history, and in its everyday operation. It does not know a pure state; even the ideal-typed logics in the writings of their advocates twist and swirl in the attempt to deal with the impossibility of their own purity." (Berg and Timmermans, 2000: 51)

What is more, the order constituted by one logistics can become a disorder within another when rationalities overlap: pre-established sequences of basic procedures are problematic for statistical inference as there is no solid mathematical foundation for how each of the steps in the protocol are linked; but statistical order can become disorder in a protocol as it cannot provide explanations about why certain actions have to follow each other. This suggests that orders not only incorporate and perform their own disorder, but that they are also entangled with others through which their own disorder can be reinforced. These entanglements do not only occur with other orders produced by a standard: Singleton (2010) provides an account where standardised record keeping on farms is entangled with practices of tending to cattle.

These latter practices are not standardised or universalised—indeed this would be impossible as they require flexibility and individual assessments—yet they are based on a logic which is recognisable, namely a logic of care. Order, in these practices, is that each individual animal received the care it requires. Thus, whereas Berg and Timmermans (2000) only examine the relations between two orders produced by different kinds of standards, Singleton's (2010) analysis allows the extension of their argument to include how orders produced through different mechanisms become disorders in standardised practices.

A final point is that orders and their disorders are not static: in their intricate interrelationship they change and transform themselves, giving rise to new orders with their own coproduced disorders (Star, 1991; Singleton, 2010). Such continually emerging orders produced through multiple local universalities are not singular: they exist in different forms, always incorporate their own disorder, and are intersected by other orders which reinforce their disorder. It is important to emphasise that this does not mean that different orders—and their universalities—are more or less rationalised at different points in time or in comparison with other orders: they are constituted in relation to different rationalities, each with their own disorders and logistics. This suggests that standardising something is dynamic too: not only do the local settings through which local universalities are constituted subject to change, the logistics underpinning an order enshrined in a standard also change and transform, thereby reshaping the universalities associated with that standard.

Conclusion

In this section, I have explored what standards do and how they do this by examining them in relation to concepts of uniformity and universality, by providing a typology, and by exploring some notions about the order produced by standards. The multitude of types of standards and the multiplicities involved in their reproduction emphasise that "not much [is] standard about standards" (Timmermans and Berg, 2003: 24).

Methodologically, the discussion is useful in pointing out what key elements of standards to examine: what is made uniform, how local universalities are constituted and what orders and disorders are produced by a standard. However, with the notable exceptions of Zeiss (2004) and Shapiro (1997) most studies that have examined 'standards at work' and order/disorder have remained close to the empirical basis of the studies of Timmermans and Berg, i.e. medical protocols (e.g. Ellingsen et al., 2007; Tournay, 2008; Hadders, 2009). These protocols are procedural standards which are intended to structure and sequence sets of activities—they "intervene directly in the organization of work" (Timmermans and Berg, 2003: 56). These protocols therefore contain clear scripts through which different activities are coordinated and put in sequence; their adaptation usually requires tinkering to make them fit in local contexts. In contrast, other kinds of standards (e.g. design standards which are verified through a third party certification) are structured differently.

For example, the mechanism of third party certification introduces a distinctly different group of actors into how voluntary product standards are reproduced—actors which are, according to the dominant discourse, independent, which forms the basis for claims that third party certification is particularly effective in organising compliance with standards (Hatanaka and Busch, 2008). However, as Hatanaka and Busch suggest these claims cannot be maintained as certification bodies act as strategic actors promoting specific objectives, and are embedded in social, political and economic systems (see also Mutersbaugh *et al.*, 2005). This implies that how voluntary product standards are mobilised and reproduced through the practices of certification bodies is itself a constitutive element of the infrastructure represented by those standards. This extends beyond political influence at the institutional level (e.g. Hatanaka *et al.*, 2005; Mutersbaugh *et al.*, 2005) and in the constitution of new markets (e.g. Higgins *et al.*, 2008) through to the everyday activities and practices of individual actors

involved in the certification of licensees[11]. Consequently, the empirical accounts of Timmermans and Berg (1997, 2003) and others are not sufficient to describe how other types of standards organise the practices of actors involved in their reproduction. Therefore, a second ambition of my thesis is to provide a parallel account to the work of Timmermans and Berg by examining third party certified standards while using similar concepts to those used in their work on protocols.

However, in order to do so I need to mobilise further resources: so far, I have mentioned practices as constitutive of standards, infrastructures and logistics without elaborating their key characteristics. As such, in the next section I examine some concepts of practices which will ground the rest of the thesis.

2.3 Concepts of practice

Within philosophy and the social and cognitive sciences, there have been many different attempts to develop an understanding of how everyday activities—such as going to a shop and buying a flapjack—are structured (e.g. Luhmann, 1989; Marcuse, 1991; Durkheim, 1997; Simon, 1983). Many theories have located social structures outside of those activities, for example in norms, goals, minds, discourses or interactions between actors—these elements precede and therefore determine action (Schatzki, 2001; Reckwitz, 2002). In contrast, theories of practice[12] start from the premise that social structures are reproduced by the everyday activities they organise. While there are many aspects to this interdependency between action and structure, I only draw on a limited set of concepts from this literature, namely those that will help me capture the infrastructure behind voluntary product labels—my argument is

[11] Yet, with the notable exception of Seppänen and Helenius (2004), who analysed the role of advice in inspection practices in relation to the definition of organic farming in Finland, to date there are no studies examining the practices through which licensees are certified.

[12] There is no single, homogeneous Theory Of Practice, but rather a loosely connected body of literature in which different aspects of practices are examined (e.g. Wittgenstein, 1953; Bourdieu, 1977; Giddens, 1984; Schatzki, 1996; Warde, 2005; Shove and Pantzar, 2005; Shove et al., 2007). What binds the accounts in this body is that they all foreground practices as the primary social phenomenon through which social structures are reproduced.

situated in the sociological understanding of standards, and as such an extensive review of practice theoretical concepts will distract from the objective of this thesis. However, it is important to recognise that in Management and Organisation Studies there is a growing number of accounts based on a practice-theoretical approach, in which a variety of concepts is mobilised to analyse different aspects of business and management, such accounting (e.g. Vollmer *et al.*, 2009), organisations (e.g. Blackler and Regan, 2009; Engeström, 2000; Engeström and Blackler, 2005; Miettinen *et al.*, 2009), marketing (e.g. Araujo, 2007; Araujo *et al.*, 2010a; Kjellberg and Helgesson, 2006), and, to a lesser degree, strategy (e.g. Jarzabkowski, 2005; Johnson *et al.*, 2007).

In this thesis, I focus on three concepts which act as resources to understand the practices in relation to the material and social circumstances in which they are situated (Suchman, 2007), the ontological tensions between singularity and multiplicity in objects that follow from reproduction in situated practices (Mol, 2002), and how mutually constituted practices and orders transform each other (Giddens, 1984; Shove, 2003). In this section I introduce each of these concepts and relate them to the understanding of standards and standardisation as developed in the previous section. At this point, I only present these ideas briefly and by no means exhaustively as they will be developed in relation to and come clearer into focus through the empirical material.

The first concept to consider concerns the interrelation between practices and the settings in which they are performed. Based on her research on human-technology interfaces, Suchman (1987, 2007) argued that actions are always situated in social and material circumstances which shape "in essential ways" (2007: 70) every course of action, i.e. how actors carry out these actions. In particular, Suchman studied the relation between plans and actions, and questioned behaviouristic and mentalistic accounts that positioned plans as preceding and determining action. Rather, she argued that rational plans help actors project and organise future action, and that they can be used afterwards to justify a particular course of action, but that action itself is situated in circumstances that actors reflexively relate to

while drawing on the plan as a resource for action. In this, it is important to note that the social and material circumstances are not fixed entities, determining in a hardwired way the direction of a course of action:

> "[...] the structuring of behaviour is not done a priori, but in reflexive relation to circumstances that are themselves in the process of being generated, through the same actions that they in turn work to make comprehensible" (2007: 19)

As Suchman argues, purposeful action, therefore, is always situated in concrete situations which provide "specific, local, contingent determinants of significance" (2007: 84) which shape action but which are also shaped through the same action.

This provides an understanding of the mechanism behind local universality as achieved through standardisation: the courses of action organised through a standard (the trajectories of practices and the actors and objects involved in those practices) are reflexively shaped by local, contingent social and material conditions—and these conditions are recursively shaped by those courses of action. Thus, the concept of situated action (or practice) captures the "localized processes of negotiations and pre-existing institutional, infrastructural, and material relations" that are involved in reproducing standards in a local setting (Timmermans and Berg, 1997: 275).

The second concept is drawn from Mol's (2002) study of how one entity can be performed in different, coexisting ways. Before discussing this in more detail, I introduce two terms of Mol's vocabulary which I have adopted throughout this thesis: Mol provides an account of how a disease 'is done', i.e. *enacted* in a number of different practices. In this, the term 'enactment' denotes the performing of an object through practice: it refers to the emergent '*doing*' of an object in instantiations of practice which are locally situated. There are large overlaps with the notion of reproduction, but whereas the latter term has connotations of stability and permanence of the object that is reproduced, enactment also allows for a more

dynamic conception of practice, where enactments can accommodate change as well as stability[13].

Mol provides an ethnography of a disease, atherosclerosis, and shows how it is 'done' in different practices. She argues that these different enactments of the disease are not different facets of a singular object, but that in each practice a slightly different atherosclerosis is 'done': the entity that is enacted by a patient is different from the one enacted by a surgeon, or by a pathologist, or a radiologist, or a physiotherapist: the entity is enacted differently each time, using different equipment, treatments, measurements, ways of discussion the disease, etc. They constitute more than one disease—but as Mol points out, less than many. The multiplicity of these enactments does not imply a fragmentation: they do hang together through processes of coordination, which accomplishes a drawing together of multiple entities into a singular name so that elements like representations, treatments and measurements can be shared between practices. Yet, this does not mean that incompatibilities between different enactments need to be resolved to retain the integrity of the object, but rather that they are separated out. In other words, different variants of a disease can coexist without the need to resolve tensions as long as they are distributed over different sites. But different enactments can also come to include each other, as when aggregate statistics become an indicator for treatment while drawing on those treatments as the source of data that is then aggregated.

As such, Mol's argument is about ontology: she suggests that there is no one, single, given ontology but that there are multiple ontologies which are "brought into being, sustained, or allowed to wither away in common, day-to-day, sociomaterial practices" (2002: 6). The concept of a multiple object, then, points to the inherent multiplicity of objects in their enactment in situated practices as well as the different processes that resolve this multiplicity

[13] It does not, therefore, refer to the process of 'putting into operation' prior to standards becoming effective (e.g. the passing of a law); it refers to the practices through which objects are re-produced.

with the singular term by which these objects are referred to—resolving local and global universalities.

The final concept I will mobilise starts from Giddens (1984). In his structuration theory, social structures are both an essential resource for and a product of situated practices; they organise practices but require enactment in local contexts so that they are reproduced. They are the mechanism through which social order is achieved: they achieve a stretching of social relations across space and time. The concept that is relevant throughout the thesis is how practices are reproduced and how they change—standardisation requires an adaptation of situated practices and therefore induces changes in how these practices are structured.

A first point to make about structuration theory is that routinisation plays a key role in the accomplishment of order: social norms and conventions are reproduced through practices which are enacted without further thought or reflection—the order is located in the habitual, routinised performance of a certain way of doing. For individual actors in their particular sociomaterial contexts, an order takes the shape of what Kaufmann (1998) calls an injunction, i.e. "a social construction (historical, family based, personal) which has produced the framework of assumptions triggering the action—the thing that simply has to be done" (1998: 21; quoted in Shove, 2003: 161). Yet, as Shove (2003) points out, this leaves the question open as to how new injunctions come into being and how new patterns of 'doing' can be established. While some scholars (e.g. Weick, 1993) argue that when practices are challenged (by whatever source), the underlying, invisible injunction becomes visible which provides an opportunity for transformation before routinisation makes the new injunction invisible again, Shove argues that practices can "emerge through barely visible adaptations and adjustments within and across existing frameworks of order (2003: 163). This implies that change in a practice can emerge from a reshaping of order by actors questioning an injunction, or from within that practice, thereby changing the order. In either case, the change emerges as a different configuration of actors, objects and ways of doing which stretches beyond the local, across time and space.

While the discussion in the previous section would point to standards requiring actors to reveal and adjust injunctions, Shove's observation that practices transform through adaptations in how they are enacted suggests that standardised elements, in becoming standardised, can shape practices in other frameworks of order. An example of this would be Michael's (2010) account of how plasters meta-standardise consumers. As such, the concept of how practices change is useful to examine how orders (and their disorders) relate to the practices which they shape and through which they are enacted.

As indicated above, the three concepts presented here will run as threads through the thesis—and therefore inform the research questions which underpin the empirical work. In the next section I will describe these questions in more detail.

2.4 Revealing infrastructures

As I wrote in the Introduction, the ambition of this thesis is to reveal the infrastructures of voluntary product labels. From the discussion in this chapter, it will be clear that this involves the enactment of the standards which underpin at least some of the labels in a number of situated practices, which in turn provide a resource for action for practitioners within these practices. However, infrastructure only becomes infrastructure in relation to *organised* practices (Star and Ruhleder, 1996; my emphasis), and therefore carrying out an infrastructural inversion (Bowker, 1994) requires both the mapping of how standards are enacted through individual practices as well as analysing the interrelations between these practices as shaped by those standards.

It is important to note that this is not merely a descriptive exercise: "Each standard and each category valorizes some point of view and silences another. This is not inherently a bad thing—indeed it is inescapable. But it *is* an ethical choice, and as such it is dangerous—not bad, but dangerous" (Bowker and Star, 2000: 5-6; emphasis in original). Therefore, a foregrounded infrastructure reveals some of the political and ethical implications of organising these practices in a particular way. While a lot of the political work is done in setting a standard (see for example Schmidt and Werle, 1998; Zeiss, 2004; Ransom, 2006), the

studies of Bowker and Star, Timmermans and Berg and others illustrate that this political work becomes active in shaping the trajectories of actors, objects and practices only when the standards are negotiated and enacted in everyday practices; indeed the politics only becomes visible when enacted (thus, how voluntary product standards are set fades into the background too). In fact, a standard, as a document provided by a standard setter, cannot act independently: it takes the active inclusion of its rules into practices before that the standard 'comes alive' (Berg, 1996), i.e. that the standard becomes active in shaping those practices. My use of the metaphor of a standard 'coming alive' therefore refers to the way in which they are enacted through practices, and how they, through the active shaping of these practies, act out the inescapably political and ethical implications of their organising. This leads to my first research question:

How do voluntary product standards 'come alive' through the situated practices of different actors, and in turn how do they, as living entities, shape these practices?

As Timmermans and Berg (1997) argued, the situated enactments through which a standard 'comes alive' results in local universalities. Moreover, Mol's (2002) study showed, the enactment of an object in distributed, situated practices leads to a multiplicity in the object—it is not one, but also not many. Hence, these studies signal a tension between local universalities and the singular notion which exists globally through a standard. This tension leads to my second research question:

How do the local universalities constituted by situated enactments of a voluntary product standard relate to the singular concept diffused by this standard?

With different actors involved in how the standards 'come alive', there are different orders (and therefore disorders) associated with that standard (Berg and Timmermans, 2000), each with their own logics and injunctions. This suggests that there are different frameworks of order that coexist through a standard. Yet, it is unclear how these orders relate to each other and how transformations in one order lead to changes in other orders. This observation leads to my final research question:

How do voluntary product standards produce order for different actors, and how are these orders interconnected?

In the next chapter I will describe the methods which I used to answer these questions.

Chapter 3 Studying infrastructures

3.1 Introduction

The questions posed at the end of the previous chapter point to my research being about analysing how something is constituted: it is a 'mechanical' intellectual puzzle (Mason, 2002: 18). To study the mechanics of how organic standards 'come alive' and constitute an infrastructure I chose a research strategy which allowed me to explore the everyday practices of different actors. In particular, I drew on a number of ethnographic methods (observation, interviewing, archival research; Hammersley and Atkinson, 1994), albeit without the intention to construct an ethnography. In fact, rather than people or communities, this thesis takes practices as central, and therefore I have produced something akin to a praxiography (Mol, 2002: 31-32): it is a story about the practicalities of *doing* organic, an entity that is never alone but which "depends on everything and everyone that is active while it is being practiced."

In this chapter I describe how I used qualitative methods to generate rich, detailed, contextual data suitable for interpretative and reflexive analysis of the practices through which voluntary product standards are enacted. I chose to undertake a relatively small scale, in-depth study of the infrastructure behind one of the labels on the flapjack—the organic label. In the next section I describe the selection criteria for this, and provide a brief history of the sector to contextualise the empirical part of the thesis and to explain which actors were relevant to my study. Then, I describe what sort of data I generated through each of the qualitative methods, and the sampling strategies I used for each of the actors. I conclude by describing how I analysed the data and how this resulted in the organisation of the thesis.

3.2 Organic farming in the UK

Choosing the site

The starting point of this thesis was the flapjack described in the Introduction. Once it became clear that there was a highly relevant and interesting research puzzle behind the labels

on the cereal bar, it made sense to continue the empirical research with the flapjack as a point of departure. Thus, the initial idea for the site was to trace how the infrastructures behind the three labels intersected at the producer, Doves Farm, to analyse how different infrastructures are superimposed, and how they reinforce as well as clash with each other. As access did not materialise, I considered a comparative study of the three standards; but their size, scope and organisation differed greatly and examining the features of each in the light of each other would have shown little, if anything, about how infrastructures behind voluntary product standards are constituted. However, my exploration of the three labels showed that the Soil Association standards provided an interesting site for an in-depth study of how standards were reproduced through different practices. It was so on four counts. Firstly, the Soil Association introduced the first voluntary product standards for organic produce in the 1960s, with the aim of promoting more sustainable forms of production and consumption. Moreover, they devised a very early precursor to the current system of third party certification. As such, the site of organic standards includes a well-established standard-setting and certification organisation for voluntary product standards.

Secondly, the Soil Association still maintains its own standards, but these are now set in an intricately interwoven space of EU regulations which set minimum standards for organic produce and which are restricting the freedom for individual standards bodies to add their own standards. Moreover, there are separate policy regimes for organic farming which set additional boundary conditions for how organic standards can be enacted. This suggests that there is a policy element to the infrastructure, which is unusual for voluntary product standards.

Thirdly, unlike in many countries, in the UK there are seven different certification bodies that are authorised to certify farmers (I will return to this in the next section). This has led to the situation that different organic standards compete with each other in a relatively stable setting, but also that there are collaborative efforts to agree on approaches to common standards. In the literature I have not found any report of this kind of co-existence; instead, it

is argued that multiple standards may emerge during an initial phase but that at some stage one standard will emerge dominant (see for example Brunsson and Jacobsson, 2000). In supply chains, the existence of different standards leads to situations where standards organisations, like the Soil Association, need to verify that ingredients certified by others meet their own standards. Especially in long supply chains this introduces issues of equivalence and traceability that need to be resolved on a daily basis and therefore provides a site where the infrastructure becomes visible.

Finally, and more practically, I could study the organic sector in its entirety—from standard setting to farming and certification to markets and policy regimes—within the UK; studying the Fairtrade infrastructure (with some different idiosyncrasies) would have been logistically much more challenging and expensive due to its globally distributed organisation.

Thus, the site of my research was circumscribed by the Soil Association standards for organic farming. However, this did not mean that this was a clearly bounded, singular place that I could visit: the research site is distributed over time, space and different actors which stand in different relations to the infrastructure constituted by standards for organic agriculture. Below, I therefore turn to the emergence of organic farming as it is shaped today so as to identify which practices and actors play a role in the reproduction of standards for organic agriculture.

A brief history of organic farming in the UK

The first ideas about organic farming emerged in the early twentieth century, when a number of unconnected scientists, farmers, doctors and conservationists tried to formulate responses to crises in agriculture and nutrition (Conford, 2001). By the start of the First World War, drives for efficiency in farming and the use of early artificial fertilisers had started to deplete soils around the globe. Between the two World Wars, this process intensified, resulting in soil degradation, poor food quality and impoverished rural communities (Vogt, 2007). In attempts to mitigate soil degradation, individuals in the British Empire and Germany

independently developed different scientific alternatives which were based on more traditional, and in the case of the British, Indian and African indigenous forms of agriculture[14]. Separately, some nutritionists and doctors became increasingly concerned with the nutritional qualities of intensively grown food, and with the promotion of public health through food along with exercise and a 'natural' lifestyle. While these projects differed in their focus, they all were based on the inseparability of human and animal health of human from the health of crops, which in turn was inseparable from the health and the 'natural' fertility of the soil.

In the UK, these initiatives resulted in two scientifically run experiments, one which was aimed to improve public health (the Pioneer Health Centre in Peckham, London), and the other to conduct a comparative trial between farming based on artificial fertilisers and on compost (the Haughley experiment; Reed, 2001). The latter resulted in a seminal book, *The Living Soil*, by Lady Eve Balfour ([1943] 1948), which attracted responses from others working and thinking along similar lines to the extent that a formal organisation was created to pool experiences (Conford, 2001). Thus, the Soil Association was founded in 1946, in which the two experiments were melded together along with a third project which was aimed at rural reconstruction. This latter project, *Kinship in Husbandry*, was controversial in that it developed a social notion of Soil which included far-Right concepts of racial determinism and nationalism, and included supporters of Nazi Germany and even some outright fascists among its members (Conford, 2001; Reed, 2001). These different ideas were never resolved, and so for two decades the Soil Association remained an assembly of these diverse concepts along with others which became attached to it after its founding.

In the late 1960s, a scientific and a political crisis forced a reorientation of the Soil Association around a new discourse: after more than two decades there was still no conclusive scientific evidence in support of organic farming, and there was no noticeable demand for

[14] For example, botanist Sir Albert Howard developed his ideas about composting based on his observations of Indian farmers; Major-General Sir Robert McCarrison derived his nutritional ideas from his observation of Indian tribesmen; and conservationist Richard St Barbe Baker founded an organisation to protect forests in Africa (Conford, 2001).

organic food. Moreover, the organisation was sidelined by other actors in the emerging environmental movement due to the Soil Association's quasi-religious approach to farming. Until this point the political and philosophical differences within the organisation were subsumed by the search for scientific proof (Reed, 2001). As a result of internal changes and in response to developments in the environmental movement and a developing international organic movement[15], the new discourse abandoned the search for scientific proof but became based on moral claims about the safety of organic food (Conford and Holden, 2007). In conjunction with these developments, the Soil Association published its first set of standards for organic farming in 1967. As such, this constituted a new start which allowed parts of its past (the association with the far-Right) to be forgotten:

> "The re-made organic movement had found ethical standards that bound them to new ethical ways of relating to plants, people and the planet." (Reed, 2001: 141)

This was reflected in a definition of organic agriculture that could be drawn up as a result of the reorientation:

> "The use of, or abstinence from, any particular practice should be judged by its effect on the well-being of the micro-organic life of the soil, on which the health of the consumer ultimately depends." (Soil Association, 1967)

In practical terms, this meant that farming practices were organised around the production of crops and livestock with minimal reliance on inputs that were not generated on the farm. For example, livestock was fed with crops which were fertilised with the manure of those same animals; a mix of different kinds of animals and crops reduced disease pressure for each individual species (in contrast to intensive, single crop systems which rely on herbicides and pesticides to manage crop and livestock health). As most organic farms were family-run

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[15] For the sake of brevity and relevance, this history ignores the international developments, such as the formation and role of the International Federation of Organic Agriculture Movements (IFOAM). This is an umbrella organisation founded in 1972 with the aim to provide a unified, organised voice for organic food and to diffuse knowledge about the principles and practices of organic agriculture around the globe (see Geier, 2007).

entities, this almost necessarily meant that they were small in scale, with little turnover to cover the costs of production.

In the 1970s therefore, organic farmers realised that their way of farming would only be feasible through the cultivation of new markets: the European subsidy system (the Common Agricultural Policy) was geared towards supporting farming based on high inputs of artificial fertilisers to maximise yields, and did not provide support for less intensive forms of farming (Conford and Holden, 2007). Indeed, as Tomlinson (2010) describes, there was little interest in organic farming from policy makers until the early 1980s. Thus, groups of mostly young organic farmers developed mechanisms to market their produce to consumers who shared their ideals, using a price premium to cover the additional cost of running an organic farm. Whereas organic standards were initially geared towards helping interested farmers to convert, they became a mechanism to protect consumers from fraud by defining the organic production system and making possible the policing of its integrity (Conford and Holden, 2007). This required the development of an early form of organic certification which was introduced in 1973. This system substituted the preliminary standards which were published as a supplement to the Soil Association's magazine *Mother Earth* in 1967 with formally published standards, and replaced the voluntary declaration which was included in the 1967 standards with an inspection system in which farmers would be inspected (by inspectors who usually were also colleagues) to assess how they enacted organic standards (Soil Association, 2010a).

By the start of the 1980s, with an increased consumer interest in organic food, supermarkets started to offer organic products as part of a diversification strategy. Moreover, farmers and horticultural growers established support organisations for the exchange of knowledge about production and marketing (Conford and Holden, 2007), other organisations were starting to offer certification services, and various research centres were active in the organic movement. Indeed, Tomlinson (2010) argues that the activities of these different kinds of organisations were difficult to disentangle. In parallel, some council members of the Soil Association established contacts with the Ministry of Agriculture, Forestry and Fisheries

(MAFF; Conford and Holden, 2007). This led to more attention to organic farming by policy makers, which resulted in the creation of the United Kingdom Register of Organic Food Standards (UKROFS) in 1987, a body which oversaw the creation of national standards (first published in 1989 based on the Soil Association standards), maintained a register of certified farms and approved inspection bodies and inspectors for organic production (Lampkin, 1990). Moreover, UKROFS helped formulate Britain's response to the European Community's draft legislation on organic farming, which was developed to harmonise national schemes of member states to facilitate intra-community trade. When this regulation was passed in 1991 (EC, 1991), organic standards embedded in the regulation were largely based on the UKROFS standards. The presence of legislation also made it possible for organic farming to become institutionalised in the Common Agricultural Policy (CAP; see Lynggaard, 2007) as a form of farming delivering environmental benefits (Tomlinson, 2008).

By the end of the 1980s, UK consumers were faced with a number of food scares, such as concerns about pesticide residues, antibiotics and hormones in food, salmonella and other forms of bacterial contamination, BSE and genetic engineering (Conford and Holden, 2007). This undermined consumer confidence in mainstream agriculture, and provided the organic movement with a number of opportunities to offer a morally and chemically safe alternative (Reed, 2001). As a result, the market share for organic produce rapidly expanded in the 1990s and 2000s. This attracted producers who regarded organic farming as an economic proposition rather than an ideal form of farming, which according to some in the organic movement signalled a process of conventionalisation in which ideals were given up in favour of profits (Michelsen, 2001), thereby circumscribing the potential of the organic movement to radically change how farming is done (Reed, 2009). This conventionalisation thesis simplifies many aspects of farming into a dichotomy (Tomlinson, 2008) with commercial and ethical forms of organic farming at the poles. This dichotomy is perpetuated in controversial issues such as the addition of new forms of agriculture to organic standards: for example a recent issue about aquaculture involved a hotly contested debate about whether standards for organic agriculture

should accommodate industry practices such as the caging of migratory fish species (see Mansfield, 2004; Rigby and Brown, 2007).

While the basic principles underpinning organic production have not changed much over the past 65 years, they have been reformulated several times. Currently, organic agriculture is defined as consisting of the following four principles (IFOAM, 2011):

- Principle of health: Organic Agriculture should sustain and enhance the health of soil, plant, animal, human and planet as one and indivisible.
- Principle of ecology: Organic Agriculture should be based on living ecological systems and cycles, work with them, emulate them and help sustain them.
- Principle of fairness: Organic Agriculture should build on relationships that ensure fairness with regard to the common environment and life opportunities
- Principle of care: Organic Agriculture should be managed in a precautionary and responsible manner to protect the health and well-being of current and future generations and the environment.

Underpinned by these principles, organic agriculture can therefore be characterised by reliance on locally or farm-derived, renewable resources and the management of self-regulating natural processes (ecosystem management) to produce crops and livestock and to protect these from pests and diseases.

In fact, in organic agriculture, farms are conceptualised as "an organism, in which all the component parts—the soil minerals, organic matter, micro-organisms, insects, plants, animals and humans—interact to create a coherent and stable whole" (Lampkin *et al.*, 2008: 2).

Relevant actors in the organic sector

So far, I have said little about the actors in the organic sector. However, to identify which actors are relevant for my research, it is necessary to be more specific about the constitution of the sector (see Figure 3.1). First, the policy side: from the history of the organic sector it is clear that all organic standards are now embedded in EU regulation, and administered in member states by a ministry. The successor to MAFF, the Department for Environment, Food and Rural Affairs (DEFRA), is currently responsible for the implementation of these standards

and their certification, and supports the organic sector through the Organic Entry Level Stewardship (OELS) and Organic Conversion Information Service (OCIS) schemes[16]. UKROFS no longer exists; concerns about its capacity to effectively supervise certification bodies due to lack of resources, legal status and a clear remit led to its replacement by the Advisory Committee on Organic Standards (ACOS) in 2003. This was purely an advisory body, without the supervisory powers of UKROFS; the powers of which were transferred to regulators within DEFRA and outsourced to the UK Accreditation Service (not depicted). While ACOS was still active during my fieldwork, it was abolished in Autumn 2010 by the coalition government. As such, it still is present in my thesis even if it has since ceased to exist—it was not replaced by anything fulfilling a similar role.

Second, the certification of licensees: the historical market-based approach to certification which preceded the EU regulation has been maintained, which meant that during my fieldwork seven bodies were offering certification services: four national bodies (with one body offering two types of scheme) and three regional schemes (for Wales, Scotland and Ireland; the diagram below does not include these regional schemes for reasons of simplicity). Due to my concept of standards 'coming alive' through situated practices, this means that effectively there are seven sets of standards through the certification bodies and their licensees which have the EU regulations in common. I have depicted this as separate strands running parallel to each other. Within the certification bodies, there usually is a division of labour between officers dealing with standards and their interpretations and those interacting with licensees, the latter being split between office-based certification officers and field-based inspectors. The importance of this division for my thesis will become clear in Chapter 6.

Advisers, farmers and processors make up the third group of actors. Advisers and consultants often provide advice to farmers about how to enact standards in their local setting, and sometimes act as representatives of farmers in dealing with certification bodies. Farmers

[16] The ministry also represents the interests of the UK organic sector at the European level.

and processors deal with organic 'stuff' on a daily basis in that they respectively grow, rear and/or process produce into semi-manufactured or final consumer products. To allow trade between these actors, the trajectories of the different 'living' standards become intertwined from the moment organic produce enters a supply chain.

Finally, a dispersed and heterogeneous research community interacts with all of the above actors to study the effects of policy interventions, to do field trials of methods, to provide advice and to share knowledge among local, regional and national groups.

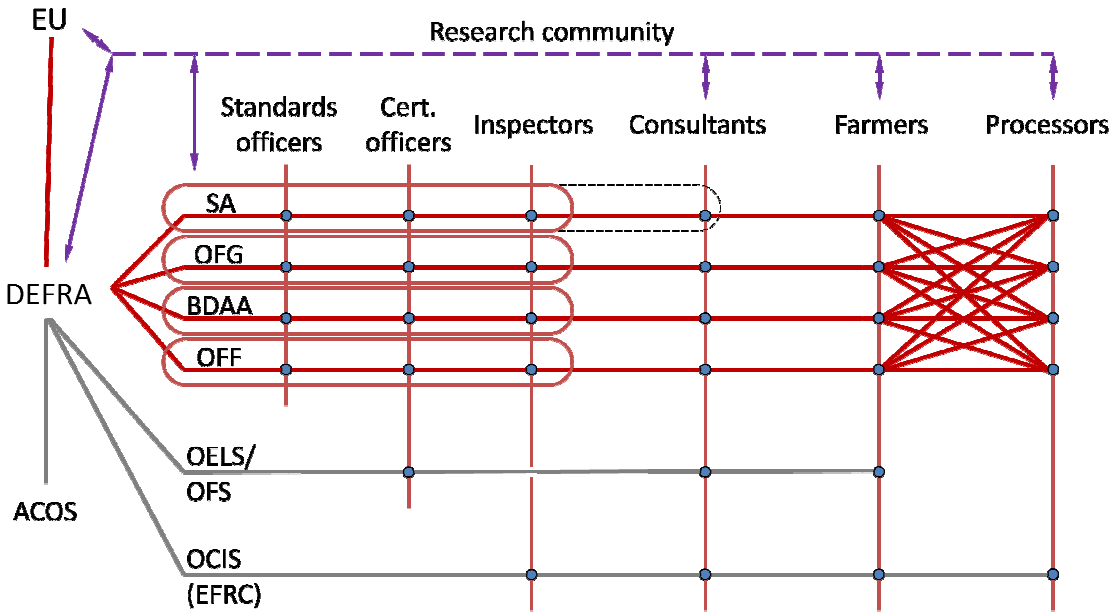

Figure 3.1: Relevant actors in the reproduction of standards for organic agriculture

In what follows, at least two relevant groups in relation to organic standards are notably absent: retailers and consumers were not part of my study. They obviously have an important role to play in the shaping of organic markets: retailers provide a limited shelf space through which all sorts of conventional, organic and otherwise (morally) differentiated products reach the consumer, and consumers relate to and choose these products in differentiated ways (e.g. Larssæther, 2010). For both groups, the presence of the label or logo through which a product is differentiated as organic—and the public debate through which the label is shaped—is the starting point to decide what to offer and what to choose. Thus, in general terms their decisions are of crucial importance for the economic viability of a singularised sector and for

individual producers in this sector. However, they are only marginally involved in how the difference between conventional and differentiated 'sustainable' products is made and they have no resources to influence how organic standards are enacted in farming practice (Klein and Kleinman, 2002). Moreover, while retailers may emphasise difference in marketing products, and consumers may attach subjective meanings to these differently singularised products which may or may not coincide with the differences constructed by the standard setter (see for instance Eden *et al.*, 2008a, b), all such processes presume the presence of a perceptible difference—a logo or label on a product. As will be clear, this difference only comes into being through an infrastructure which is the subject of this thesis.

3.3 Data generation

As already outlined above, I used a combination of different methods to generate the data for this thesis. Due to the distributed nature of the infrastructure underpinning organic standards in the UK, concentrating on the practices of a single group of actors would have shown one element of this infrastructure in great detail while providing a highly partial perspective on the other elements of the infrastructure. Instead, I used various qualitative methods to study the practices of actors involved in the certification of licensees to generate rich insights into how voluntary product standards 'come alive' in a different way from Timmermans and Berg's (1997, 2003) protocols. As such, I observed certification officers and inspectors in their everyday activities; observing farmers while they were 'doing' something specifically 'organic' was not feasible as such instances are not sharply delineated in time. Moreover, as someone without a background in farming, I would not have been able to grasp what exactly made a practice organic rather than conventional[17]. Therefore, I chose to conduct

[17] In this thesis I use the term 'conventional' to denote farming systems which are based on the use of chemicals and fertilisers—and what is mostly taught as mainstream approaches in agricultural colleges. Belz (2004) refers to this as 'industrialized' agriculture, but this is not a very accurate term as organic farming practice has emerged from and draws on industrialised agriculture in that there is a high degree of specialisation and a reliance on technology (even if some forms of technology are eschewed). These characteristics are especially noticeable in the recent emergence of 'intensive' organic systems. Thus, I

semi-structured interviews with farmers and other individuals in the organic sector who could provide particularly detailed perspectives on how this sector was constituted and/or how specific practices were shaped. I supplemented these data sources with archival data and a study of publicly available documents. In this section, I discuss each of these methods in more detail and describe how I entered the field.

Observations

Observations allow "the generation of multidimensional data on social interaction in specific contexts as it occurs" (Mason, 2002: 85), which particularly includes the use of tacit knowledge and interactions between activities, actors, objects, artefacts and setting that cannot be easily articulated by practitioners. As such, I aimed to construct an account of how processes of certification and of 'doing' organic were carried out in their local context or field of practice (Czarniawska, 2007), and supplemented this with planned and spontaneous interviewing of practitioners (Mason, 2002). This is not to say that I generated 'objective' or impartial data—indeed, my account is necessarily partial due to my position as participant-observer (Silverman, 2005): my presence was situated and particular, and thereby influenced how the practitioners I observed carried out their activities (even if I did not actively participate as a practitioner). Namely, they explained steps in the process to me, provided a background of farming practice, perhaps took greater care in how they performed certain activities, and in general maintained a relation with someone studying what they did. This meant that I adopted a reflexive approach to my observational methods (Mason, 2002), recognising the ongoing negotiations that shaped what I observed and recorded (Coffey, 1999) in my field notes.

My observations of the Soil Association were distributed over four sites. Firstly, I attended Cereals 2009—the Cereals event is the largest annual trade fair in the UK for arable

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have adopted the term 'conventional' from my respondents, who used it to denote the mainstream farming systems from which the organic sector is distancing itself.

producers and their suppliers—to observe staff from the Soil Association charity at their stand while they interacted with visitors. The aim was to observe how organic farming was constructed in those interactions, and how the Soil Association standards were positioned in relation to queries from interested farmers and others. Secondly, for ten consecutive weeks from the end of September 2009, I spent one day a week observing and interviewing certification officers during their daily activities in their offices in Bristol (ten days in total). Thirdly, I attended a training day for SACL inspectors in November 2009 to observe how knowledge was shared between inspectors and SACL's management. Finally, I accompanied an inspector to observe the inspection of a licensee in December 2009. As most of my data about the practices of certifying licensees came from the observations of certification officers and the inspection, I will describe these in more detail (I will describe how I gained access to this team below).

The team of certification officers I observed was the team dealing with farmers—producers in SACL's language. To capture different aspects of their everyday activities, I sat next to different officers while they carried out their daily activities. This showed differences in how certain routines were carried out, but also how members of the team interacted over areas in organic standards for which certain officers acted as specialist advisers to the team (each of the senior certification officers had their own specialism). As I had been introduced to them as a researcher interested in their work, the certification officers initially explained their activities to me without needing prompting. Yet, this only resulted in a partial and 'cleaned up' account: they made explicit many aspects of the certifying process, but did not refer to some tacit assumptions and knowledge that they mobilised in doing so. After the second week, the main elements of this process were clear to me, and the officers reduced their voluntary explanations to a contextualisation of the cases they were dealing with. This allowed me to observe and probe about tacit elements, for example how they decided which areas in a certification report to focus on. Towards the end I started to actively explore, through the cases that I had observed, some activities that had not been articulated, such as the

careers that cases go through. Thus, my position as an observer changed from being informed by my respondents to an active participant in teasing out how the practices of certifying licensees were constituted.

My presence in the office and identity as researcher was accepted without too much thought. Moreover, they were used to individuals occasionally looking over their shoulder for a day: inspectors would regularly spend a day sitting next to certification officers to foster mutual understanding and to coordinate reporting style and content. Occasionally, a certification officer would be curious about my research, and we discussed what I was trying to do. This usually resulted in a conversation about a specific aspect of their work that I had picked up during that day and that I wanted to probe further. After a few weeks, I became a familiar face in the office, and I managed to establish rapport with them to the extent that in one of the final weeks I earned the 'dumb hat' that passed between officers for remarks that they considered particularly 'nerdy'[18]—as the surprised team manager commented, new colleagues usually earn this hat for the first time only after some three months in the team.

In two instances, my presence affected licensees: in the first case, the certification officer had finished going through an inspection report with me, but as I asked a question he returned to a section in the report where he then spotted an entry that should have been a non-compliance. In the other case, the certification officer made an error in some calculations, which I helped correct and which meant that what a licensee was proposing to do would be non-compliant with a particular standard. In the former case, the consequence for the licensee was a mark in their record and, if they would not correct the error, an escalation of the issue during next year's inspection leading to potential sanctions. In the latter case, the licensee was informed that what he was planning to do was not allowed and that the proposal had to be revised. This was an animal welfare issue, which, if found non-compliant during an

[18] The comment that earned me the hat was that procedures provided surprisingly interesting reading—I was returning to the computer terminal that I had been given after a meeting, ready to further explore SACL's quality manual.

inspection, would have immediately resulted in a critical non-compliance with potential sanctions. While ethically defensible (licensees are responsible for compliance), I felt uncomfortable having become an active participant in the certification process: when I started this fieldwork I did not imagine that my presence in the SACL offices would have a direct effect on licensees; moreover, these licensees had not given their consent for me to be involved in their cases. However, in both cases there was no possibility to reflect on the consequences before acting—I did not have a choice to become involved. This suggests that researchers in the field of certification can become more entangled in the practice they are studying than they may have anticipated in their research design (for other examples of researcher role shifting, see Jarvie, 1969; Wade, 1984; Murray, 2003).

The inspection I observed was of a company supplying seed to the agricultural sector. The inspector I accompanied arranged for me to be present, and briefed me on how he would conduct the inspection prior beforehand. He introduced me to the licensee and assured her that my observations were covered by a confidentiality agreement (see below). I introduced my research to the licensee, who then reaffirmed her consent for me to be there. The inspector then carried out his inspection, occasionally explaining to me how he interpreted certain findings. This included a walk around the plant and the examination of paperwork in the office of the licensee. Like the certification officers, the inspector was used to someone accompanying him: inspectors regularly have certification officers shadowing them, and carry out a number of witnessed inspections per year for their inspector accreditation. At times where the inspector was busy entering details on his laptop, I chatted with the licensee about technical details of their operations and organisation. In total, the inspection lasted 6 hours, at the end of which the inspector discussed all of his findings with the licensee and with me. Also, once we had left he invited me into his car to provide some further thoughts on how the day went and to hear about my impressions. He confirmed that my conduct had been appropriate for an observer to an inspection, and seemed pleased with the points that I had picked up.

During all of my fieldwork I kept extensive notes of the activities I observed, the objects and artefacts that were mobilised in them, and the context in which these activities were carried out. After each day in the field I spent a considerable amount of time typing up my notes, starting the long train journey home with some general impressions and reflections on the day. It would usually take a few days to convert them into clear narratives about what had happened and to include the cases and their contexts. Often, I found that I could add further details to cases beyond my notes as I remembered past observations. I kept a rough chronological order to the notes, so that they became representations of field days (Emerson *et al.*, 2001). This was necessary to capture the flow of activities as carried out by actors—the sequence of what certification officers did was as important as what they were doing. However, it also helped me to add reflections as I could recall situations within the flow of those days—the chronology provided the context for me to analyse how I negotiated relations.

Both the observations of certification officers and the inspection were covered by confidentiality agreements. The general confidentiality agreement covering my observations in SACL was amended on my request to ensure that I would still be able to publish from the data generated—the agreement stipulates that I will not reveal commercially sensitive and confidential information relating to specific certification activities and decisions, or commercially sensitive financial and/or administrative details of SACL. This means that, while I am using certain cases to construct my argument, I have removed every detail that could provide a link to specific licensees. The inspection was covered by a separate agreement to the same effect.

Interviews

My approach to interviewing was based on Holstein and Gubrium's (2004) notion of the active interview. Rather than considering interviews as providing a neutral means of extracting information from a respondent in a one-way flow of information, Holstein and Gubrium propose that the participants in an interview are actively involved in meaning construction in interpretive practice. This means that interviews have a developing plot which

is produced as an improvisation between the interviewer and respondent, and through which alternative perspectives and stocks of knowledge can be activated. Thus, interviews generate situated accounts through the co-construction of narratives (Silverman, 2005) which are guided, but not determined by the interviewer. This meant that I attempted to structure the interviews loosely around a limited number of topics related to the themes of my research, with the aim of generating accounts of how practices were 'done' in the local setting of the respondent and of how the relations with other actors within and outside the organic sector were shaped. To achieve this, I adopted a conversational interview style and allowed respondents to develop narratives rather than sticking closely to a predetermined agenda. I did prepare a guide for each interview which was structured around the main themes of my research, but which was tailored to the particularities of the situation of the respondent. These interview guides also progressively reflected my understanding of the constitution of the organic sector and the particular issues that were likely to be relevant to a respondent (for a sample of these guides, see appendix 2).

In total, I conducted 43 interviews in roughly three periods. The first period, from March 2009 to September 2009 consisted of interviews with a variety of respondents (a director of SACh, two farmers, a merchant, an adviser, a researcher and a policy maker; details about my respondents and my sampling strategy follow below). The second period, from October 2009 to December 2010 coincided with my observations at SACL and therefore consisted of interviews with employees of SACL and SACh. The third period, from December 2010 to March 2010, consisted of interviews with farmers and advisers, and included further interviews with researchers and policy makers. Four interviews were with two respondents; five individuals were interviewed twice as time ran out or because there were further topics that could be explored with those respondents.

Interviews ranged from 45 minutes to three and a half hours although most were between an hour to two hours in duration. Two interviews had to be conducted over the telephone, all of the others occurred at the site of the respondent or, in two cases at a venue of their

choosing. In preparation for the interview, I emailed a research outline to each respondent in which I explained the background of my research, the questions I was trying to answer, a statement of how the activities of the respondent's organisation provided relevant insights to my research, and brief statements of possible outcomes, the ethics covering the research and about Lancaster University Management School, and my contact details (for an example see appendix 3). At the start of each interview, I explained my research again and asked whether respondents had any questions or needed any clarifications about the research. One respondent asked me to clarify what I was looking for in the interview; I explained the value of his narrative to my understanding of how standards 'come alive', which was sufficient to proceed.

Every interview was recorded on a digital recorder and fully transcribed afterwards. At the start of each interview, I asked permission to do so before switching on the recorder; no-one refused. I explained that the interview was confidential, and that I would make the interview data non-attributable by anonymising respondents, and where necessary, their role in their organisation. Despite these safeguards, respondents could end up revealing more than they would be comfortable with as a result of the conversational style (Mason, 2002), and therefore at the end of each interview I explained that I would transcribe the interview and asked whether there were any bits of the interview that the respondent was, on reflection, uncomfortable with being used in my research. In two cases a respondent indicated that a particular comment could not be used in the public domain as this related to current, sensitive affairs, and in transcribing I clearly marked those comments as not suitable for use in any form of publication. To provide respondents with another opportunity to reflect on the data generated, I attached the transcript to the email in which I thanked respondents for their time.

These elements—informing respondents about the research, guaranteeing confidentiality, anonymising respondents and providing two moments of reflection on the interview—constituted my procedure of gaining informed consent. I decided against using consent forms (Fine *et al.*, 2000) as I was concerned that their formality could interfere with the interview: as I had found out in my attempts to set up early interviews, the farming community is a fairly

closed one to outsiders and I did not want to risk my access for a largely bureaucratic tool (Murphy and Dingwall, 2007). Moreover, I felt that producing papers that needed signing would inflate the interview from a friendly chat at the kitchen table to a formal, official affair, which would make it more difficult to achieve the conversational style of interviewing that I required for my data. While for other actors, such as policy makers and researchers, these concerns were less relevant, I did not think that adopting a more formalised system for those respondents would add much to the procedure I was following.

My position as an outsider to farming and as a novice in the organic sector seemed to be accepted by my respondents. For my data, it actually provided an advantage as it allowed me to ask for clarification and probe deeper when respondents narrated technical details of how they were enacting organic standards. The ensuing explanations usually provided rich and detailed insight into how certain aspects of 'doing' organic are organised which I otherwise would not have been able to access. However, after a number of interviews, I started to get used to some of the arrangements and problems that arise from organic farming. In later interviews, I could mobilise specific terms and examples to explore particular aspects of how practices were configured. Moreover, I knew in more detail what roles different actors played in the organic sector, and more importantly, I knew the names of individuals in key positions. This meant that I was no longer a complete outsider to this world I was trying to study, which helped build up some trust with respondents—in fact, all bar one respondents offered that I could contact them if I had further questions.

Archival data and publicly available documentation

During my visits to the SACL office, I was given unrestricted access to the databases which the certification officers and inspectors use in their daily work. In particular, I searched the database with cases presented to the Certification Committee—the authority on how standards are to be interpreted in practice—for detailed cases representing conflicts or interpretive uncertainty over how certain rules in organic standards should be enacted. However, the documents embodying these cases are not mere 'containers of content' (Prior,

2004: 77)—they are products of social interaction, which in turn are active in shaping practices. Thus, the documents in the database provided not only further insights into the 'doing' of organic in farming practice, but also data about how interpretations were established and negotiated and conflicts resolved between licensees and SACL. Moreover, as 'social facts' (Atkinson and Coffey, 2004: 58) they are shared and used in the practices of certifying licensees, and therefore provided data about how explicit knowledge is shared between actors within and outside of SACL. This implies that documents were not used as 'secondary' but as a 'primary' data source.

My sample of archival data was taken from the period I was carrying out my observations at SACL (September to December 2009), reflecting the prominent issues for the certification officers at that time. In total, I selected 174 cases in which the Certification Committee could not refer to a previous decision or otherwise established explicit interpretation of a rule. This included, *inter alia*, queries from certification officers, requests for permission by licensees, appeals against previous decisions, and serious non-compliances and disciplinary cases which had to be examined by the Committee. In all of these cases, different kinds of knowledge were mobilised to take a decision; many cases contained a number of different documents and extracts thereof. Subsequently, I categorised the selected cases into different categories based on who submitted the case to the Committee (e.g. certification officer), the type of case (e.g. query) and the substantive area of organic standards (e.g. poultry) to allow analysis.

Also, I examined publicly available documents from a variety of sources such as various pieces of EU legislation, DEFRA guidance on the legislation on organic farming, policy documents and reports by public and private actors in the organic sector.

Access to various fields

To generate the data with which I could construct an account of the different practices organised by standards for organic agriculture, I had to negotiate access with different groups

of actors. This meant developing different strategies for those groups: I established contact with a director in the Soil Association charity, who provided an introduction to the Managing Director of SACL. Following a presentation to the Management Board of SACL about half a year after the initial contact, I received permission to conduct observations of and interviews with certification officers and inspectors. The practicalities of this were organised by the certification managers heading the two teams of certification officers, and the director of inspections. After explanations of the daily activities of certification officers by individuals from the producer team and the processor team, I concluded that the activities of the team dealing with producers (farmers) would provide more insights into the interpretations and negotiations required to make organic standards 'come alive'. Subsequent arrangements were made with the certification manager of the producer team, who was very helpful in organising the support of his team as well as access to the databases of SACL. In parallel, the director of inspections invited me to observe a training day for inspectors and introduced me to an inspector I could accompany; on the training day I set up interviews with two further inspectors. The inspector I accompanied to observe an inspection organised access to the licensee.

Table 3.1 contains an overview of SACL employees who I interviewed and whose work I observed (all names are fictional; to make identification of their roles in the thesis easier, the initial of the respondents reflects their group: inspectors have names starting with I or J, certification officers have names starting with C, and technical managers have names starting with T). This table includes individuals in a managerial role (three team managers and two directors). Revealing this role would make them immediately identifiable to actors outside SACL, most notably to other certification bodies, policy makers and researchers. As such, I have chosen not to state the managerial component of their position, but their functional role—all of these individuals progressed through the ranks of the teams they were heading, and therefore they could be considered as *primus inter pares*. Also, a number of senior

certification officers also were qualified as inspector, which meant that their narratives contained references to the work of an inspector.

Name	*Function*	*Observed*
Cathy	Senior Certification Officer	Y
Cerys	Certification Officer	Y
Charles	Senior Certification Officer	N
Charlotte	Certification Officer in training	N
Christine	Senior Certification Officer, Inspector	N
Christopher	Senior Certification Officer, Inspector	Y
Claire	Senior Certification Officer, Inspector	Y
Colin	Senior Certification Officer, Inspector	Y
Craig	Senior Certification Officer, Inspector	N
Ingram	Inspector	N
Irene	Inspector	N
James	Inspector	Y
John	Inspector	N
Tamsin	Technical Manager	Y
Theo	Technical Manager	N
Theresa	Technical Manager	N
Toby	Technical Manager	N
Tom	Technical Manager	Y

Table 3.1: Respondents from SACL

Access to farmers was more difficult to establish: a first round of calling farmers in the region I was interested in (East Anglia) resulted in only one interview. However, independent from my research I had met a Cambridge academic who introduced me to an ex-student, who was an organic farmer and a farm adviser herself and who introduced me to a locally based consultant for organic farming (Alistair). On hearing my ideas about sampling, Alistair provided useful advice about the sample and provided some contacts for farms fitting my sampling strategy. After this, it became easier to access farms as there were some names that I could refer to in the initial telephone conversation with new farmers. Also, I had received

extracts from the SACL licensee database, separated out by enterprise[19]. This allowed strategic sampling (c.f Mason, 2002) and provided another form of introduction.

My initial sampling strategy for farms was based on the idea that studying farms in conversion to organic production would allow me to discover how farming practices were reconfigured as a result of organic standards. From conversations with some farm advisers of the Soil Association charity, I concluded that a mixed farm with four or more integrated enterprises and a stockless arable farm would allow me to draw out different kinds of knowledge specific to organic farming as they provided extreme cases (Flyvbjerg, 2006).

First, stockless arable farming is the only possible form of organic production that does not rely on different enterprises making up a full farm system. In other words, whereas most organic farms rely on different farm enterprises to minimise the need for external inputs to the farm, a stockless arable farm constitutes a single-enterprise operation. In terms of organic principles, this constitutes an innovation on the ecosystems approach underlying the organic principles—in which different enterprises are required to make the farm as closed to external inputs as possible. The main problem that stockless farms face is how to fertilise the soil: some farmers will import farmyard manure from other organic farmers and as such for the purpose of my study they would not differ from multi-enterprise farms in how fertility is built. However, there are also stockless organic farms that rely solely on green manure, i.e. crops that are not harvested but ploughed into the soil for fertility. Farmers that do this need to gain specialist knowledge of how to build fertility through crops on top of knowledge of rotations for weed and pest control.

In contrast, farms that are mixed with arable and multiple livestock enterprises are much more at the heart of the organic principles as they are closer to an ecosystems approach. They require specialist knowledge about how different enterprises connect but also require specific

[19] An enterprise is a recognisable type of farm operation, such as arable, horticulture, beef, dairy or lamb production.

activities to allow the different enterprises to benefit each other. Especially farms where enterprises have been added specifically to minimise external inputs makes are relevant for my study as they show specific knowledge about systems and connecting enterprises involved in making the farm an organic system. Moreover, this type of farm depends on many interrelated activities and therefore represents a case in which becoming and remaining certified requires particular efforts to maintain the integrity of the system.

However, as inspector Ingram explained to me during SACL's training day, there were very few, if any, of the types of farms I was looking for in conversion. He indicated that stockless arable was a highly specialised form of farming, with only a few practitioners in the UK and even fewer converting farms, and that traditional, mixed organic farms were no longer established in a single conversion but in a staggered manner—but he also suggested that such farm systems were becoming less common as many farmers were specialising in a few high value crops. In fact, while doing my fieldwork it became apparent that many of the changes towards organic farming are made *after* conversion is completed (see Chapter 4). As such, I switched my attention to licensed farms.

Moreover, farms differ from each other in many ways due to their specific locations and the social, organisational and economic arrangements in which the farm is situated. As I could not include farms for each of these aspects, I chose to include different farms based on their organisational and economic conditions, thus changing to 'maximum variation cases' (Flyvbjerg, 2006: 230). This provided insights into how farm configurations and practices can be shaped differently based on prevalent notions of profitability and organisational structure. To describe this, my cases were drawn from 'classical' organic enterprises, e.g. arable and livestock enterprises which could form a more or less 'closed system'; I did not include areas which have only recently been covered by standards for organic agriculture, such as woodland or aquaculture (fish and seafood farming). Also horticultural enterprises such as fruit and vegetable farming were excluded, as the material complexity of their farming is, at least for in the context of this thesis, less than for arable farming.

In total, I visited one conventional farm, five organic farms and two estates which were partially conventional and partially organic; all of them are located in East Anglia. By way of introducing the farms, Table 3.2 contains some of their details. I have classified the farms either as family or as hobby farm or as estate. Family farms are those where the holding is owned by the farming family who derive their main livelihood from the farm. Hobby farms are owned by a family whose main source of income is not related to the holding; it does not refer to the level of skill or seriousness of the farmer. Some of the enterprises on the estates were tenanted out, meaning that they are run by independent businesses with their own organic certification (indicated by a 't' in the table below). Again, all names of individuals and holdings are fictional.

Holding	*Farmer/manager*	*Type*	*Enterprises*	*Organic status*
Acre Farm	Fred	Family farm	Cereals, pigs	Demeter
Brook Farm	Felix	Family farm	Goats, horses, pigs, dairy cattle	n/o
Clover Farm	Frances	Hobby farm	Cereals	OF&G
Drove Farm	Frank	Hobby farm	Cereals, beef cattle, horses	SACL
Elder Farm	Florence	Hobby farm	Highland cattle	SACL
Field Farm	Alistair	Experimental/ hobby farm	Cereals, apples	In conversion with SACL
Gooseberry Estate	Fergus	Estate	Cereals, pigs (t), sheep (t)	SACL; n/o
Hawthorn Estate	Fraser	Estate	Cereals, beef cattle, deer, pigs (t), eggs (t), vegetables (t)	SACL; n/o

Table 3.2: Some characteristics of the holdings visited during fieldwork.

Finally, access to other respondents in the organic sector (advisers, policy makers, researchers) was negotiated on an individual basis. Policy makers and researchers were easily identified due to the small scale of the organic sector; for advisers I differentiated between advisers from the Soil Association charity, consultants working for an independent consultancy specialised in organic advice, and an organic specialist within a large, mostly conventional consultancy and land management agency. I also interviewed a number of individuals in relation to other activities of the Soil Association charity, such as standard

setting and policy work. For an overview of all of these respondents, please refer to Table 3.3. Names are fictional; to make identification of their social group easier throughout the thesis, their initial reflects the social group they belong to.

Most respondents had been involved in the organic sector for a long time (a decade or more); several individuals could draw on 25 to 35 years experience to provide detailed accounts of the organic sector changed over that period. Rather than 'factual' histories of the 'doing' of organic, these often biographical narratives provided valuable data about the current organisation of organic practice and sector as they contrasted the past with the present.

Name	*Function*		*Name*	*Function*
Sally	SACh farm business adviser		Adrian	Adviser, large consultancy
Scott	SACh farm business adviser		Alistair[20]	Adviser, organic consultancy
Simon	SACh standards team		Allen	Adviser, organic consultancy
Sophie	SACh policy team			
Stephen	SACh standards team		Roland	Researcher
Susan	SACh standards team		Rory	Researcher
			Ruth	Researcher
Paul	Policy maker, Natural England			
Peter	Retired policy maker		Mike	Merchant
Philip	Policy maker			
Pippa	Administrator, Natural England		Neil	NGO

Table 3.3: Respondents from the organic sector

3.4 Analysis

Alongside the generation of data, I continuously analysed what each new instalment of data added to my understanding of how organic standards 'come alive' through the practices I was studying. In the initial stage (March 2009 to September 2009), I read each completed transcript a number of times. The first time, I read them literally, scribbling notes in the margin about the topics that had been discussed. Second and further readings were

[20] Alistair features as a farmer and as an adviser; I interviewed him in both capacities on different occasions.

interpretative and reflexive (Mason, 2002) to draw out themes that these topics related to; I read them until no further themes emerged and until I had at least some idea about the agenda of the respondent in constructing a certain narrative. In each case, some of the themes that I generated seemed relevant to bring up in a next interview to explore with another actor how these themes related to his or her narrative. After six interviews, with different types of respondent (see above), I wrote a memo (Charmaz, 2000) to examine connections between the themes in the narratives of these different actors. This resulted in ten overarching themes which seemed relevant to all actors (farmers, standard setters, policy makers, advisers and merchants).

However, these themes were amalgamated from narratives of respondents of all relevant groups and as such these themes did not tell a story—yet. A second round of analysis, in which elements of different themes were linked on the basis of theoretical concepts derived from literature and in which the data from two days of observing SACL employees was included, helped tease out two main stories, one having to do with the enactment of organic standards through the everyday activities of SACL officers, the other concerning the shaping of markets through organic standards. These stories eventually became Chapters 6 and 7 of the thesis. To interpret the data and to develop ideas about the underlying mechanisms for the practices described, I incorporated theoretical resources to bring into focus particular characteristics of these practices which had a direct influence on how organic standards were enacted. Moreover, I reorganised my data so that the distinctiveness of different elements of the infrastructure became more apparent (contextual data organisation; Mason, 2002). Once these two main narratives had emerged, three other themes emerged from the remaining material, namely the reconfiguration of farming, the configuration of policy interventions, and the quest for a 'real' organic. While this latter topic was interesting in showing how the 'doing' of organic can differ, it has less relevance to the constitution of the infrastructure. It has a minor role in the thesis, figuring briefly in Chapter 7.

Early ideas about these three themes helped focus the last period of data generation. In developing my analysis of policy interventions (Chapter 8) I drew on some theoretical notions to bring into focus how these interventions relate to the infrastructure constituted by organic standards. For the farming chapter, I did not refer to literature beyond that dealing with notions of 'standards at work' as discussed in Chapter 2. However, in analysing and simultaneously writing about farming it became apparent that there were two stories that needed to be told. As such, Chapters 4 and 5 both deal with how standards for organic agriculture shape farming practices, but from different, complementary angles.

Once all of the empirical themes were clear, a reflection of their analytical points in relation to the literature on 'standards at work' and on orders and co-produced disorders helped to tease out the interrelations between the different sets of practices. Thus, the infrastructure constituted by standards for organic agriculture came into view by considering how the practices through which organic standards are enacted 'hang together' (Schatzki, 1996). The final element of the analysis was to find an appropriate sequence for the empirical chapters; as I documented a web of practices, there were a number of possibilities. In the end, I chose to more or less follow the trajectory of organic 'stuff' as I originally intended with the flapjack. However, I would like to emphasise that the actual sequence is heuristic rather than reflecting a theoretical model of the structure of the web of practices (Star and Griesemer, 1989): there is no primacy of any of the practices described here over others; they are all required to be enacted simultaneously and continuously for the infrastructure to be transparent and 'ready to hand' (Star and Ruhleder, 1996).

As will be clear, in the analysis I have drawn interchangeably on different sources of data and theoretical resources, considering them as equally valid but providing different perspectives on my research problem. With them, I have constructed an exploratory account akin to a praxiography (Mol, 2002) which I hope reflects the multi-layered nature of the infrastructure encountered by the actors involved in its constitution, as well as the multiplicity of 'doing' organic in many of its facets in a particular country at a particular point in time. If I

had done this study in another country, or five years ago, or if I were to revisit my respondents in five years, their narratives, and therefore the thesis that flows from it, would be different. As such, while the aim of this thesis is to develop theory about how voluntary product standards 'come alive', it is also a document of how organic was 'done' in England in 2009.

Or, to be more precise: it is *my*, necessarily partial, account of how organic was done in England in 2009. This is reflected in a number of ways, of which the most prominent is my starting point of framing of organic farming as a mode of farming which does not rely on the input of synthetic chemicals (see next chapter)—this perspective is a construction based on my own, long standing interests in environmental protection growing up in the 1980s and 1990s. From my current knowledge of organic farming, other framings would be possible, for example as a mode of farming which minimises reliance on external inputs and an emphasis on closed loops. This latter framing would probably relate more to the position adopted by some of my respondents. Yet, while the narrative of this thesis would have been different in places (e.g. a focus on how enactments of organic standards enable a system of nutrient recycling, etc.), this would not have substantially altered my overall argument. This means that my respondents may not quite share the perspective on the enactments of standards for organic agriculture which I have constructed. I however do hope that they will appreciate my interpretations.

Chapter 4 Organic in time and space

4.1 Introduction

Friday late afternoon, the pale winter sun is casting long shadows over the flat land in East Anglia. It is the end of January 2010, and organic consultant and farmer Alistair drives me around in his 4x4 to show me the farm, which is in the final year of conversion to organic farming. He drives carefully over the tracks between the fields while his dog accompanies us alongside the car. We get out where some of the fields are separated by a ditch, and Alistair points out what he has planned for the farm, and what has been done so far. He points to the rows of apple trees that have been planted in autumn. Unusual for East Anglia, these trees will provide additional income for the farm, act as windbreaks for the arable crops, provide wildlife habitats for many different species, and lower disease pressure for many elements of the farm. Then, Alistair takes me to the edge of a field, and points to some sprigs of green emerging from the rich black fenland soil, which he had explained is grade 1 soil[21] with 23% organic matter. The green that is just starting to show is the winter wheat which he had sown in autumn. Alistair's plan is to farm these fields using a permanent clover sward which will suppress weeds, and into which the cash crops, such as wheat or triticale is sown. While the clover sward is already established in the soil, it is not yet visible: the plants will only come up in spring and quickly shield the weeds, which will emerge around the same time, from the sunlight that they need to grow. Having the permanent clover stand will also be good for the fertility of the land, as nutrient levels in the ground will no longer be depleted by cash crops to the extent that these levels need to be rebuilt by two years of growing clover. Instead, the clover will maintain the fertility of the land by providing nutrients and making available nutrients in the soil for the cash crops every time these crops are grown. This will allow cash

[21] This is according to the Agricultural Land Classification of England and Wales. Grade 1 is the highest quality of land: "Grade 1 - excellent quality agricultural land. Land with no or very minor limitations to agricultural use. A very wide range of agricultural and horticultural crops can be grown and commonly includes top fruit, soft fruit, salad crops and winter harvested vegetables. Yields are high and less variable than on land of lower quality." (MAFF, 1988)

crops to be grown every year, albeit at a lower annual yield than usual. It will be a minimum-till farm, which means that the soil will not be ploughed or cultivated if it can be avoided so as to minimise weeds and to maintain nutrients and organic matter in the soil. In fact, Alistair is trying to establish a profitable arable organic farm which can be run by doing as little as possible.

This is Alistair's own farm, where he is experimenting with some of the insights he gained from his extensive experience in organic farming as a consultant to many farm businesses[22]. Everything Alistair plans to do makes his farm unusual in conventional as well as organic terms. While the conventional neighbours of the farm will not recognise much beyond the annual cash cropping (although being puzzled by the purposeful reduction in yield) and the sowing of winter wheat, for organic farmers the permanent clover sward, the absence of a rotation, the annual cropping and the sowing of winter wheat will be unfamiliar. And the presence of fruit trees in arable fields will be strange to both types of farmers. So if this is an idiosyncratic example, what would be a typical example of a farmer 'doing' organic?

While doing my fieldwork, it became apparent that there is no 'typical' organic farm: even archetypal organic farms (family-run, where arable fields, pasture and various kinds of livestock form a closed system so that the outputs of one 'enterprise' feed into one or more of the others) differ from each other in many ways due to the geographic, social, physical, organisational and economic arrangements in which the farm is situated. Furthermore, organic standards do not only govern the practices and material 'stuff' of these mixed farms, they apply to any farm wishing to sell their produce as organic. So what is standardised by standards for organic agriculture? What does 'doing' organic mean for farmers in their everyday activities? How do organic standards shape these activities, and the objects thereof? How does the doing of organic shape its standards? In this chapter and the next, I will explore these questions by exploring the enactment of organic standards through farming practice.

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[22] Alistair's main occupation still is adviser/consultant, and therefore I have classified him as an adviser rather than a farmer—although in this introduction he talked to me as a farmer.

In this chapter, I focus on the way in which activities, materials and tools[23] are arranged in particular ways as a direct result of individual rules in standards for organic agriculture. I start by arguing that these rules turn into process injunctions which produce locally situated frameworks for action. I then examine how these injunctions shape how organic stuff is produced, firstly through the configuration of arable farming through a temporal and sometimes a spatial rotation (section 4.3), and secondly through the reshaping of physical and hygiene-related boundaries around livestock (section 4.4). In both cases I suggest that the elements which constitute these configurations (actions, materials, tools) are in fact standard and packaged through different standardisation processes, which are mobilised in specific ways and which require ongoing tinkering so that organic can be 'done' in economic, social and material terms. I argue that these injunctions result in a mode of farming which is preventative rather than reactive (section 4.5). In the final section I conclude that, unlike the ways in which protocols interfere with or structure work practices, the scripts for the farming practices on a particular farm are written *on that farm* using pre-existing elements resulting in the local, contextual enactment—the localised universality—of organic standards. I suggest that notions of compliance and deviance do not refer to how a script is performed, but to the inclusion of particular rules in the constitution of the configurations that make up the farm-specific script—although there is an underlying script pre-scribing the mode of farming that is required to do organic. I conclude that the 'doing' of organic is characterised by multiplicity: each enactment of standards for organic agriculture is unique. I argue that this is irrelevant for the organicness of products: as long as all relevant rules were complied with, each configuration is a permitted way of organising a farm.

In what follows, the labour involved in farming (e.g. harvesting, rearing livestock, etc.) is mostly absent: my respondents only rarely commented on these activities, and then mainly to indicate that these were part of general farming practice rather than specific to either

[23] Tools are mobilised in the enactment of a practice to perform certain activities, and can be material artefacts (like tractors, ploughs and medicines) or objects (like farming economics and soil maps).

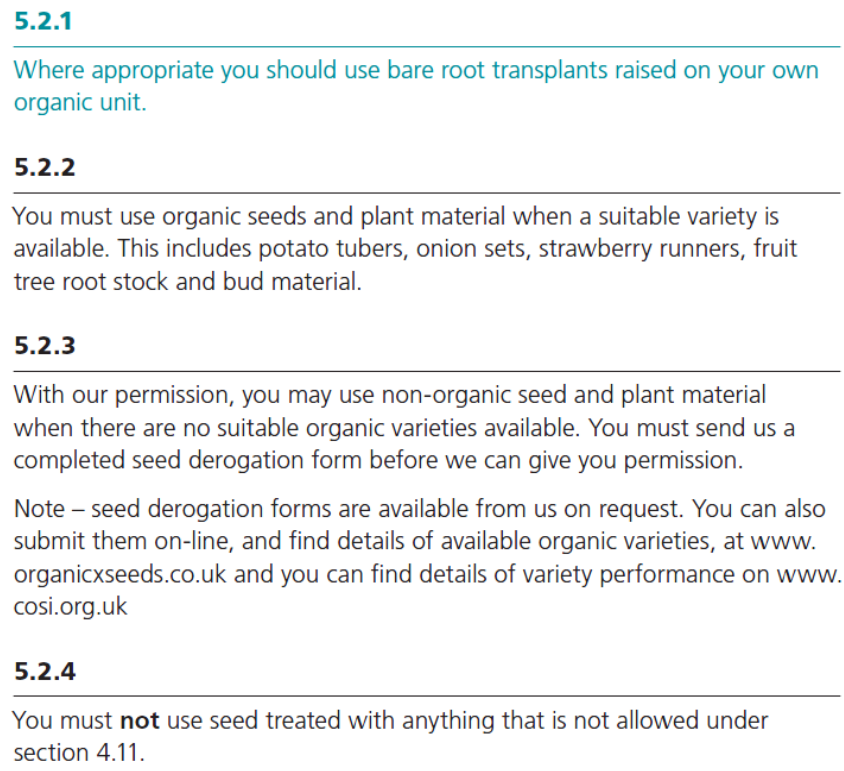
conventional or organic farming. This implies that how they are performed does not significantly change between conventional and organic forms of farming even if, as activities in farming practice, they are arranged in different ways. These aspects of farming therefore are not part of this particular story.

Also, I have drawn my examples of rules for organic farming from the Soil Association standards. I have done this for three reasons: firstly, the Soil Association standards are presented in a format which makes them particularly suited to this approach in that each rule has been given its own clause (other certification bodies use standards which have compound clauses which would make my narrative less clear). Secondly, most of the farmers I interviewed were licensees of the Soil Association, and therefore the Soil Association standards were those that were being enacted in practice. Thirdly, I became very familiar with the Soil Association standards through my observations of SACL officers. However, this does not mean that my account is biased towards the occasionally stricter Soil Association standards (see chapter 7).

4.2 Organic standards at work

In their current form, the Soil Association standards are published in two volumes and two appendices (Soil Association, 2010b, c, d, e). Jointly, they fill over 600 pages (albeit with some duplications) with rules, guidelines, and instructions for a wide range of farming practices. In sections devoted to enterprises, they define what is allowed and what is prohibited, specify when licensees need to inform SACL, and provide guidance about what would constitute 'best practice'. To do this, the text is divided into numbered clauses containing provisions and, if applicable, particulars about the conditions under which these provisions apply. The guidelines for best practice are not binding, but indicate what would be desirable for the operation of enterprises. To set these apart from the rules, they are printed in a different colour. The four clauses in Figure 4.1 show the different types of rules and guidelines that are present in the Soil Association standards. This example is taken from the section on arable and horticultural crop rotations (Soil Association, 2010c: section 5), and

deals with the properties of seed and propagation material used in rotations (section 5.2). This example, while covering material properties, is representative of how activities are standardised as well.



5.2.1

Where appropriate you should use bare root transplants raised on your own organic unit.

5.2.2

You must use organic seeds and plant material when a suitable variety is available. This includes potato tubers, onion sets, strawberry runners, fruit tree root stock and bud material.

5.2.3

With our permission, you may use non-organic seed and plant material when there are no suitable organic varieties available. You must send us a completed seed derogation form before we can give you permission.

Note – seed derogation forms are available from us on request. You can also submit them on-line, and find details of available organic varieties, at www.organicxseeds.co.uk and you can find details of variety performance on www.cosi.org.uk

5.2.4

You must **not** use seed treated with anything that is not allowed under section 4.11.

Figure 4.1: Example of Soil Association standards

Each (sub)section starts with some guidelines about how the enterprise should ideally be run, and therefore clause 5.2.1 is printed in the sea-green colour reserved for guidelines. Also, the text contains the word ‘should’, indicating that this is not a requirement. Clauses 5.2.2 to 5.2.4 are printed in black, and contain the binding rules of the Soil Association standards. Clause 5.2.2 specifies the use of a particular kind of seed, namely organic, and clarifies that this rule is not only applicable to seeds, but also to other types of ‘propagation material’ from which crop-bearing plants can grow. Clause 5.2.3 specifies the conditions that apply if clause 5.2.2 cannot be complied with, by allowing non-organic seeds to be used if organic material is not available. This requires a written request which needs to be approved by SACL before the non-organic seed can be used. The clause also contains guidance how this can be done, and about where to check the availability of organic material. While the latter part appears to be

guidance, it actually is a requirement: organicxseeds is, at least for SACL, the authoritative reference for what material for planting is available organically. Clause 5.2.4 contains a rule excluding material which has been treated in a certain way, which applies to all propagation material—but as organic seeds may not be treated chemically, this is a specific requirement for non-organic material. In subsequent clauses in this section, the Soil Association standards continue to define how planting material becomes organic, including some specific requirements for transplant material and pot plants.

In this manner, standards for organic agriculture set many rules for what products or practices are allowed, and what is explicitly prohibited. In fact, the first section of the Soil Association standards explicitly states: "Generally, if we do not mention a product or practice, it means we do not allow it so you must not use it. Please ask us if you are in doubt." (section 1.1). This means that organic farming does not exist in a vacuum, but is in many ways closely related to other forms of farming. Indeed, many practices, objects, tools, classifications and standards are mobilised in identical ways to conventional farming. For instance, a dairy farmer going organic (switching from conventional to organic management of a dairy herd) will not change the way in which he or she will milk the cows, store their milk, treat acute mastitis (udder infection), dispose of milk containing antibiotics, attend to nutritional needs, wean calves, etc. Indeed, these elements will be exactly the same for conventional and organic farmers alike.

However, depending on what conventional dairy system the farmer is converting, there are substantial changes in how the cattle are managed. Namely, the National Farmers' Union distinguishes three main types of dairy systems in the UK: grass systems in which the cattle grazes pasture for about six months of the year, and is housed for the remainder of the year; housed systems in which the cattle is mostly held indoors, and extensively grazed systems in which the cattle is mostly outdoors (NFU, 2010). Farms based on either grazed system would not require vast changes, but housed systems are not permitted under organic standards and so the changes would be substantial to comply with the rules which require access to pasture (see

also below). Moreover, problems like acute mastitis will be treated in the same way on conventional and organic farms, but there are marked differences in how mastitis is managed more generally: for example, organic standards prohibit the use of antibiotics to prevent mastitis from occurring (Soil Association, 2010c: cl. 10.10.24). Instead, farmers need to manage the cattle in such a way that the occurrence of mastitis is minimised by reducing the number of bacteria through which cows can be infected. This includes a number of different things, such as changing bedding frequently, additional udder cleaning before and after milking, adjusting how cows are managed during their 'dry' period (when they do not produce milk), controlling flies during the summer, and maybe even culling cows that have consistently high counts of infected cells (FWI, 2009). Therefore, even if not prescribed as such, to manage a practice (welfare of cattle) without recourse to a conventionally common element (prophylactic use of drugs), tinkering with other elements (managing hygiene in various ways[24]), and the adoption of new strategies (e.g. culling) is required.

This means that differently organised farming practices emerge from the rules in standards for organic farming. As the example of mastitis management shows, a single rule preventing the prophylactic use of antibiotics results in a different pattern of activities for managing cattle, a pattern which integrates material artefacts in particular ways. Yet, this pattern will be, in part, dependent on the local conditions of a farm: only some farmers may consider culling, whereas others may not need to do as much as the disease pressure is generally low. Thus, this rule becomes a framework for action: by embodying assumptions about how mastitis can be managed and prevented without the need for antibiotics, the enactment of the rule requires a farmer to assemble activities and artefacts in a way that mastitis can be managed in the specific setting of that farm. As such, the rules in organic standards are not just simple prohibitions or statements of allowed practices: in their local

[24] This is not to say that conventional farmers would not employ similar techniques. Indeed, some elements are considered 'best practice' also in conventional dairy herd management. However, in organic farming they are essential to reduce chronic occurrences of mastitis, whereas in conventional farming these adjustments are desirable but not critical to control chronic mastitis.

enactment they become process injunctions (Kaufmann, 1998) which produce a framework for how a particular aspect of farming practice should be performed or managed. This is a local framework: it depends on the local conditions of the farm which activities and artefacts need to be assembled in a way that practices are compliant with the rules.

For a farmer converting to organic farming—'going' organic—this means that these injunctions are made visible: conventional farming practices are challenged by and change as a result of organic standards. However, as mentioned above, many activities and artefacts are shared with other forms of farming. A new injunction does not introduce an entirely new practice; rather, existing assemblies of actors, activities, objects, artefacts and meanings are rearranged into new, more or less stable assemblies. This process of making the injunction visible and rearranging different elements of practice is captured by the term reconfiguration (Shove, 2003). But injunctions are not only made visible in 'going' organic: changing conditions in the setting of an organic farm may challenge established configurations. In more general terms, then, 'doing' organic requires finding configurations which allow farming based on the injunctions to proceed while enacting rules in organic standards, and doing so in the local setting of the farm.

This implies that unlike protocols (as described by Timmermans and Berg, 1997, 2003), the rules in organic standards shape practice not by interfering directly with work practices and sequences of activity. Instead, organic standards structure work practices more loosely: they specify which elements (activities, materials, tools) can be used. *Which* elements a farmer mobilises in a local, specific context (depending on geographic, social, physical, organisational and economic arrangements) and *how* these elements are assembled is not in itself scripted in the narrative of organic standards. Rather, this depends on the injunctions which emerge from the rules in a local setting, which in turn produce frameworks for action. This mechanism means that the enactment of organic standards can occur in a near infinite variety of potential social, economic and material contexts: what configurations underpin local

enactments follow from locally constructed frameworks for action rather than direct prescriptions of practices in those standards.

Yet, while the injunctions are locally situated, this does not imply that they are independent or disconnected from other 'doings' of organic: in fact, as I will argue in the remainder of this chapter, they constitute a particular mode of farming. To examine this mode, I explore the temporal and spatial dimensions of these (re)configurations in the next two sections, after which I argue that these injunctions constitute and reflect a preventative mode of organising farming practice.

4.3 Temporal configurations

To examine how organic standards configure the temporal dimension of farming practice, it is necessary to first consider some of the properties of the main class of artefacts which is excluded by standards for organic agriculture—the synthetic chemical compounds (agrochemicals) designed to manage the production of crops, e.g. herbicides, pesticides, insecticides, artificial fertilisers, pH adjusting agents, antibiotics, growth hormones, etc. As technological solutions for the management of crop and livestock production, these industrially manufactured substances provide effective ways to boost yields and control pests: their effect can be noticed soon after application, and often one application is sufficient to achieve the desired effect. They can be used routinely to manage production processes and to prevent problems from occurring, but many of them can also be applied to control problems once they have been identified. Moreover, they are portable as they can be taken to the site where their effect is required, and applied locally or across an entire farm depending on what needs to be managed. As such, agrochemicals provide highly homogeneous solutions for farmers in the sense that while required dosages may vary between local settings, their effect is mostly predictable and can be calculated to an optimum yield/cost ratio. Furthermore, they can be applied widely across settings, and many of the agrochemicals are designed to manage a broad spectrum of related problems (e.g. a herbicide such as Roundup is not species-specific: any plant will be killed when its leaves come into contact with it). This means that

agrochemicals not only provide technological solutions for many farming problems, they also standardise farming practice by reducing the complexity of managing and disciplining nature: agrochemicals package the management of yields and the control of undesirable organisms into technologically advanced substances which can be routinely sprayed on fields or administered to livestock.

Prohibiting their use, therefore, means that producing crops and livestock cannot be achieved through a limited number of highly uniform, packaged materials and practices. Consequently, the injunction for organic farmers is to configure alternative ways to manage the growth of crops and to keep undesirable organisms under control. The options for straight substitutions are limited indeed: to achieve the desired effects, the farming practices on an organic farm entail extended assemblies of sets of activities and the use of certain materials and tools. For many of these elements (activities, use of artefacts, mobilisation of tools) there are various options and different ways of managing a particular aspect of production. For example, weed control can be achieved in many different ways, such as through the removal of weeds by hand, by letting them grow before ploughing them under, purposefully germinating and hoeing out weeds a few weeks before the crop seeds need to be sown, through the choice of highly competitive crop species, by splitting the root of certain weeds again and again so that the rhizome (growth kernel) of each root section is exhausted, timing the drilling (sowing) of the crop seed so that the emerging crop shades out weeds quickly after germination, by managing weeds so that no single species of weed becomes dominant, or by simply accepting that the field in which the crop grows contains weeds. Often, a farmer will use a combination of these methods to control the specific weeds that are growing on a field depending on the crop that is to be produced.

Such sets of practices therefore do not substitute prohibited agrochemicals by emulating their effects: they form altogether different arrangements of managing yields and controlling weeds, pests and diseases, the assembly of which fulfils the specific requirements for crop production and the welfare of livestock. The core arrangement for almost all organic arable

enterprises is a rotation of crops for each field: it constitutes the central method of managing soil fertility and controlling weeds and pests in a way that ensures the financial viability of a farm (Lampkin, 1990).

To understand how this is achieved, it is necessary to briefly consider some agronomic[25] aspects of farming. In order to grow and to reproduce, plants need large quantities of nutrients such as carbon, oxygen, hydrogen, nitrogen and potassium, to a lesser extent phosphorus, calcium and magnesium, and even smaller quantities of other elements (trace elements). Carbon and oxygen are synthesised from carbon dioxide absorbed from the air; any other nutrient is absorbed through the plant's roots in the soil. This means that the soil[26] is depleted of these elements, reducing its fertility and consequently the yields of successive crops. As such, an important part of farming practice is to fertilise the soil in relation to the nutritional needs of the crop to be grown. To make these soil-based nutrients available to crops without applying prohibited artificial, inorganic fertilisers such as ammonium nitrate, farmers can apply manure from farm animals (farmyard manure) as a source of nitrogen and potassium. However, this might not always be readily available, and does not cater for the introduction of other nutrients. Therefore, the rotation includes plants to manage the fertility of the soil by growing crops with different agronomic properties in a sequence which balances the nutritional needs to all of these crops.

For example, legumes such as clover, peas and beans are able to capture atmospheric nitrogen and fix it in their roots. Potassium, phosphorus and other elements can be returned by ploughing plant residues (straw and/or roots) of legumes, cereals and grasses into the soil as a 'green manure'. Furthermore, some legume species have very deep roots which can make nutrients available from soil unreachable by other species. This means that while some crops

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[25] Agronomy is the science of land management and crop production.

[26] I refer here to soil as if this would be a uniform entity. However, soils types vary widely in structure (important for rooting) and a number of factors which influence the availability of nutrients for plants. While some of these aspects can be improved through soil management, others cannot be changed and therefore affect the plants that can be grown on a specific field.

deplete the soil of nutrients, other plants can be used to fertilise the soil again. Growing a sequence of different plants on the same field—a rotation—can balance the nutrient off-take and input in the soil. A rotation also helps in the management of undesirable organisms, as it will lead to different cultivations (ploughing, tilling, planting, etc.) at different times of the year so that weed species cannot become dominant. Moreover, some competitive crops suppress weeds by shading them out, while others act as natural herbicides through the biochemical residues they leave in the soil. Finally, a rotation reduces the build up and survival of soil-borne pests and diseases as host crops are alternated with non-host crops (for more details of rotations please refer to Blake, 1990; Lampkin, 1990; Lampkin *et al.*, 2008). It is important to note that most rotations are temporal rotations: they define the sequence of crops to be grown on a field.

The Soil Association standards specify that "[w]here rotation is possible, the annual rotation you use for each area of land must: balance the use of fertility building and fertility depleting crops; include crops with various root systems; include a legume crop (for example clover or beans), and; leave enough time between crops with similar pests and disease risks" (Soil Association, 2010c: cl. 5.1.10). Additionally, some species can only be grown every three seasons on the same piece of land. While the Soil Association standards do provide some guidelines about what a rotation should achieve, they do not specify anything in more detail: there are few constraints on how farmers and farm managers design the rotations for their farms. So how do individuals figure this out in practice?

> *"So, where do you start, what are the considerations to put in such a rotation?" (Maarten)*
> "Fertility is probably the most important consideration; getting a balance between nutrient off-take and nutrient input. Also, something that is economic because part of this farm is non-organic and because the directors of the farm are accountants and bankers and advisers, they're always comparing the profitability of organic and non-organic. [...] so what I have to do is I have to balance the rotation and the practicality of maintaining fertility, controlling weeds and making enough money to keep the directors focused on organic farming. So, there's quite a lot of pressure. So that's how the rotation is basically based around getting that as well as possible,

> bearing in mind long term considerations and short term profitability." (Farm manager Fergus)[27]

As Fergus indicates, a rotation is designed to balance tensions between the management of fertility, weeds and profitability in organic farming over time. In fact, the temporal patterning of organic production is directly related to the income that specific fields generate: while cereals such as wheat, barley and oats, and legumes such as peas and beans can be sold, some leguminous crops such as clover and mustard are ploughed in (unless they are grown for seed, which is rare). This means that when such green manures are grown on a field, there will be no revenue for that crop year. Thus, the profitability that Fergus mentions is intricately linked with the way in which he plans the rotation: while there are potentially countless ways of designing a rotation, there will be only a few that are applicable at a given moment in time due to the material, agronomic, social and economic conditions of a farm (I will discuss farming economics in more detail in the next chapter).

To spread the financial risk, a rotation is staggered temporally over different fields on the farm: different cash crops provide different marketing opportunities, and the sale of some fields of cash crops can cover the costs and lack of income from other fields in a fertility building stage. This means that each field is managed as a separate entity with its own pattern of weeding, ploughing, sowing and harvesting (different crops are seeded and harvested at different times).

But the individual management of fields goes further than that: farmers usually calculate a theoretical nutrient budget for each field which balances the off-take of nutrients by cash crops and the input provided by (green) manures. This budget is based on scientific data about

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[27] This section is mostly based on Fergus's account of the rotations on the Gooseberry estate; we generated an exceptionally detailed narrative of the intricacies of how the rotations were established and maintained. This was possible due to the scale and particularities of Gooseberry's operations as a large, almost entirely arable estate which is only partially organic, and Fergus's record keeping. While I discussed rotations with other farmers whose narratives showed similar considerations, their accounts did not provide such rich understandings of how a rotation organises farming practices.

the agronomic properties of various crops, which then is related to the way in which a particular soil type fixes nutrients:

> "[...] if you look at nitrogen, phosphate, and potash, as far as nitrogen is concerned it's much more predictable. You can say two years of clover will fix 200kg [per hectare], shall we say, of nitrogen. That will feed one wheat and one triticale and one oats at reasonable yields. You can predict that. The nitrogen is a much more mobile nutrient, readily leached, readily taken up, predictably fixed. As far as phosphate and potash are concerned that's a much more difficult thing [but] you can predict the input of the P and K[28] and you can predict the off-take of the P and K." (Fergus)

But Fergus went on to explain that there are substantial differences in how individual fields will hold different nutrients, especially potassium and phosphorus. Therefore, he had mapped each field for these nutrients through soil samples, on the basis of which he tried to even out the levels of fixed nutrients in the soil, for example by splitting a field into three separate fields, each with their own soil characteristics and nutrient stores. This would make management easier, and would likely result in slightly different rotations for each of the new fields—a further localisation of farming practice. But Fergus also commented that especially for phosphate, another method is required to map the availability in the soil:

> "But what I've recently concluded is that it's wrong just to rely on soil samples of phosphate availability. You also need to back that up with plant samples. Sampling of plants when they're at their most vigorous in about May, take samples of plants and get them analysed for the amount of [phosphate] in the plant fibre, plant tissue, against set standards for optimum yields and then relate that back to the actual amount of phosphate recorded in the soil." (Fergus)

Thus, relying on one scientific measurement of nutrient availability may not provide conclusive data through which soil fertility can be managed, requiring different kinds of samples which allow a more detailed agronomic analysis of how a rotation should be designed.

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[28] Nitrogen, potassium or potash and phosphorus or phosphate are commonly referred to as N, K and P, respectively.

Apart from nutrient budgets and soil and plant sampling, other agronomic aspects such as the physical characteristics of the soil of a field and the specific ways in which different plants grow in that soil are considered in designing a rotation. This means that while the rotation is often field specific, the elements with which it is designed are standardised in the sense that there are several bodies of literature in which the nutrient requirements and growth patterns of the plant species which are commercially available are documented in relation to standard soil types, the soil and plant sampling is based on laboratory-based scientific analyses of individual nutrient elements, and there are studies and reports of different non-chemical weed management techniques, including rotational methods (e.g. Bond *et al.*, 2003). Therefore, whereas the rotation itself is a simple sequence of different crops for a field, it embodies extensive performances of scientific and technological elements through which nature is made manageable, each with their own temporality.

Once established, a rotation does not become static: the farmers I spoke to all mentioned how their rotation evolves, as each year there the circumstances of the farm change slightly. For example, some fields suffer more from weeds than expected, other fields do not have sufficient fertility left for the cash crop which was planned previously, and sometimes there is a change in the anticipated demand for a specific crop. For instance, the year before I conducted my interviews, the two major buyers of organic oats had stockpiled oats at a high price in connection with the volatility in prices on the cereal markets. This meant that the likely demand for oats after the 2009 harvest would be much lower than previous years, and that the buyers would no longer buy oats before it was produced. According to Fergus, this led to a number of farmers reducing the area of oats or even deleting oats from their rotation. However, he suggested that it would be unlikely that demand would collapse altogether, and as oats are very good agronomically in a rotation, it would make sense to keep growing the oats. Furthermore, rotations evolve as farmers introduce new crops for their agronomic properties. For instance, buckwheat would be very good in a rotation because of its capacity to make phosphate available to other plants, and because of its characteristics in suppressing

couch grass, which is a highly invasive weed species. While Fergus did not include it in his rotation because of the lack of a market for organic buckwheat, Alistair was trialling buckwheat as a green manure which would be ploughed in rather than harvested.

This means that 'the rotation' for a farm is not a fixed entity: it evolves annually with the agronomic and economic situation, with the presence of new agronomic insights, and with trials to test a new variety of a particular crop or green manure (I will discuss the details of different varieties in the next chapter). Moreover, 'the rotation' is usually a guide for all of the fields on a farm, but for individual fields it is tinkered with to address specific problems: perhaps add a catch crop (a rapidly growing crop which is grown in a short time frame between regular crops), or an undersown crop to balance out some nutritional needs or to control a weed problem. Further tinkering may be required if next to the temporal rotation, there is another rotation—a spatial rotation of livestock which is used for agronomic purposes. Some animal species eat specific weeds, or their behaviour on the field has beneficial effects for crops grown after the livestock has visited the field. Yet, not all fields are equally suitable to the agronomic use of livestock, and therefore farmers may need to establish two parallel rotations.

So far, I have described how rotations are assembled from standard elements and tinkered with to manage yields, deal with undesirable organisms and ensure some financial returns for the farm. However, the labour involved in managing fields occasionally needs to be tinkered with too:

> "... we tend to plough a little bit earlier for spring cropping in the non-organic system because we realise that the longer you can keep the stubble there and the weeds growing in the organic system the more fertility you'll have in the spring. We're much more conscious of moisture content of the soil when we're cultivating in the organic system because the compaction in the organic system, or smearing of the soil has much more of an effect on the crop than it does in the non-organic system because the roots may be restricted and therefore it gets short of nutrients. If that happens in the non-organic system it doesn't matter too much because you can apply bagged fertiliser to it." (Fergus)

Fergus's comment suggests that soil and weather conditions are monitored more closely in an organic farming system, resulting in slight shifts in when particular activities are carried out.

As such, the temporal configuration of organic production is organised through a structuring of agronomic, economic and labour aspects of farming into a simple sequence of crops for each field. This sequence is established through the mobilisation of a number of standard elements which perform and configure knowledge about each field. Subsequently, each rotation is made field specific by tinkering to accommodate the highly local conditions of individual fields: for a rotation to be enacted successfully, each sequence needs to be adjusted according to the interrelations between different aspects of the rotation and the field on which this sequence is performed. The process injunction following from the rules about rotations in standards for organic agriculture therefore not only produces a framework for calculating and performing rotations, but also a framework for incorporating past experience and an ongoing adjusting of different practices to suit the changing conditions of the farm (rather than to adjust these conditions through agrochemicals). This echoes the remarks of farmers and advisers alike that even after a long time farming organically, they still learn every year about things that work and things that do not—but from their stories, the things they learn is not about what organic standards require or the basics of working with a rotation, but about the ways in which the rotational elements are interrelated and how these relationships can be adjusted.

4.4 Spatial configurations

Similar to the temporal configuration of organic production, the spatial configuration can be best understood by comparing it with conventional practices—this time of managing livestock. Especially in intensive livestock industries, conventional farmers can choose to employ packaged solutions. Many conventional farmers will routinely use agrochemicals to vaccinate livestock as a precaution, not as treatment. Furthermore, they have access to other highly packaged solutions for the management of livestock. These solutions provide a site

where workers interact with the livestock in a spatially compact area such as a building or set of buildings where the supply of feed, the removal of manure, the capture of produce (e.g. eggs, milk, animals headed for slaughter), and the medical treatment of animals can be organised efficiently. While organic standards do not directly prohibit the use of such compounds for livestock, their potential use within organic systems is limited. For instance, they require pigs to rotate over a farm, and therefore they require mobile housing. For poultry, the number of birds per square metre permitted in organic standards is significantly lower than common conventional stocking rates. Also, conventionally acceptable practices to manage aggressive behaviour in densely packed groups of birds or animals, such as tail docking, teeth grinding, beak tipping, etc., are not permitted. Furthermore, standards for organic agriculture require that creatures have access to outdoor areas where they have sufficient space to exhibit natural behaviour (e.g. pigs rootling, chickens ranging) without damaging the area beyond repair. In fact, for most enterprises this means that organic standards prohibit livestock to permanently range on the same piece of land. Hence, the fixed barns used in the conventional industry have too little suitable outdoor space available adjacent to the buildings, and therefore their use is, as a spatially packaged solution, not possible.

This suggests that enacting organic standards results in a reshaping of two sets of boundaries around livestock: firstly, the spatial requirements—and therefore the material barriers required to keep livestock contained—follow from the requirement that animals must be able to exhibit natural behaviour. The maximum stocking density for ranges and housings stipulated in organic standards define how physical space relates to the potential for livestock to act in this way. While in most cases it will be relatively straightforward for farmers to adjust their stocking rate according to pre-existing infrastructures, for especially the poultry industry this often leads farmers to construct (or commission) new housings in the form of polytunnels, which are temporary structures made out of polyethylene plastic sheets stretched over semi-circular arches. These housings can be placed anywhere on a field serving as the range for the birds, solving the problems of access to a sufficient range and of needing to

rotate the birds. In either case (reducing numbers held in existing housing or constructing new housing), the maximum number of birds/animals is determined either by the size of the range and the size of the housing. Consequently, livestock enterprises are reconfigured through the material boundaries through which creatures are contained—not so much by increasing material boundaries but by reshaping the space within those boundaries.

However, this does not always solve the problem of stocking density: in the poultry industry it is common that suppliers of brooding eggs and hatched chicks send up to ten percent more birds than ordered to cover any losses that may occur during transport. For conventional farmers this usually is not a problem, but for organic farmers this might mean that the stocking rate is too high—there are too many birds for the bounded living space (housing and range). As this constitutes an animal welfare issue, this would automatically become at least a major non-compliance during an inspection. Ordering fewer birds would solve this, but could lead to reduced profitability if only the reduced number of birds would arrive. As such, compliance with the rules in organic standards requires a further reconfiguration of how the routines of the livestock supply industry are integrated in the 'doing' of organic poultry enterprises; the reshaping of spatial boundaries reconfigures only part of livestock enterprises, and additional elements—including decisions about stocking—are required to comply with organic standards.

Secondly, certain boundaries are reshaped as a result of medical considerations: as the example in section 4.2 shows, to organise the management of mastitis without the prophylactic use of antibiotics requires additional hygiene measures to prevent bacteria from spreading. This means doing additional things to keep udders and bedding clean. However, there are other instances where such additional activities have little effect. For instance, external parasites such as the mites causing scab in sheep, or internal parasites such as worms, cannot be eradicated by keeping the livestock clean. While acute instances of parasites can be treated after permission by the certification body, systemic treatment is not allowed. Instead, the solution is to minimise the possibility for the livestock to pick up the parasites. This

requires a rotation of animals around different fields across the farm, and leaving sufficient space between successive visits of stock to a particular field—so-called clean grazing—so that the parasites die in the time in between visits. While clean grazing is considered good practice in conventional animal husbandry, in organic farming it is necessary as there are few alternatives for controlling parasites. The management of potential medical problems therefore is organised by introducing boundaries between the livestock and undesirable organisms, either physically (removing pathogens) or temporally (longer than the lifespan of parasites in a field). However, this is not always possible:

> "[...] If you manage your animals differently you shouldn't need to do [worming] year in year out. But there might be exceptions to that and again I suppose this is open to interpretation because there are instances, particularly in the north of England in the areas where there's very heavy rainfall and the ground soil conditions are not right and so on, where they're running flocks of hill sheep but only have a very small area of [...] land that they can bring the animals onto in winter." (Allen)
> *"So that land will be ..." (Maarten)*
> "Used year in year out because they have no choice. So what do you do there? So I think maybe you might have to say 'yes, it's a hill flock and he's got nowhere else he can put them'. The only thing you can do there is to go for breeds which are more resistant to internal parasites, and there is a big difference across the breeds, and do what you can." (Allen)

This suggests that reshaping some of the boundaries involves managing a multiplicity of hygiene strategies to prevent routine treatments with antibiotics and other medicines: these include attending to the hygiene of specific body parts, of entire bodies, and of specific aspects of the soil. But if some aspects of an enterprise do not allow the reshaping of hygiene-related boundaries as required by the rules in organic standards, being organic could require a reshaping of the livestock enterprise by changing the breed. Put differently, such a reconfiguration—the substitution of one standard element (breed) for another—stems from an injunction which requires the use of appropriate breeds in a local context; a reconfiguration of this kind is required to make an organic livestock enterprise possible in that particular context.

These two examples show how organic standards potentially require a reshaping of some spatial boundaries through which livestock is contained: the process injunctions relating to

some specific sets of rules in organic standards may also reshape the material and hygiene-related spaces in which livestock is kept. The boundaries of these spaces are local and context specific as they depend on infrastructures and material conditions present on a farm. However, the reshaping is achieved by mobilising standard and packaged elements, which are partially external to the context (physiological, agronomic and medical knowledge), and the reconfiguration of local physical entities and agronomic conditions.

4.5 The prevention of problems

As the examples in the previous two sections show, the management of yield and animal welfare and the control of weeds, pests and diseases depends on the mobilisation of a number of different methods which are temporally and spatially configured to fulfil the specific requirements for crop production and the welfare of livestock. This does not mean that these sets of practices substitute packaged solutions by emulating their effects. This is partially because one of the premises of organic farming is to interfere with biological and physiological processes as little as possible and to utilise and cultivate natural processes which help the growth of crops and the welfare of livestock and partially because this often would not even be possible. For example, a conventional farmer would be able to spray additional chemical fertilisers during specific growth stages if the fertility of the soil would be insufficient, and apply herbicides and pesticides when weeds or diseases occur. An organic farmer does not have these options. Instead, as various respondents pointed out, an organic seedbed needs to be organised *before* the crop seeds germinate. If an organic farmer has made a mistake with this, the consequences can extend well beyond the production of the current crop:

> *"Once it's in and you've made a mistake then you've lost and next year try again." (Maarten)*
> "Yes, and that mistake can be if you ended up with too thin a population you get a weed problem, that mistake can live with you through the rotation, just as if you find you've got a poor clover take in the fertility building phase then that will give you a poor rotation right the way through to the next fertility building." (Adviser Adrian)

Adrian's comment indicates that, because of the agronomic interrelations between different crops in a sequence, little errors in the management of one phase can have a knock on effect which affects subsequent crops and therefore farm income. Something similar applies to the management of livestock: while livestock health problems can still be cured when they arise through the permitted use of agrochemicals, this can only be incidental; recurring treatments are not allowed if livestock is to keep its organic status and therefore require problems to be resolved and prevented[29].

In fact, Adrian suggested that the ability of organic farmers to tinker with their ecological system is much lower. This means that, instead of remediating emerging problems, the sets of practices through which crops are grown, livestock managed and weeds, pests and diseases are controlled in an organic system are structured differently:

> "Conventional, it seems to me, is very much a case of waiting until the problem arises and then fixing that problem with whatever happens to be available, whether it's fertiliser, whether it's a spray or whether it's an antibiotic treatment for animals and so on. Whereas, organic [is] trying to anticipate what might go wrong and trying to avoid problems in the first place." (Adviser Allen)

> "I think [organic farming] comes back to the basic premise is that you're trying to work with nature rather than manipulate it. So, it's a mindset of capturing the natural advantages and minimising the natural disadvantages." (Adviser Adrian)

The comments of these two advisers signal that the sets of activities to manage organic production are intended to prevent problems from occurring through natural processes, or to minimise the impact of emerging problems on current as well as future crops and livestock. Allen's quote is very specific in suggesting that this is a different mode of farming compared to conventional farming. Rather than reactively responding to problems, he (and other respondents like him) indicates that organic farming is based on a proactive prevention of problems. The habitual, routinised performance of 'doing' organic, then, is based on

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[29] Certification bodies will never prohibit the use of medical interventions if the welfare of an animal is compromised. However, they may decide that certain animals or herds lose organic status if too many identical interventions have been administered in a brief period.

injunctions, derived from the rules in organic standards, which provide a framework for the anticipation of problems and their resolution before they occur. In other words, individual rules embody assumptions about how organic farming practices can be shaped around the prevention of problems; and the locally contingent construction of frameworks for action by individual farmers realises this mode of farming.

This requires regular planning activities to anticipate how the growth of crops, livestock and undesirable organisms are interrelated in the specific material (ecological, biological, chemical, physical, geographic) setting of their farm in relation to a range of permitted farming practices. As different interventions have different consequences for the productivity of an enterprise, this is intricately linked to the social and economic context in which enterprises are set and therefore their mobilisation as part of a farming system is directly related to the social requirements and the financial performance of a farm:

> "Every ... the challenge is every farming business and every farmer is different because they all have different requirements. Some farmers will want a modest level of productivity and a modest level of profitability and income because maybe they're owner occupiers and they don't have mortgages to pay; maybe they have other business interests and other sources of income; whereas other farmers will want to maximise production and productivity because they need it. So your response to that scenario is going to be different for every farm, added to which you've then got the complexities of different climatic locations and also different soil types. So, it's a 3D jigsaw, with a blindfold on, all the time." (Alistair)

The particular form of this 3D jigsaw of farming mode, profitability and farm setting shapes how different elements of farming practice are assembled to manage fields, crops and livestock on a day to day basis—indeed, it is constitutive of the injunctions through which actions are structured.

This suggests that, in comparison with conventional farming, organic farming practices are more differentiated and contingent on the specific material, social and economic setting of a particular farm—the enactment of individual rules in organic standards, through the construction of locally situated injunctions, results in an arrangement of activities, tools and materials which is unique to the specific context in which it is constituted. However, the

absence of highly packaged solutions and practices does not mean that organic farming practices are not standardised: while the farm-specific arrangement of practices is configured uniquely for every farm, the sets of activities and material entities which make up these practices are often standardised in a different sense—partly through rules in standards for organic agriculture, partly through other rules and guidelines.

4.6 Packaging practice

Summarising the above sections, I started by arguing that rules in organic standards turn into process injunctions which produce locally situated frameworks for action. I then examined how these injunctions shape the organic production, firstly through the configuration of arable farming by means of a temporal and sometimes a spatial rotation, and secondly through the reshaping of physical and hygiene-related boundaries around livestock. I argued that these injunctions result in a mode of farming which is preventative rather than reactive. In both cases I suggested that the elements which constitute these configurations (actions, materials, tools) are in fact standard and packaged but which require ongoing tinkering so that organic can be 'done' in economic, social and material terms.

In effect, standards reconfigure practices by acting as process injunctions: the site-specific assembling of permitted elements through which a farmer does, or plans to do, organic in a local context is dependent on sets of specific rules in standards for organic agriculture—but for each farm this set of rules will be different depending on its material, economic and social characteristics. This suggests that product standards do not contain specific scripts of the type that characterise protocols (Timmermans and Berg, 1997, 2003), but that the site-specific configuration elements through which organic is done—are written *on that farm* using pre-existing elements. This implies that notions of compliance and deviance do not refer to how a script is performed, but to the inclusion of particular rules in the constitution of the configurations that make up the farm-specific script. It is important to note that for rules which can be interpreted in multiple ways, interpretations of compliance and deviance depend on *how* these rules have been mobilised. Thus, standards for organic

agriculture contain rules about which elements can or must be used, nothing more but also nothing less than that. For farmers this means that their toolkit has been changed: some options and strategies have been removed. It also means that the remaining tools in the toolkit have been made explicit.

Moreover, farmers transform themselves in a process of active submission (Timmermans and Berg, 2003): in going organic, they change orientation, switching from a reactive to a preventative mode of farming. Finally, and again in contrast to the enactment of protocols, adaptation to organic standards is achieved through the construction of process injunctions which inform configurations of farming practice. Enacting standards requires extensive knowledge of the local agronomic, economic and social conditions of a farm, but there is no scope for tinkering with the rules themselves. Rather, improvising and tinkering is done with each of the elements that jointly constitute the local, contextual enactment—the localised universality—of organic standards.

These points underscore the multiplicity of 'doing' organic: each enactment of organic standards is unique. Yet, organic 'stuff', once produced, circulates in a manner made possible by the fact that it belongs into this one category: it is 'organic' (see chapters 6 and 7). While the details of how this produce was grown or reared are important for the farmer in that they determine the profitability of the enterprises on his or her farm, this is irrelevant as far as the subsequent circulation of the produce is concerned. What matters for the organicness of products is that all relevant rules were complied with, not which configuration was used to organise the farm from which the produce came.

In this chapter, I have discussed methods of farming which follow from enacting the rules enshrined in standards for organic agriculture. However, doing organic requires additional changes beyond those required in organic standards—these are not directly related to organic standards but are a result of the fact that doing organic has knock-on consequences for other aspects of farming practice. These are the subject of the next chapter.

Chapter 5 Organic valuations

5.1 Introduction

In the previous chapter I described how organic standards are enacted. However, these enactments in themselves are not sufficient to constitute organic agriculture: to have effect they need to be supported by a number of tools and practices which perform further elements of 'doing' organic. For example, and as hinted at already, the economics of organic farming exist and are compared and defined in relation to the economics of conventional farming. As I go on to show, 'doing organic' also represents a shift of priorities—different valuations come into play. These demand and generate different forms and trails of recording, measurement and calculation. In this chapter I show how these three aspects of farming practice are configured by and around being and 'doing' organic. In the next section, I discuss how a dedicated form or farm economics provides a calculative device for organic farming, followed by an account of how the integration of enterprises based on agronomic properties is constitutive of organic farm systems, and I consider how a prioritisation of certain qualities of plant varieties and livestock breeds is required for the enactment of organic farm systems. In section 5.3 I show how the maintenance of paperwork is constitutive of 'doing' organic and argue that it results in an extension of farming practice. In the final section I argue that these practices, in all of their necessarily multiple performances, enact a specific mode of farming. I conclude that they are not required by organic standards but they are required to make the enactment of those standards possible.

5.2 Organic configurations

Configuring farming economics

As I discussed in the previous chapter, the profitability of an organic farm is intricately linked with the design of a rotation system. Indeed, farm manager Fergus indicated that profitability frames his temporal configuration of 'doing' organic (see quote on page 83): the

choices Fergus makes about growing oats, wheat or barley, or building fertility have an impact on this figure. In his case, the directors overseeing the management of the farm on behalf of the owners compare the profitability of the organic with the conventional part of the operation. If the performance of the organic part of the farm—as expressed through profitability as a single number—would systematically be lower than the conventional part, the directors could decide to reduce the area allocated to organic farming or even to instruct Fergus to manage the farm as an entirely conventional entity. Profitability, therefore, is the established indicator to measure performance, and to make the performances of different farms and farm systems commensurable. Thus, it is a calculative device (Callon, 1998) which enables farming economics through a function of forecast commodity prices, crop yields and livestock prices, production costs and subsidies for certain practices.

In this equation, subsidies usually form a predictable source of income for a farm (a more detailed discussion of subsidies will follow in chapter 8); commodity prices fluctuate beyond the control of an individual farmer—although in livestock production farmers can influence the price they will get for an animal depending on its condition at slaughter. As such, the two main variables through which the profitability of a farm can be influenced are the yields and the costs of production. In a conventional system, yields usually depend on the use of agrochemicals, and farmers need to find the point where the difference between the cost of various agrochemicals and other inputs (e.g. cost of feed for livestock) and increased yields is at its largest. What makes this equation difficult to calculate is that the cost of agrochemicals is directly linked to oil prices (most agrochemicals are oil-based substances), and the cost of feed is related to the cost of the agrochemicals used it its production, as well as the weather: a bad harvest will push up the prices of feed (e.g. cereals, maize, soya) considerably. While this is good news for arable farmers (they will receive more for their crops), for the meat, dairy and egg industry this means that costs of production can skyrocket, as happened after the 2007 and 2010 harvests. For farmers producing on a contract in which carcass, dairy or egg prices

have been determined in advance, this can mean that their profitability can be negative: they incur losses because of the increased costs.

The economics of organic farming are different. Firstly, the cost of inputs is much lower for an organic farm as expensive agrochemicals are not used: Alistair suggested that organic farmers would need between £80-£100 per acre working capital, compared to £250-£260 per acre for conventional farmers. However, yields are also lower: a field of organic wheat will generally produce around 6 tonnes per hectare, whereas in a conventional system this will be around 8 tonnes. While this difference is more than offset by the premium for organic cereals (£227 per tonne ex-farm compared to £166 per tonne ex-farm for feed wheat, prices November 2010[30]), due to the fertility building phase required in organic farming (as explained in the previous chapter), each field will only produce crops for an average two out of three years, whereas a conventional farm will produce crops almost every year for all of its fields.

As such, doing organic is based on a different form of doing farming economics: the standard methods to determine the profitability of a conventional farm are insufficient to analyse the financial conditions of an organic farm in the sense that the aspects of production required to manage fertility and control undesirable organisms introduce economic elements which are not included in conventional production economics. Therefore, a method is required which takes into consideration the specific configurations in which farm-economic aspects are structured for an organic farm. This method necessarily accommodates a wide range of possibilities through which organic can be enacted in a given context: the multitude of arrangements of permitted elements is vast, each with its own economic implications. Furthermore, not all organic farms work towards an optimisation of profitability through maximum productivity: farmers can choose to produce less intensively, reducing the cost of

[30] Sources:

http://www.soilassociation.org/Farmersgrowers/Marketinformation/Pricedata/Arable/tabid/168/Default.aspx, accessed 18/11/2010; http://www.farming.co.uk/, accessed 18/11/2010.

production (see for example Alistair's farm presented at the start of the previous chapter). While the reduced costs of inputs for the 'self sufficient' farmer would offset some of the lost revenues, the profitability of his/her farm would be lower than for the more intensive farm:

> "Yes. Because immediately you can think of systems, how profitable would you expect it to be, for example, if you have a beef producer who's on appropriate land you might choose to out-winter those animals. If he does that he [...] might want a small building to house them if they were sick or when they're calving but he wouldn't need a building to house them all during the winter. He doesn't need to make and conserve forage because they would be grazing for most of the time, well he might make some conserved forage but a relatively small amount compared with a producer who chose to house his animals for a larger part of the winter. Now, the amount of money that those two farmers make might be the same but the level of profitability is going to be vastly different. Who's to say which is right?" (Allen)

As Allen indicates, there is no single answer to what the profitability of a farm could or should be—it depends on the social and economic conditions of the owners or the tenants of the farm. Returning to the examples of Alistair's Field Farm and Fergus's Gooseberry Estate, Field Farm is configured to provide additional income for Alistair without requiring much manpower. In contrast, the organic part of the Gooseberry Estate is in constant competition with the conventional part, meaning that Fergus has to manage it to achieve maximum profitability. A third example is Frank's Drove Farm, which is a hobby farm which had not made any profits since Frank bought the farm and started converting it—Frank enjoyed the process of becoming a self-taught farmer and was able to put in additional investments to cover for losses made in the process.

Despite these multiple enactments of profitability, all calculations reflected the mode of organic farming in that the cost of fertilising land was accounted for as a reduction in productivity: in established organic farms about a third of the total area of the farm does not provide any farm income as it is in a fertility building phase. Moreover, business risks are included differently: on the one hand, the lower cost of inputs (especially oil-based inputs) changes the cash flow of organic farms, which in turn reduces the risk that financial obligations cannot be met (Warren, 1997). On the other hand, the inherent uncertainty of

knowing whether preventative measures will be sufficient to manage fertility and weeds, the inability to modify emerging crop problems and a greater dependence on the weather increases the risk that yields are lower than calculated:

> "Yes, yes because it's quite a risky weather dependent operation. [...] [which] plays a huge role. I mean, people forget that farming, even conventional farming is a high risk business and I would say organic farming is an even higher risk business. In fact, I would go so far as to say that one way or the other I budget for 10% less yield or 10% higher costs, whatever way you like to put it, or 10% increase in crop failure in the organic side, and budget for that." (Fergus)

Fergus indicates that the uncertainties about his farm's agronomic performance (yield) are included as a standard reduction of the forecast economic performance. This contrasts with the assessment of cash flow as a theoretical calculation of how increased costs and reduced incomes affect the liquidity of a business at any point in time. This means that not only the method of calculating profitability is configured differently, also the way in which certain business and agronomic risks are accounted for are included in a different way. Moreover, when organic farms consist of multiple enterprises, establishing profitability can become an intricate set of calculations (see for example Lampkin *et al.*, 2008: section 5): outputs of one enterprise are inputs to another, and therefore these enterprises are agronomically and economically linked (in the next section I examine how these linkages are achieved). As such, the methods of calculating profitability for organic farms enact the 'doing' of organic by accounting for fertility through reduced income, and by explicitly including agronomic and weather-related risks.

Integrating enterprises

As mentioned above and in the previous chapter, when organic farms comprise multiple enterprises, these are usually linked agronomically. In this section I examine how enterprises are integrated into one farm system; one of the estates I visited provided a good example of how integration works in practice.

> The Hawthorn Estate is a very large estate in Norfolk, its grounds overlooked by a stately 18th century mansion. On behalf of the owners, an old aristocratic family, farm manager

> Fraser oversees the running of 1300 hectares of land. Conversion of some of the land started in 1999—a result of the owner's personal interest—and over the years more land was added so that currently a bit over half the estate is managed organically. Fraser explained that the lighter soils were converted, as these are "readily suitable for all sorts of mixed cropping" and best suited to accommodate the livestock enterprises which were established in phases (the heavier soils with a lot of clay are still used to produce conventional arable crops). Once the initial plot of land reached organic status some of it was tenanted out to an organic pig herd, and later to an organic egg laying unit and a vegetable grower. Then Fraser established a longhorn cattle enterprise and two flocks of sheep as part of the Estate's certificate, and at the time of my interview the existing deer enterprise was in conversion. Fraser explained that the aim was to establish a fully integrated mixed organic system on the estate. Thus, the land is partly pasture for the livestock, and partly arable to produce crops for feed and for income. The pigs are used agronomically for cleaning weeds, and their manure is used as fertiliser. The laying hens produce "rocket fuel fertiliser", i.e. very concentrated manure which can help address substantial fertility problems. The different types of livestock, spatially rotated in sequence with vegetables and crops, each graze differently thereby reducing weeds—and their manure during grazing is additional fertiliser for the pastureland. Apart from cereals, the estate produces lamb, beef and venison, and the tenants produce vegetables, pork and eggs.

As Fraser explained, this arrangement not only fits the wishes of the owners, but also generates different streams of income. Analogous to the planning of an arable rotation, the enterprises of a mixed farm are put in sequence so that nutrients are kept on the farm as much as possible, and so that weeds are managed through different grazing methods[31]. While standards for organic agriculture do not contain any rules about the organisation of a mixed farm—except for some rules about the temporal separation between certain species on the same field, and the general rule that manure generated on an organic holding cannot be put onto non-organic land[32]—the planning of the mixed rotation (temporal and spatial) depends on the agronomic properties of different species:

> "So, it's trying to get [farmers] to work from a basic philosophy that you need to manage the farm in ... I hate the word ... in an holistic way; that you can't just look at one particular aspect of it. You've got to look at all the various aspects and consider how they interact with one another when you're trying to put a plan together. It's fairly clear that from an organic point of view, a mixed farm set up

[31] In this sense, the setup of the Hawthorn Estate is an embodiment of an archetypal organic farm, albeit at a much larger scale than what would be possible on a family farm.

[32] Organic standards prohibit the spreading of organic manure onto non-organic land so that nutrient loss from organic systems is prevented; surplus manure must be spread onto other organic holdings. These rules are based on the principle of organic farming as a closed system, see Soil Association, 2010c: cl. 4.7. In reverse, as can be expected, non-organic manure may not be spread onto organic land.

> works better than trying to work with mono-cultures, and it's how you integrate the mixture." (Allen)

However, this might not always work as planned, leading to a revised rotation. For instance, the vegetable grower on the Hawthorn Estate had a pest problem with his carrots, and to break this up the temporal boundary between vegetables grown on the same field had to be increased to control the pest. This meant that the entire rotation had to be adapted, as the relations in the sequence had to be reorganised. But rather than changing the rotation completely, sometimes a reconfiguration of one enterprise may help with the management of another. For example, on the other estate in my sample, the Gooseberry Estate, pigs were used to control docks[33], but they did not quite remove the docks to the extent that Fergus would have wanted. As he explained, he should have cultivated the soil first so that the dock roots would be easier for the pigs to uproot, and that he should have reduced the food rations of the sows so that they would be hungrier and therefore be more vigorous in uprooting the docks. This meant that he could only use 'dry' sows, as reduced food rations would affect milk production in lactating sows and by extension, their piglets. This example suggests that the agronomic properties of one enterprise are being adjusted to the specific, local mixed farm system. In other words, the different elements of the mixed farm (enterprises) are not made operational as separate entities, but they are purposefully interrelated through a process of mutual adaptation.

Yet, in practice this does not mean that all of the enterprises need to be managed centrally. As indicated above, the Hawthorn Estate accommodates several tenants, who lease land for their own operation. In fact, the decision to have tenants for the vegetables, eggs and pork was taken because of the competence required to run those enterprises:

> "The reason being, they're growing organic vegetables is highly specialist and not something we want to try to do. To do pigs similarly they're similarly highly specialist, as are chicken's eggs. We'd rather leave that to someone else's expertise who has got the expertise and bring it in and then rotate round and we'll just do the

[33] A dock is a hardy, invasive weed with a long and strong root.

relatively simple bits of the clover lays and the cereals that go between them." (Fraser)

As Fraser explained, day-to-day adjustments and adaptations required to manage problems in an individual enterprise would be done by the owner of that enterprise. However, he also described a willingness on the part of others to advise how something might be managed, and to share equipment. More formally, everyone involved in the organic enterprises would regularly meet to discuss the running of the organic part of the estate and to agree on certain practices and solutions to problems. As such, although the pig, egg and vegetable enterprises are formally separate entities, their agronomic properties are, through negotiation, fully integrated in the system of the estate.

But this integration can even stretch beyond the boundaries of the farm: on the Gooseberry Estate in Suffolk, the pigs are managed by a tenant on estate land; but the pigs themselves are property of a company whose main business is to produce pig feed rations. Just prior to my interview with Fergus, he had been to speak with the feed producer about the possibility of including not only wheat, barley and soya but also other crops which are part of an organic rotation. Lorries delivering pig feed could return to the mill with cereals grown on the land which also accommodated the pigs. This would mean that some of the activities of three organisationally separate entities would be coordinated (economically as well as materially) through the agronomic context of the Gooseberry Estate.

These examples suggest that the integration of different enterprises introduces additional considerations in the structuring of the temporal and spatial configurations of a farm, and in how profitability is calculated. Coordinating and managing the interrelations between enterprises requires careful planning, tinkering and negotiation. In return, the farming system is economically less dependent on single streams of income, and the control of weeds can be organised in different complementary ways. Finally, the integration of enterprises provides an important additional, flexible way of managing fertility:

"[...] The thing about manure is that it's portable fertility. One ... I was mentioning, but with conventional farmers if they've got a problem well they can get a bag out

> and they can partially fix it, maybe not totally but they can do something about it. At least with some farmyard manure you've got some portable facility you can say 'well, that field's not doing so well, we'll put it on there.'" (Frank)

The integration of different enterprises does not provide farmers with an organic equivalent to conventional agrochemicals; the active mobilisation of agronomic properties of farm-generated outputs as inputs into interrelated enterprises provides local arrangements with multiple ways of organising how problems in individual enterprises can be dealt with.

Choosing varieties and breeds

As will be clear from the previous section and the discussion of planning rotations and managing livestock (in the previous chapter), the agronomic properties of plants and livestock are important considerations in planning how individual enterprises are arranged and integrated. As I show in this section, similar considerations apply in selecting varieties of crops and breeds of livestock.

Crop varieties

> *"So, what sort of seeds do you use?" (Maarten)*
> "I save my own mostly. This spring I'm changing variety of barley, I'm changing from Dandy which has become outclassed to Westminster. So, I will be buying C2 organic Westminster. [...]" (Fergus)
> *"What does that mean, the Dandy got outclassed?" (Maarten)*
> "Its yield, comparatively, is not as good as the newer varieties so it pays me to buy in seed at a higher cost in anticipation of getting a yield which will more than pay for the extra seed cost." (Fergus)

As Fergus explained, the potential yield of a crop depends on the variety of plant that is used. Dandy and Westminster are varieties of barley that have different properties which affect a number of different agronomic aspects of growing them as a crop. Some varieties of crops are better than others at accessing nutrients, or they are more resilient, or they can function with a higher disease pressure or they are better at competing with weeds. Moreover, they produce different qualities of crop: some with more protein content, some with a higher specific weight or other aspects which affect the market into which a specific variety can be sold. For example, in the bread industry different qualities of wheat are important than in the

feed or biscuit industry. Thus, the choice of variety of crop is important not only for the agronomic consequences of yield, disease and soil management but also for the markets that can be accessed.

Commercial seed merchants produce large catalogues in which these properties are indicated for each variety. However, organic farmers want different information, and varieties with different properties. As Alistair explains,

> "the breeding programs and the varieties available, and even the framework of approval and legislation is geared to conventional farming. The approval [by DEFRA] is based on being ... I forget what they call it ... it's distinct, uniform and better yielding. So, to get on to the approved list it has to be high yielding and of a distinct advantage in terms of pest and disease performance whereas it might be completely different traits from what you want organically. So, organically what we basically have to put up with is all the varieties that are commercially available for conventional farming we have to make a best selection from that group of what's available for what we want to use, which isn't ideal." (Alistair)

Readily available varieties have been designed, through conventional breeding programmes, to produce their maximum yield in an environment which can be controlled through agrochemicals. In other words, the highly standardised solutions to farming provided by agrochemicals require equally standardised and compatible crop varieties. For example, most cereal varieties have been bred to have shallow root systems to access the fertilisers that are sprayed on the land—deeper roots would reduce the efficacy of the fertilisers. A shallow root system results in a plant which is less stable as it is more susceptible to being blown over by wind. Therefore, these varieties have been bred short (semi dwarf) so that this problem is mitigated. In an organic system this is undesirable, firstly as the shallow root system cannot access nutrients located deeper in the soil. Secondly, the short varieties are not as competitive as taller varieties, and therefore not as good in suppressing weeds. This means that the yield of the same variety in an organic system is usually lower compared to when used in a conventional system.

Selecting a suitable variety for a particular agronomic setting requires that organic farmers need to test different varieties—for each of the crops they grow. However, as Alistair

explained, many farmers will only test a few cereal species, but not any of the other crops that they will use in their rotation. Yet, he argued that for each species of plant grown, the choice should reflect the geographic and agronomic conditions and the growth season for each single crop. As such, the absence of arable crop varieties specially bred for a variety of organic production settings requires a reshaping of the expected yield. Moreover, optimising production at a specific site requires a testing regime through which available varieties are grown *in situ* so that what is grown can be adjusted to the local agronomic and economic conditions of a farm. Thus, the rotation is made even more specific through the choice of variety. However, as Fergus's comment shows, this is not a fixed entity: sometimes a variety becomes outclassed by another, around which the farming system is reshaped.

Livestock breeds

In livestock production the tension between breeds used in intensive conventional farming systems and the conditions of organic farming systems is resolved differently: conventional livestock industries generally rely on breeds which are efficient in converting feed into meat, milk or eggs of consistent quality. Especially for dairy and beef cattle this has resulted in breeds which are at odds with the requirements in standards for organic agriculture[34]. To achieve their maximum productivity conventional breeds require high levels of concentrated feed, such as cereals and other sources of protein. Concentrated feed also helps farmers supplying the meat industry with 'finished' animals that meet the standard specifications for slaughter conditions (weight, fat content and carcass shape) in a predictable time frame, independent of age (most calves are born in spring, but are finished throughout

[34] I only focus on cattle here. There is a notable issue in the poultry industry: poultry produced for meat (table birds) has been bred in intensive conventional systems to produce fast-growing birds with large breasts and small legs. This means that these birds have difficulty moving and often health problems related to their sedentary life (e.g. hock burns; for more details refer to e.g. Lawrence, 2004), which have to be avoided according to organic standards. As such, the organic poultry industry uses different breeds, mostly of slow-growing strains. Although there are some market implications, the substitution of breeds does not affect the configuration of the poultry industry.

the year from 14-20 months (animals[35] coming from a dairy herd) or from 18-30 months (animals coming from a beef herd). As standards for organic agriculture set limits to the amount of concentrated feed can be used (maximum 40%, at least 60% must come from forage, i.e. grass, hay, straw, etc.; Soil Association, 2010c: cl. 10.13.11), this means that the nutritional needs of the breeds used in conventional systems are difficult to meet. For example, to meet the feed needs of the Holstein breed commonly used in the conventional dairy sector would require "very consistent high quality forage every year but this is largely dependent on the weather so cannot be guaranteed" (Allen). Allen therefore argued that if the quality of forage cannot be guaranteed in a specific organic system, the Holstein would not be a suitable choice of breed for that system:

> I mean, the Holstein does have certain characteristics which are actually difficult to manage in organic systems." (Allen)
> *"Such as?" (Maarten)*
> "Well, the difficulty with Holstein, particularly pure bred Holstein is that it will tend to milk to its genetic potential regardless of how you feed it." (Allen)
> *"So if you don't feed it properly you will deplete the animal." (Maarten)*
> "Yes, deplete the animal's reserves very quickly." (Allen)

As Allen explains, Holstein cattle has been bred specifically to yield extraordinary amounts of milk under conditions which can be maintained in conventional dairy systems by feeding almost solely highly concentrated feed. As Holstein cows do not respond to different feed patterns by reducing yields, they would become exhausted. In contrast, other breeds, such as the British Friesian or the Ayrshire, are capable of producing "quite high levels of milk" (Allen) under the conditions set by standards for organic agriculture.

Also in the beef industry the nutritional requirements of conventionally used breeds are an issue as they are 'double muscled', a genetic condition which leads to additional muscle growth. To accommodate this growth, these animals require a high protein diet, and cannot be

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[35] At a year old, a calf becomes a heifer (young female cow) or a bull or a steer (castrated bull). In dairy herds, heifers are usually kept to expand the herd or to replace old cows, steers are sold into the beef industry. However, dairy steers provide a lesser quality of beef compared to animals from a beef herd.

finished on grass or forage. This means that for organic beef enterprises, these breeds are not suitable as they would not produce the desired quality of meat. The main factor influencing the price a farmer receives for a slaughter animal is its condition at slaughter (see above), regardless of whether the animal is organic. This means that organic farmers tend to choose breeds for beef production which are adapted to the conditions of British farms, namely traditional[36] British breeds such as the Hereford or the Aberdeen Angus.

However, organic farmers have another option: they can choose a so-called dual purpose breed, such as the Red Poll or Lincoln Red, which produces good quality beef as well as relatively large quantities of milk. A British Friesian dairy herd would produce less milk compared to a herd of pure-bred Holstein cattle, but it would not substantially improve the potential quality of finished steers. In contrast, dual purpose breeds provide an alternative way of organising farming practice:

> "Yes, you're never going to be the highest milk producer and you're never going to win the Smithfield Beef Prize, but you can make a pretty good fist of both if you go about it the right way." (Allen)

This suggests a reconfiguration of farming practice where a dairy and a beef enterprise are merged, and integrated in a grass-finishing system. This arrangement is not a direct result of a rule in organic standards (no breed is prohibited), but it follows as a sensible consequence of adhering to these rules. In contrast to the arable crop varieties available for farming, organic livestock enterprises adopt breeds that suit the ways in which organic farms are organised.

These examples of crops and livestock selection show that 'doing' organic requires prioritising certain qualities particular to organic farming: as local settings cannot be managed to suit the requirements of certain breeds (as is usual in conventional farming), varieties and

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[36] Traditional is relative: for instance, the oldest of traditional breeds, the Hereford, originated in the middle of the 17th century, but breeding pedigree lines only started in the early 19th century. Its herd book (record of pedigree lines) was closed in 1886, meaning that any animal born after that point was/is offspring of the animals already recorded in the book.

breeds are chosen to suit the specific, but changing, economic and agronomic conditions and requirements of a specific site.

5.3 Maintaining paperwork

'Doing' organic means finding spatial and temporal configurations through which the rules in organic standards can be locally enacted (see previous chapter), calculating profitability in a certain way, often integrating enterprises into an interrelated farming system, and choosing particular crop varieties and livestock breeds. 'Doing' organic also requires the maintenance of documentation to enable the independent verification of compliance by a certification body such as the Soil Association. Trajectories of products and inputs—organic 'stuff'—and the organic status of these inputs, must be made visible by recording what was done where and when. For instance, organic livestock cannot be kept on non-organic land, but when livestock is on the move this needs to be made explicit in a tangible form so that an inspector can verify that this was the case, i.e. by a piece of paper which describes the movement of the livestock and refers to the fields on which the animals were kept.

In other words, 'stuff' is only organic when it was and is kept in the right place (e.g. on organic land or in separate storage areas dedicated to organic substances). This means tracing the movements of stuff around the farm and between farms, and demonstrating that inputs are verifiably organic. If no organic inputs are available, a derogation must be requested and approved before a non-organic input can be used. This requires an adaptation of existing ways of doing things. For instance, ordering a type of seed is not just placing an order with a seed company:

> "[...] if you ring up [and] a seed supplier says this seed is only available in non-organic seed [...] you can't say there and then 'ok, I'll buy it.' I then have to put the phone down to him and then you have to go on to organicxseeds which is pretty useless because it's never kept up to date [...] as a result you see that the last entry is quite a long time ago so you think 'right, well I'd better ring up my certification officer to talk to him about it.' He says 'have you tried ringing so and so, they might have some.' So you ring them and they say 'well we haven't but we've got this genre, [...] but we've only got this tonnage.' So then you go back to your original supplier and say 'well they can supply this and you say you can supply it

> and there's nothing on organicxseeds' it's not a straightforward ... it's not picking up the phone and saying 'please send me two tons of such and such'. And then you have to get the derogation sorted out officially before you buy it [...]" (Fergus)

As Fergus explains, to comply with certain rules in standards for organic agriculture, simple administrative activities expand to ensure that there is documentation to prove the organicness of stuff or the permission to use non-organic stuff—which is dependent on the outcomes of a search for organic stuff. This means that farming practices are extended, through these administrative practices, to include formalising the organicness of stuff. Put differently, the enactment of organic standards requires the inclusion of specific administrative activities designed to record how activities were carried out and what materials and tools were used. What form these records take varies; the organicness of inputs is established through the documents that follow from the ordering process, namely the purchase order, delivery note and organic certificate of the supplier, and if required, an approved derogation request.

However, merely recording what happened on a farm is not sufficient. For a number of key elements, organic standards require that farmers draw up plans which describe how these elements are configured to prevent systemic problems from occurring. In particular, farmers should produce a conversion plan in which they describe how the changes in farm arrangements will be managed (certification bodies could request a financial plan for the conversion process if there are concerns that the conversion will be difficult to implement), how livestock is managed, the format of the rotation, and, if the farm will remain partly conventional, and how the organic part (enterprises, practices, tools) will be separated from the conventional part. There is no prescribed template for these plans, but their presence is required and their content should describe how a number of key aspects is organised. For instance, the Livestock Management Plan (LMP) should address how a farmer will meet organic standards in the following areas: sourcing and converting; health and welfare; feeding and grazing (including stocking density and rotation); housing; handling and transporting, and; slaughter (Soil Association, 2010c: cl. 10.3.1). The health plan in the LMP should

describe how a farmer "will build health and reduce disease" with the aim of minimising the use of veterinary medicines (2010c: cl. 10.3.3) and therefore must include "how you will manage the health of your animals, both during and after conversion; how you will monitor and diagnose disease; the disease control measures you will apply, and how you will reduce any health problems your animals already have" (2010c: cl. 10.3.3). These required aspects clearly point to the preventative character of organic farming practices.

As such, merely reconfiguring elements and enterprises to an organic mode of farming which suits the particular material, social and economic setting of a farm is not enough: 'doing' organic includes documenting the arrangement of elements to make external verification of the specific organic system of the farm possible. Thus, enacting organic standards through practice is, on the one hand, the assembly of permitted elements and the tinkering with those elements into an arrangement through which organic can be done on a farm—the mobilisation of particular sets of rules in a local setting—and, on the other hand, a translation of some aspects of the resulting farming system into standardised formats to make verification possible and to make stuff traceable. Indeed, maintaining paperwork is as constitutive of 'doing' organic as are the farming practices through which standards for organic agriculture 'come alive' in local settings[37].

5.4 Conclusion

In this chapter I have discussed a number of practices which are required to 'do' organic, beyond arranging and managing the farm in ways that comply with organic standards. I first discussed methods of calculating profitability and argued that these shape the 'doing' of organic. I then showed how the integration of enterprises provides farmers with multiple ways of managing a total organic system. Subsequently, I suggested that 'doing' organic requires selecting varieties and breeds which are particular to organic farming. Finally, I examined the

[37] For some of my respondents, this is controversial: they were long-standing organic practitioners, and they indicated that the relatively recent emphasis on the bureaucratic aspect of 'doing' organic detracted from attention to the farming systems and practices.

administrative practices which are required to make external verification of the specific organic system of a farm possible, and argued that this results in an extension of farming practice.

This suggests that 'doing' organic reconfigures the doing of farming on a number of counts including methods of calculation, integration, selection and administration. Put differently, these practices, in combination, constitute the enactment of a specific mode of farming. As the examples show, there is no standard outcome or template: doing organic is internally differentiated depending on the local settings of farms and how they are managed. In other words, 'ordinary' artefacts become 'organic' artefacts through several kinds of reconfiguration. Merely not using pesticides or letting livestock range in conditions permitted by organic standards is not enough to 'do' organic and therefore to produce organic stuff: doing organic requires that the interrelationship between a number of elements is made explicit, and that stuff is traced. However, the organicness of stuff still needs to be formalised; in the next chapter I examine how this is done by the certification bodies involved.

Chapter 6 Certifying licensees

6.1 Introduction

Every Tuesday morning at 10 am, a number of senior employees of Soil Association Certification Limited (SACL) convene in one of the meeting rooms in their offices in Bristol to form the Certification Committee. During the subsequent couple of hours the committee deals with issues and problems that have arisen during the certification process of individual licensees. Each separate case is at or beyond the boundaries of organic standards: some are about requests by licensees to temporarily allow products or practices that are ordinarily not permitted by organic standards. Others are about inspection findings where licensees overstepped the boundaries of organic standards in such a way that the organic status of their products may be compromised. Again others are about how SACL employees should interpret certain standards to assess the compliance of practices, or about practices for which there are no explicit standards. Finally, some are about appeals raised by licensees about earlier committee decisions. For each of these cases, the committee decides, in very practical terms, how these issues are to be resolved. These decisions have direct consequences for licensees as they include disciplinary sanctions for serious non-compliances (such as the suspension or termination of an enterprise or even an entire licence), and for licensees and SACL officers as they provide binding guidance for how specific standards should be interpreted. As such, each case presents a defining moment, not only for the way in which the licensee in question 'does' organic, but also for the certification organisation and indeed organic standards themselves[38]. Consequently, the weekly meeting of the committee is central to the certification process as it

[38] All cases are recorded in a database that can be searched by SACL employees to inform how other licensees' cases may be dealt with; sometimes the way in which the committee decides to resolve an issue can result in the formalisation of a precedent which explicitly informs employees how subsequent cases should be resolved. And when a specific issue has come up several times indicating that the standards are difficult or impossible to implement, the committee suggests a change to the standard setter. I will describe these processes in more detail in section 6.4.

provides the space in which boundaries of organic standards are contested in relation to practice.

But only a fraction of certification decisions end up as an agenda item for the committee. Mostly, the employees of SACL assess compliance of licensees' practices without referring their assessments to the committee: the boundaries involved are not contested and therefore require no authoritative guidance from the expert panel. This does not mean that uncontested boundaries remain invisible. Indeed, assessing compliance can only be done by referring to the rules codified by standards. As such, the everyday activities of the officers are aimed at delineating and making explicit the practical meaning of organic standards in relation to how licensees practise organic—for each single relevant activity or set of activities.

This implies that the officers of SACL enact a version of organic standards and the certification thereof. In this chapter I explore this way of enacting organic standards by concentrating on the following questions: What are the characteristics of this enactment? How do the everyday activities of SACL officers shape different aspects of the certification process? What are the processes through which the knowledge required to certify licensees is constituted? How do organisational efforts to manage these processes affect the way in which 'organic' is enacted by SACL and hence by its licensees?

To answer these questions, the chapter is structured as follows: in the next section I describe the procedures through which licensees are certified, and identify three distinct groups of officers involved in the certification process. I argue that the activities of certification officers, inspectors and technical managers constitute a continuous process of interpreting standards and practice in the context of each other. I suggest that inspectors and certification officers are not mere external observers trying to reveal how a licensee enacts certain standards, but that they are active participants in shaping this object and in defining how a particular form of 'organic' farming is enacted by a licensee. In section 6.3 I argue that the licensee-specific knowledge object underpinning this process can be characterised as having partial epistemic properties (drawing on Knorr Cetina, 2001) which need to be

managed through a standardised process to avoid paralysis or arbitrariness in the certification of licensees. I argue that the systemic absence of potentially relevant knowledge in the certification process makes the work of SACL officers paradoxical in that they are caught between the necessity of being thorough and the impossibility of doing so: they need to assess how licensees enact a particular version of organic standards, but many elements of organic farming practice remain invisible for the SACL officers throughout the certification process. I suggest that this results in an inherent uncertainty in the process which cannot be resolved but which also cannot lead to paralysis (inability to take decisions) or to arbitrary decision making when dealing with licensees. In section 6.4 I explore how the procedures of SACL officers are standardised so that inability to take decisions is avoided and how this reduces the potential for arbitrariness in the process. I illustrate how enactment of SACL procedures reproduces a particular form of certification process which is standardised and auditable by external parties. In the final section I conclude that standards for organic agriculture are not only written by the standard setter, but that they are continually rewritten—re-produced—in the certification process. As such, they are alive: with each new interpretation and with each new instantiation they subtly change and reconfigure how a particular form of farming is and can be enacted.

6.2 Procedures for certifying licensees

The task of verifying whether a licensee conforms to organic standards is carried out by two actors who have distinctly different activities: an inspector who visits the licensee to assess and reports on the operations of the licensee, and a certification officer who reviews the inspection report and supporting paperwork before issuing a certificate of conformity and who also maintains a relationship with the licensee throughout the year. In fact, the person carrying out the inspection is by law not allowed to decide whether the inspected licensee is (re)certified to avoid conflicts of interest or the possibility of coercion towards certification (CEN, 1998: cl. 4.2.f). Thus, inspectors and certification officers constitute two markedly different groups: inspectors are trained and qualified as auditors and spend most of their time inspecting licensees, certification officers are office based and trained by the certification

body without the need to for formal professional qualifications. According to the European legislation, organic licensees should be inspected at a minimum once every calendar year. As familiarity with the circumstances of individual licensees might colour the reporting of an inspector, the Soil Association allows inspectors to inspect the same licensee only three times in a row, after which another inspector will take over the inspections. In contrast, certification officers (at least at the Soil Association) are encouraged to build up relations with their licensees, and act as account holders for an average of 250 licensees per officer.

This section describes the routine activities through which licensees are certified, starting with an outline of the annual inspection cycle, followed by a description of how an inspection of an organic licensee is organised. After this, I describe the procedures that characterise the work of certification officers, elaborating on how interpreting standards and practices form a core aspect of the daily work of certification officers and inspectors. I finish the section with a description of how the relation between them is shaped.

The annual certification cycle

The annual cycle (see Figure 6.1) starts with the task of inspecting a licensee which is allocated to an inspector. The inspector sends a letter or email to the licensee confirming to him or her when the inspection will take place. Attached to this letter is a document called the Annual Questionnaire (AQ) which the licensee has to complete with up-to-date figures about certain aspects of the operations that will be assessed (e.g. enterprises, livestock numbers, etc.). During the inspection the inspector generates a report which is printed so that the farmer can sign, indicating his or her agreement with what the inspector found. Once the licensee has read and signed the report, the inspector generates and prints an Action Summary Form (ASF) which contains a list of non-compliances found during the inspection as well as comments and any requests for further information. The licensee has to respond to each item on this list by stating the actions that will be undertaken to resolve the non-compliance or to supplement information. The ASF needs to be returned to the certification officer within thirty days from the inspection. On receipt of the ASF, the account-holding certification officer assesses the

information in the report, the ASF and other relevant documents (and may request further actions and/or information) to decide whether the licensee has fulfilled all requirements and can therefore be (re)certified for another year. If there are no further questions about how the operation meets standards for organic agriculture, the report is signed off and the licensee is sent a letter confirming ongoing certification and an updated trading schedule if required. This latter document lists the enterprises that are certified, and states the specific crops, livestock and products that fall under the licence.

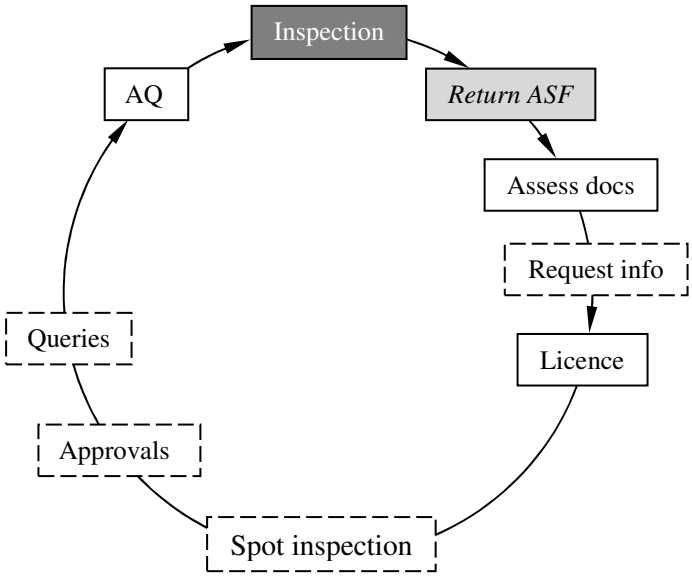


Figure 6.1: Annual certification cycle

This completes the annual cycle, but during the remainder of the year the licensee will send the certification officer certain bits of information, request permissions and seek approval for inputs and treatments, and raise queries about what might be permitted within organic standards (this will be described in more detail below). Furthermore, the certification body may decide to do a spot inspection, which is a smaller inspection focussed on a specific aspect of an operation. Spot inspections fall into three categories: the first includes follow-up inspections intended to monitor an aspect which was deemed unsatisfactory at a previous inspection. Second, there are unannounced inspections which may be connected to a previous inspection or based on a complaint by a member of the public or a concern about certain

elements of practice that can be easily remedied. Third, SACL has its own annual planned programme of spot inspections for issues which could potentially be systemic. As Inspector Irene explained, the theme in a given year may be determined by a drive to benchmark how a specific aspect of an enterprise is performed. In other years the agenda will be set by a problem found at one licensee, after which other licensees will be sampled to investigate the extent to which the problem is endemic to that part of the industry.

As will be clear, the annual certification cycle is started by an inspection. In the next section I explore what is involved in doing an inspection. But before doing so, I briefly describe the terminology and the system of the different non-compliances so that subsequent references to 'minors', 'majors' and 'criticals' can be placed in context. If an inspector finds a practice which does not accord with what is permitted in organic standards, there are three levels of non-compliance that can be issued. The lowest level is a minor non-compliance, which is usually given for issues that do not directly compromise the organic integrity of a product, e.g. errors in record keeping. Major non-compliances are given for practices which may end up affecting the integrity of a product if they are not corrected. Critical non-compliances are given for practices in which the integrity of a product may have been affected:

> "Sometimes if it's like a straight forward record keeping error like with these two examples it would start off as a minor, go to major and then go to critical and be suspended probably. If it's something that's more of an integrity issue like say it was a welfare issue, there was no bedding, the inspector went there and the cattle were all caked in ... that would be at least a major or a critical. If it's a critical then it goes to certification committee and they decide whether it's good enough to suspend their licence. So, use of prohibitive input for example, say an inspector turned up there and they'd used [the prohibited chemical herbicide] Roundup on all their fields. That would immediately be a critical non-compliance, there would be a loss of [organic] status on the land and then it again goes to certification committee. So you're looking for a corrective action and your sanction is that the land has to restart its conversion." (Certification officer Christopher)

If an issue for which a non-compliance was given during the previous inspection is found non-compliant during the following inspection, the severity is increased—'ratcheted up'—a level. So this is what Christopher refers to at the start of the quote: a minor non-compliance

will become a major during the following inspection, and a critical at the third annual inspection[39]. There is one more level, the manifest infringement, which would be issued if there is a major breach of the integrity of the entire organic system within the operations of the licensee: this would lead to immediate termination of the licence. As certification officer Colin explained, if for instance a product is kept to standards but if there is no paperwork to back this status up this would be a critical non-compliance. If however a licensee would commit fraud, such as selling conventional produce as organic (as was the case in 2009 by processor One Foods Limited), this would constitute a manifest infringement.

The inspection process

As Irene explained, inspectors prepare for an inspection by looking at what was found during the previous inspection, noting past non-compliances and critical areas to consider. By going through the communication history between the licensee and the certification officer, they note what treatments were approved as well as the inputs that were permitted. Moreover, they have access to technical bulletins that describe in detail how certain standards are to be interpreted, and to briefing sheets on the specifics of enterprises and production processes in case they need to brush up on their knowledge of where there potentially critical issues lie for any given agricultural or food manufacturing process.

The inspection itself usually consists of a visual check of the licensee's operations to assess the way in which organic standards are put into practice by the licensee, and to spot irregularities or non-compliances:

> "[...] while they're out on the farm they will walk in, if the licensee is going [this] way and there is a shed that way then they'll be going that way to look at the shed. So, they're looking in all storage areas and looking at all the housing and they look at all the stock. It doesn't matter, all the stock. The only occasion when they might look at a portion of stock is when they're on common grazing and they're over 500 hectares up on a hill in which case they do need to go and look at some of them but

[39] A note about language use: certification officers and inspectors would usually talk about 'minors', 'majors' and 'criticals', and not explicitly add 'non-compliance'.

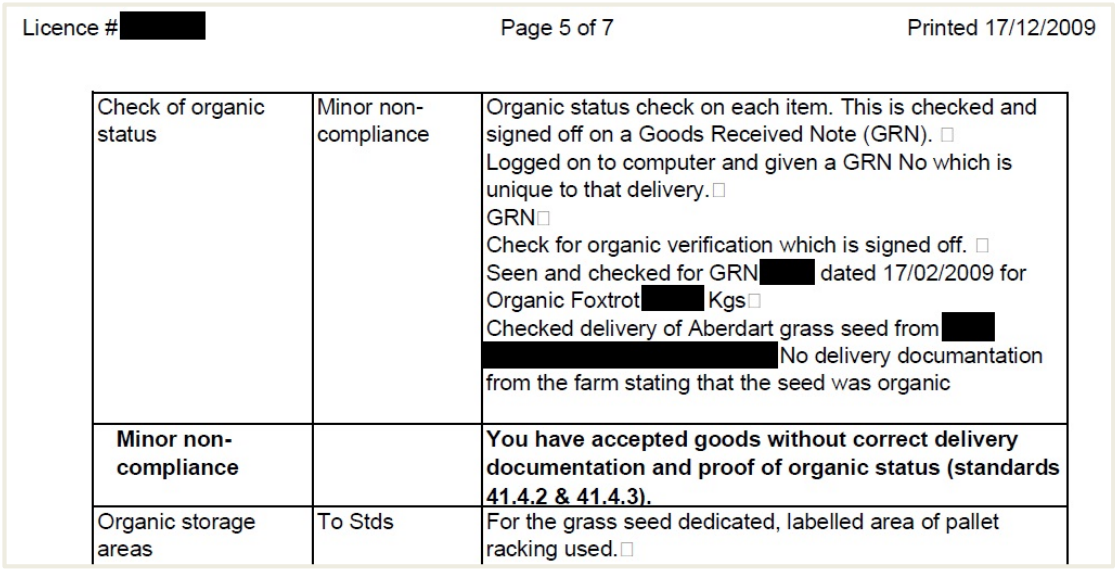
> they're never going to see them all, but just to get a feel, but generally speaking we don't require that they look at every field." (Irene)

Instead, fields are sampled, as inspectors are required to look at a minimum of one third of all crop types and a third of pastureland. The farm walk is followed by several checks on documentation and records kept by the licensee to ensure that no prohibited inputs were used, that activities were compliant with the standard, that the inputs (such as seed and animal feed) correspond with the production record (outputs) and current stock levels of the licensee, and that the trajectory of individual ingredients, crops and livestock can be traced. As such, inspectors check records for consistency between the administrative and material organisation (e.g. which enterprises are present on a farm and in the records), look at general invoices for the purchase of prohibited substances, and a mass balance. This is a calculation to assess whether sold quantities of produce or livestock equate with the production record and the purchase of inputs (e.g. seed), and the stock that a farmer still has left.

As various respondents explained, the paperwork is sampled: an inspector picks one or two ingredients or crops more or less at random and performs a traceability audit on them. This means establishing the mass balance, but also verifying that the required inputs were organic, when they entered the licensee's system, where they were stored, and after production where the crops or products were stored and how they were sold. The assumption is that, if there is evidence that the licensee has a system through which trajectories of crops and products are recorded, a check on one or two items is representative of this system. I will discuss some of the implications of this assumption is detail in section 6.3.

Inspectors take a laptop and a small printer to an inspection, and compose the inspection report on their laptops while doing the inspection. All relevant information for a licensee is downloaded from a central database before the inspection, and during the inspection an inspector can generate the report by confirming which enterprises are part of the inspection. The reports are descriptive as the software creates a separate line for each relevant standard or group of standards. Each line is split into three fields, the first of which contains a brief hint of

what the standard is about. The second field states the observed level of compliance with the standard (to standards; minor, major or critical non-compliance, manifest infringement), and the third field contains a description of what was seen and any issues that may have arisen (for an example see Figure 6.2). A new report can be populated with the entries of the previous inspection, so that the most of the information is already available. Despite this, various respondents commented that it is time consuming to compose the report. As certification officer Colin, who is a qualified inspector himself, explained there are a number of repetitions in the reports. He suggested that experienced inspectors know where they are and therefore spend less time early on in the report as they know they will have to enter the same information somewhere else, but novice inspectors are usually very slow in their inspections as they enter the same information in multiple places.



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Check of organic status	Minor non-compliance	Organic status check on each item. This is checked and signed off on a Goods Received Note (GRN). Logged on to computer and given a GRN No which is unique to that delivery. GRN Check for organic verification which is signed off. Seen and checked for GRN[redacted] dated 17/02/2009 for Organic Foxtrot[redacted] Kgs Checked delivery of Aberdart grass seed from[redacted]No delivery documantation from the farm stating that the seed was organic
Minor non-compliance		**You have accepted goods without correct delivery documentation and proof of organic status (standards 41.4.2 & 41.4.3).**
Organic storage areas	To Stds	For the grass seed dedicated, labelled area of pallet racking used.

Figure 6.2: Entry in inspection report of a minor non-compliance found at inspection.

For each entry the inspector can choose from a set of relevant standard sentences to describe what was found but where specifics still need to be added. Certification officer Christopher described this as "a bit old fashioned" compared to reports that would consist of questions and tick boxes. However, he said that the certification officers preferred the descriptive approach as this "[...] gives us a much, much better understanding of what's going

on as well. So, it allows the inspector to put things in which might otherwise not be put in. Then from our point of view reading the report we wouldn't know".

But Christopher also explained that it relies on the inspector to "write things in a way, in a format that can't be misconstrued or confused". He further mentioned that inspectors might introduce points that might not be relevant or necessary. This has become more prominent since inspectors issue their reports and the Action Summary Form on the day: until the start of 2009 inspectors would write a compliance report which would be sent to the certification officer along with all relevant documentation. Certification officer Claire explained that this meant sifting through all the information to verify the inspection findings and where necessary edit the report before it would be made available to the licensee. The new scheme reduces work for the certification officers and the time between the inspection and the completion of follow-up actions, but as Christopher commented there is "a potential for messiness" if inspectors do not "get things right". But he quickly added that this happens rarely. Various respondents commented that the new scheme benefits licensees as they have a more direct relation with the inspection, the report and the required actions: the report and the request for remedial actions are no longer detached from the inspection itself.

As such, the activities of an inspector visiting a licensee involve inspecting key areas by walking around, tracing of paper trails of products and processes, composing a descriptive report from standard sentences and licensee-specific information, and informing the licensee of what was found. Irene estimated that the time on a farm is split in half between looking around and doing paperwork, while an inspection of a processing plant involves more paperwork:

> "So, that's now the time on the farm is probably spent 50/50. We would like to improve that. We would like to be more like 65/35. So 65 out looking around 35 actually looking at records. Processors are probably even slightly more unbalanced but there isn't so much to look at the processors. So there are more records to look at the processor and less production area." (Irene)

Once the report has been uploaded in the database and any other relevant documents sent to the office, the inspection is in principle over. All findings have been made available to the second actor in the certification cycle: the certification officer.

Daily procedures of certification officers

Once the report has been uploaded, the responsible certification officer is notified. Usually though, certification officers wait with their review of the report (and therefore the licensee) until the Action Summary Form and Annual Questionnaire have been returned to the office by the licensee. On receipt, all documents are scanned in and made available as pdf documents, and as such certification officers access and review all relevant information electronically. Once all information is available, a certification officer will 'do'[40] a report. This involves reviewing the report, checking progress on actions that the inspector has agreed with the farmer during the inspection, assessing how non-compliances have been dealt with (corrective actions), taking action where an inspector has missed something or where an inspection report is unclear, and grading each inspection report to feed back on inspector performance.

In doing this, they use last year's reports in parallel to compare how the producer has changed enterprises on the farm and how he or she has dealt with problems found during a previous inspection. This points to areas where the officer has to pay particular attention. Certification officers therefore switch between the two inspection reports as well as any relevant communication between officers and farmers and/or inspectors that might help with points that need to be assessed. This is supplemented with information from the Annual Questionnaire, the responses of the licensee on the Action Summary Form, and the mandatory plans that the licensee submitted to indicate how specific aspects of an enterprise are

[40] This is the terminology of the certification officers themselves.

managed[41]. Depending on the specifics of a licensee, further information comes from the requests for permissions, approvals and/or derogations made by the licensee, grazing records, seed records, field maps, ingredient lists, and other documents that record part of an item's trajectory through the system of the licensee.

In some cases, the review of the inspection report and the related documents provides sufficient information for (re)certification. However, in most cases certification officers decide to follow up on something—from requesting some additional information or management plan from a farmer to chasing up actions from the ASF, and from contacting an inspector about an aspect of the inspection to preparing a case for the committee that deals with problematic and ambiguous certification issues. If an officer is not entirely sure of how a particular standard should be interpreted, and therefore how an inspection finding should be assessed, he or she relies on colleagues for expertise and experience in particular areas such as dairy or pig enterprises, knowledge of rearing practices and vet treatments, and specific information or about a general requirement that follows from the standard but that is not part of the standard itself (such as the legal requirements and technical procedure for salmonella testing for a farm of a given size). Also, officers use a select set of trusted websites and handbooks to find specific technical information about certain issues such as details of diseases and their treatments, and current market information. Most SACL employees contribute to and work with three electronic repositories of knowledge: electronic copies of the Soil Association standards and EU regulations, interpretation notes that are signed off by the Soil Association charity standards department and lists of other interpretations, and the database of Certification Committee meetings in which a large number (if not all) cases have been recorded with their history, deliberations and the decision reached.

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[41] For example, each livestock farmer will submit a Livestock Management Plan which contains an overview of how the animals are cared for and where they are housed, the feed that they will get, the veterinary treatments that will be used, and the practices through which diseases are prevented from spreading. Other plans will deal with how the rotation of arable crops is managed, how a licensee plans to carry out a conversion of an enterprise to organic, or how a separation will be maintained between organic and conventional crops or livestock if a licensee has both. See also Chapter 5 for more details.

This means that 'doing a report' usually takes a few hours—reading the report, finding relevant information, contacting licensees and inspectors, and sometimes finding out what an interpretation should be. Once an officer signs off a report, it is sent to a colleague whose role it is to check that all actions have been completed, and who then issues the certificate and trading schedule. The certification officer then has to manually enter the latest inspection report into the database so as to make it available for the next inspection.

This formally concludes the certification process, but maintaining contact with licensees involves other routine work such as answering the farmers, and inspectors calling for information or to ask approval for something. This occurs regularly, and all correspondence with licensees is logged electronically and so after calls officers immediately write a note of what was discussed. These notes are attached to the licensee's records in the database, making the information available for other certification officers and inspectors.

When serious problems arise from an inspection, such as critical non-compliances and major non-compliances missed during an inspection but found during the review of the report, these are put to the certification committee (as described in the introduction to this chapter). Certification officers submit an agenda item by outlining the problem, stating the standards it relates to, adding similar cases from the committee's database, posing the questions that this raises, and where possible stating what the officer would advise the committee to decide. Only the Certification Committee has the authority to suspend and terminate licences, and in general can take decisions that individual officers cannot or might not want to take on their own. The committee also decides what the interpretation of a standard should be if there are ambiguities in a standard. As such, officers also use the committee for (binding) guidance of how to assess certain practices. Finally, the committee deals with appeals to certification decisions, thus providing a formal way of escalating an issue for both SACL employees and licensees. Whereas this is a highly formalised way of establishing interpretations, the everyday activities of inspectors and certification officers contain continuous processes of interpretation.

Interpretation and the 'human element' in the certification process

As is clear from the above, licensees are certified based on an inspection and subsequent administrative activities. But while this process relies on standard procedures, several officers and inspectors pointed out that each individual licensee represents a unique case. Certification officer Christopher is explicit about how this shapes the everyday activities of certification officers:

> "Yes, there has to be a pretty good human element in the certification process because each farm is different. There are so many different scenarios, and when I first started here I almost thought that book, those standards were just way too big, you don't have to be here very long to realise actually it's not anywhere near big enough. There's a lot of judgments you take as a certification officer to balance the licensee's needs against the needs of the standards. So it's quite an important role in that respect, there's quite a lot of responsibility there. Going through things like management plans, what you will allow, what you don't allow; how can you move forward to get to a situation maybe where if something is not quite right how do you make some progress to make sure it does fit into the standards. That's what makes this job really interesting, actually." (Christopher)
> *"Solving the problems." (Maarten)*
> "Yes, and everyone is different. It's very rare you get two things the same. Which is why those standards will never cater for everything because it's just not possible." (Christopher)

In suggesting that there is a space between the codified standards and farming practice, and that certification officers operate in this space, Christopher indicates that the procedures of certifying licensees require two types of interpretation: firstly interpreting actual farming practices in the context of organic standards, i.e. assessing the extent to which practices are allowed according to the codified standards. Secondly, as he points out, interpreting organic standards in the context of possible practice, i.e. assessing the extent to which the rules codified by organic standards can be practically enacted by an individual licensee. Both types of interpretation need to be resolved on a daily basis, and apart from the formal and informal ways of finding information that can help do this (as described below), SACL employs a number of Technical Managers, whose main role is to support the certification officers and

inspectors by coordinating how individual standards should be interpreted and how actual farming practices may affect these interpretations[42].

But certification officers have to carry out another type of interpretation when assessing inspection reports. The choice for a descriptive approach to reporting means that, despite the availability of many standard entries, inspectors have to add remarks and data which are specific to a licensee. Since inspectors have their own styles in doing this, their reports vary widely in the amount of information that is made available to the certification officers:

> "[...] So, as you can see this inspector's ... there's far more detail than the other inspector." (Colin)
> *"So that is again where you come down to the issue of interpretation. How do you work with that, where you've got those two different more or less style of reportings and how do you manage to try and balance what you see?" (Maarten)*
> "I suppose it comes down to knowing the inspector in some ways [...] and knowing how they pick up issues, and that comes over time, I guess. And learning their style, I would say. Because [Imogen], here, on this side is very factual, there's very little amounts of information but it's quite relevant in what she's saying. [Jason] might put in some more information but ..." (Colin)
> *"It might not always be as relevant to your job." (Maarten)*
> "Yeah, it could be it's more of a descriptive second scene almost, I suppose [...]" (Colin)

Moreover, Colin and inspector John both explained how inspectors might not always want or be able to report on issues that they find, because of the potentially problematic interaction with a licensee who might react aggressively to an inspection finding, or because the inspector might decide to use discretion in certain cases (see below), or because an inspector might miss a non-compliance. However, in either case the relevant entries in the report will contain traces of the issue and Colin explained how certification officers need to 'read between the lines', i.e. interpret the entries in a report based on the knowledge they have about the individual styles of inspectors. Sometimes an inspector will provide subtle

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[42] Usually, Technical Managers have had a long career as certification officers/managers and are qualified inspectors. In their coordinative capacity they are the formal connection between SACL and the standards department of SACh, as well as between SACL and the other certification bodies (through the Technical Working Group of these bodies, CBTWG). Their role will be clarified in 6.4.

indicators (in for instance an opening statement for a section, where inspectors set out particular issues which they find important to note) which may convey a feeling that the inspector did not explicitly address a specific topic during an inspection, framed such that the certification officer could derive that there might be a problem that needs looking into.

Interpretive processes also play a role in carrying out inspections, although on site judgements are of a different order. John, who had a long career in organic farming and inspecting, indicated that inspectors exercise varying degrees of 'inspector discretion' when inspecting. He suggested that this difference had implications for the roles of inspectors and certification officers:

> "Slightly tongue in cheek, if you pursue that route far enough you could have trained monkeys going round visiting the farms and the thing is entirely driven from the office. On the other hand I tend to think that the person on the farm, or in the factory, seeing what's going on and relating to the individual doing it is in a much better position to form a judgment than people in the office, so to some extent who is in charge, the inspector, or the certification officer? I feel there is potential tension there. [...]" (John)

By flagging up a controversy around how the activities of certifying licensees are distributed between inspectors and certification officers, John suggests that the directionality of the interpretive process during inspections depends on individual inspectors. This has organisational consequences: the different styles of interpretation are tied to the way in which the inspection process is managed and the types of inspectors that are employed.

Summarising the above, the activities of certification officers, inspectors and technical managers constitute a continuous process of interpreting standards and practice in the context of each other. Through this, knowledge is generated on the basis of which a decision can be taken about the status of a licensee's operations with regard to organic standards. As noted above, procedures and organisational factors shape these activities, but within them each case is unique and needs to be assessed in its own context vis-à-vis organic standards. In other words, the knowledge processes are routinised, but the content of the knowledge object created by these processes changes for each licensee. So how is this knowledge constituted?

What are its characteristics? How can the knowledge object be conceptualised? These questions form the core of the next section.

6.3 Inferring the unknown

The object of the certification process

A good starting point to answer the questions posed in the previous section is to consider what the object of the certification process is. The role of the activities in the certification process as described above is to check "that products, materials, services, systems or people measure up to the specifications of a relevant standard" (ISO, 2010). In other words, a licensee is responsible for compliance with organic standards in order to qualify for certification, and inspectors, certification officers and technical managers carry out their specific procedures to verify this compliance: they check that the specific way in which a licensee enacts organic standards is compliant with those standards. The object of the certification process therefore is the set of agricultural systems, activities, material artefacts and knowledge that is mobilised by a licensee in a specific context to produce food (or farmed commodities) according to organic standards: its configuration is different for each and every licensee.

The procedures of the certification process are intended to reveal this object for each individual licensee. But many of its elements are not directly accessible: the practices through which organic standards are enacted are temporally (and in many cases spatially) distributed. Furthermore, elements of 'organic' practice are also socially distributed: for example, as described in Chapters 4 and 5, establishing a crop rotation relies on soil sampling and specialist agronomic advice which most farmers need to buy in; treatments of livestock are usually prescribed and carried out by a vet rather than the licensee; etc. This implies that even the licensee him- or herself would not be able to grasp and reveal the object in all of its details. Instead, aspects of it are made visible through specific representations of systems, activities, material movements and transformations, and knowledge. For instance, a note on a

wall calendar indicating on which date a farmer is planning to mow the hay meadows provides a trace of practice (according to organic standards this cannot be before a certain date); a livestock management plan contains, in a very condensed form, a representation of the conditions of a livestock enterprise and its management practices; a purchase order, goods-in record and a valid organic certificate for the inputs, stock records, production records and sale records jointly provide a representation of how material objects entered and moved around the farm and how they transformed during that time; the Action Summary Form contains brief remarks about how certain aspects will be reshaped; etc.

It is important to note that many of these representations are more than just that: they are simultaneously enactments of 'organic' practice. For example, by a providing representation of material movements and transformations, the document trail makes those materials traceable, which is one way in which the integrity of the organic system is maintained. Put differently, the representative function of records and documents is also performative[43]: their presence is required in order for 'organic' practice to exist; their presence is as important as the trajectory that their content describes. To capture the representative and performative aspects of these entities, I will refer to them as instantiations (Knorr Cetina, 2001) of 'organic' practice.

However, not all aspects of the object 'organic practice' are instantiated through records and documents as some are revealed through material entities on the farm. For example, the presence of weeds and the absence of 'tram rails' (tractor tracks) in an arable field indicates that the crops have not been sprayed with fertilisers or pesticides. Thus, the organisation and condition of material entities discloses aspects of how organic standards are enacted as they represent a trace of past activities. While most of these embodied traces are visible and therefore directly accessible to a trained inspector, some can only be detected in laboratories. For these instances, inspectors carry a test kit with them to take leaf tissue and grain samples

[43] In this thesis, I use the adjective performative to denote an instantiation of performation.

if they suspect that prohibited substances were used, or as part of a routine crop check. Once collected, samples are sent to a laboratory where they are tested for residue levels for a number of common agro-chemicals.

Besides these instantiations and embodied traces of enactments, inspectors create another instantiation of this object when composing a report. This instantiation draws together some of the elements as it provides information about all the agricultural systems through which the licensee is enacting organic standards. For each system, the entries describe different elements of practice in the context of organic standards—a particular way of doing is either 'to standards' or is non-compliant in one of three degrees at which point details of the non-compliance are provided and framed by organic standards. Many entries require only documentary traces, but others consist of observations of material entities and again others are composed of a combination of the two types. But the report also contains references to other sorts of representations: for instance, Colin explained that inspectors have a tool to assess welfare so that they can 'more objectively' compare and report on the condition of livestock. Based on photos of livestock in different conditions (from emaciated to fat in five grades; classification by Bristol University), this yardstick has helped in making the work of an inspector 'more black and white', 'more factual' which is useful in the report but also in discussions with farmers about what constitutes a welfare issue.

> *"So there's a standard assessment, or standardised assessment tool to be able to have a look at cattle and ... (Maarten)*
> "And sheep, yes. So that's what we do. I'm just going to have a look at [Jason]'s and see what he's put last year. Yes, there we go. So, on [Jason]'s he has actually rated them in the condition score. So, 2.75 – 3[44], which, at the time of year if you think an inspector actually went ... similar time of year, then that's not bad condition to go to the tup [ram]. You want them into the 3s so that when they go they've got plenty of energy, they'll hold their lamb and they'll have enough energy to go through the winter." (Colin)

[44] The specificity of the entry is interesting to note, as there is no photo of sheep in a 2.75 condition. This implies that the tool requires interpretation of intermediate stages, both on the farm and in the office, about what a given condition could be.

By including such references, more general notions of farming practice are added to the object—beyond the specifically organic aspects.

However, while the report is intended to represent a verified and accurate depiction of the practices on a site, many elements are in fact inaccessible to an inspector (and as noted above, most likely to the licensee as well). Furthermore, the scope of reporting is necessarily limited by temporal, spatial, technological and resource constraints and therefore only a few elements of practice are traced per inspection. Hence, the inspection report constitutes a partial instantiation based on the items chosen by the inspector and by the material entities that were observed *and that triggered questions about their history*. In addition, the instantiation depends on the individual reporting style and the extent of inspector discretion that was exercised.

In brief, the object of the certification process cannot be revealed in its entirety. Instead, partial instantiations show specific aspects of the object—but the assembly of these still does not reveal the object in all of its details: the object can never be complete. This suggests that there is a systemic absence of knowledge within the certification process, as there are always more things to probe, more documents to see, more questions to ask and more details to report. Thus, inspectors and certification officers have to make do with a limited amount of information to determine how to proceed, raising questions and then trying to resolve what the answers might have been. But the three examples below illustrate how answers to questions often raise new questions that require further investigation:

> While 'doing' a report, Colin picked up on two lines that were strange: in one the inspector mentioned the use of a broad vaccination programme (the vaccine used contains ten strains of diseases whereas the Soil Association standards prefer no interventions or targeted vaccines). Colin checked the communication records to see whether the farmers had asked for permission to do so, and did not find any information about this in the history. He checked the latest version of the Livestock Management Plan but could not find anything about this treatment there either. As such, he considered that this probably would constitute a missed major non-compliance but that before issuing this he would first contact the licensee to see on what basis the treatment was given (as in previous years the treatment was not given he did not suspect that the was a licensee who had continued conventional treatments and therefore thought to speak to the farmer first). The second point he picked out was that the inspector wrote that 'a few ewes' had died due to a disease, but as this constituted a welfare issue Colin wanted to have specific numbers about how many ewes

had died and whether they had all occurred together or spread over the year. He contacted both the inspector and the licensee to discuss the problem areas, and found out that the loss of ewes and the vaccination programme were related to the same problem: this licensee owns several farms, and that livestock is rotated annually so that build up of worms is avoided. Over the past year, the sheep had been housed on a markedly dirtier field compared to the other sites, and to protect the sheep against some microbial diseases present in the soil the farmer had used a multi-acting vaccination. Colin decided that the vaccinations were acceptable under these conditions. But he delved deeper into the issue as the use of single-acting vaccines is preferred (they cause the animals less stress) and that the multi-acting vaccine, which vaccinates against ten different diseases, is in most cases not necessary. The licensee had given these vaccinations without asking prior permission, which normally would constitute a minor non-compliance. However, Colin discovered that in a much older version of the livestock management plan the use of this particular vaccine had been approved because of this particular site. Over the past four years the treatment was not necessary and therefore was not included in newer versions of the LMP. On this basis Colin did not raise this as a missed non-compliance.

Christopher found a remark in a report drawn up in spring that a licensee had some welfare issues and that a follow up inspection would be required after the licensee had sought veterinary advice. In a different place in the report he found that the livestock in question suffered from several types of parasites: firstly lice, which have a relation to stocking rate in the winter accommodation. To check this, he searched for the livestock management plan and manually calculated the stocking density for the herd in the given accommodation. Secondly, the cattle suffered from worms and fluke, two problems associated with outdoor grazing. As the inspection was carried out just before the herd was about to go out into the fields, Christopher found it strange that these problems had not been dealt with over the winter. Looking in detail at the LMP, he found that it did not include any details of how the parasites were dealt with. Also, Christopher did not receive any information about the veterinary treatments that the licensee should have provided him with (each of the parasites would require treatment for which prior approval would need to be given). From these points he concluded that something went wrong in how the animals were looked after and prepared a case for the Certification Committee to decide what level of non-compliance this would be and how this would need to be resolved.

One of Claire's licensees was a seasonal turkey producer producing organic turkeys for Christmas and Easter. This licensee had had many recurring non-compliances over its history, but this did not result in the regular ratcheting up of the level since the licensee each year contracted different farms to do the rearing for them. Furthermore the management of the licensee had changed three times over the last three years and therefore continuity in dealing with issues had been a problem. In an effort to avoid issues arising in the first place, Claire had requested a detailed livestock management plan before the production for Christmas 2009 as she wanted to be "extra, extra careful with going through everything in terms of the management plans and everything" (Claire). The LMP went through a number of iterations, but even the third version raised eight questions that required answers and details that needed filling in. Two of them required permission by the certification committee, and Claire composed an agenda item for the committee outlining the issues. In this, she searched the database of committee decisions and the precedence register for similar cases where the committee had already decided on an interpretation that could inform how these cases could be decided. For the first item, which concerned the extent of range available to the birds within 50m of a fixed barn, Claire found a number of previous decisions where the committee had already decided on an interpretation that could inform how this case could be decided. She made those available in the agenda item, and

> added her recommendation to allow the limited space for the current production only. For the second item, which concerned the amount of time some of the birds would have access to the range before slaughter, she found no suitable items. As such, the committee had to assess how the standards could be interpreted, and on what basis permission might be given to allow this to happen.

The example of Claire's questioning illustrates how the involvement of the certification committee results in other elements becoming part of an object by drawing on previous committee decisions, cases from the precedent register and official standards interpretations. While this knowledge is not made available to the licensee in question, it does shape how the licensee will enact organic standards as the certification committee decides (in part) on this knowledge what will be appropriate measures for the licensee to implement. This equally applies for non-compliances and queries to the committee to decide on how to interpret a standard. Hence, this knowledge helps shape the way in which organic standards will be enacted by connecting the context and conditions of the current licensee to those of other licensees, or by questioning how certain contexts and conditions relate to organic standards (if there is no reference to previous cases). In fact, through this mechanism the enactments of different licensees become connected as the objects of different licensees become embedded in the object of another licensee.

It is important to note that inspectors and certification officers therefore are not mere external observers trying to reveal how a licensee enacts organic standards. As outlined earlier, their procedures generate the knowledge on the basis of which a decision can be taken about whether a licence will be issued. But it goes further than that: due to their activities of producing an instantiation of and subsequent questioning of the object, they—and the certification committee—are active participants in shaping the object and consequently how 'organic' is enacted by a licensee.

Epistemic objects and their properties

To develop a conceptual understanding of the object of the certification process and its multiple dimensions I draw on two related conceptualisations of knowledge objects and

knowledge-centred practice which have features closely resembling those as outlined in the previous section. Rooted in laboratory studies, Hans-Jörg Rheinberger (1997) introduced the concept of epistemic thing (as a thing embodying concepts) to denote the material entities or processes that constitute the objects of inquiry. As they embody what the researcher does not know, they present themselves in an irreducible vagueness: as scientific objects they are absent in their experimental presence. Therefore, epistemic things should be thought of as open-ended, question-generating and a complexity that is not reduced but increased by observation and inquiry. The concept of epistemic things was developed by Karin Knorr Cetina (1999, 2001) into the notion of epistemic objects which play a constitutive role in what she terms epistemic practice[45]. She developed this concept of practice out of the observation that scientific and expert practice cannot be captured by previous conceptualisations of practice as skill or routine.

Instead, Knorr Cetina (2001) argues that a relational rather than a performative conceptualisation of practice can account for creative and constructive practice, the practice which comes to the fore when actors encounter non-routine problems. She suggests that this notion of practice "is internally more differentiated than current conceptions of practice as skill or habitual task-performance suggest" (Knorr Cetina, 2001: 175-176). Based on Heidegger's (1962) work on how objects become 'ready-to-hand' and transparent while they are mobilised in practice, Knorr Cetina argues that in performative notions of practice, objects are indistinguishable elements of an activity script; they are instruments which are absorbed in the practice, becoming invisible and transparent while they are being used—just like the subject enacting the practice becomes invisible and absorbed in the practice. But in "knowledge-creating and -validating practice or 'epistemic practice'" (2001: 176), this is not an adequate account (except for its procedural routines) as subject and the epistemic object become dissociated—its object is no longer invisible; rather, it is being investigated, explored,

[45] Knorr Cetina also uses the terms object-oriented or objectual practice.

probed: “Instead, it becomes enhanced and in fact enlarged through the researcher’s strategy of visualizing it and its behavior under various circumstances” (2001: 179).

Epistemic practice, then, is based on a differentiation of subject and object which is held together by the relationship between the two. This relationship is shaped by the characteristics of the epistemic object: they contain a ‘lack in completeness of being’ and therefore have the capacity of unfolding indefinitively:

> “They are more like open drawers filled with folders extending indefinitively into the depth of a dark closet. Since epistemic objects are always in the process of being materially defined, they continually acquire new properties and change the ones they have. But this also means that objects of knowledge can never be fully attained, that they are, if you wish, never quite themselves. What we encounter in the research process are representations or stand-ins for a more basic lack of object.” (2001: 181)

Knorr Cetina suggests that although objects of knowledge exist in a variety of instantiations (representations and material realisations), they simultaneously constitute unfolding, temporal structures of absences. The instantiations therefore are always partial: they do not represent “*another* object, ‘the real thing’. It is ‘the real thing’ itself that has the changing ontology which the partial objects unfold” (2001: 182). Instead, the partial objects display the lack and provide suggestions for further unfolding. In other words, partial epistemic objects constitute complex links in a sequence of unfolding, which when unfolded lead to equally complex sublinks.

Returning to the mutual relationship between subject and object in epistemic practice (or object-oriented or objectual practice), Knorr Cetina suggests that this is sustained by a ‘structure of wanting’ which is ‘uniquely’ matched by the open, unfolding character of epistemic objects:

> “... wants are always directed at an empirical object mediated by representations – through signifiers, which identify the object and render it significant. But these representations never quite catch up with the empirical object; they always in some aspects fail (misrepresent) the thing they articulate. They thereby reiterate the lack rather than eliminate it” (2001: 185)

Thus, the mutuality of the relationship is constituted by the structuring of what is still missing by partial objects, and the provision that their unfolding can continue by the subject. Put differently, scientists and experts involved in knowledge centred activities act on the lack of a partial epistemic object by unfolding it, which leads to another partial object which presents a different lack on which the experts can act again, etc. Knorr Cetina argues that the structure (or chain) of wantings "brings into view whole series of moves and their underlying dynamic rather than isolated reasons, as the traditional vocabulary of motives, incentives and actions does" (2001: 186). As such, she suggests that this conceptualisation can account for the emotional basis of knowledge-centred work, and that it can account for the lateral and angular branching off of strands of practice that occur when wants transfer from one chain of wantings to another. Therefore, she concludes, the proposed approach may become relevant to object-centred practice outside scientific and expert knowledge contexts.

The object of the certification process as described in the previous section certainly shares many characteristics with the concept of an epistemic object: it is an object of knowledge which is not directly accessible but which can only be described by partial instantiations which fail to render the object in its entirety. These simultaneously represent and enact elements of 'organic' practice—and with each instantiation the object changes. These instantiations could display a lack that warrants further investigation (even if an inspector or certification officer decides not to pursue this); especially the inspection report constitutes a multi-layered partial object which frequently prompts a chain of questioning that could, in principle, go on indefinitely. On the other hand, many of the instantiations of the object of the certification process do not 'explode' into equally complex subsystems—their answers bring specific elements of the object in focus and complete the query. Only some elements prompt further questioning: these elements render the object partially epistemic.

Although this echoes how scientific practice "shifts back and forth between the performance of 'packaged' routine procedures and differentiated practice..." (Knorr Cetina, 2001: 187), the difference is that certification processes attempt to bring the object into

sufficient focus so that a decision can be taken to (re)certify a licensee. In other words, the epistemic qualities of the object are actively curtailed at the stage where sufficient knowledge is available for a practical decision to be taken. Even if theoretically the object of the certification process could remain indefinitely epistemic, practically this is not the case. Time and resource constraints dictate that at some point it is enough; in very practical terms the object has unfolded to the extent that there is sufficient information to conclude an enactment falls within organic standards. This is different from scientific practice, which according to Knorr Cetina (1999) is constrained by social, political, economic and technological dimensions but which is not terminated.

However, it is important to note that in the procedures of certifying licensees the knowledge object cannot remain invisible since it is the explicit aim of the certification process to make it visible so that it can be probed and investigated further. This corresponds with the proposal by Miettinen and Virkkunen (2005) to use the construct of an epistemic object to analyse how a practice "can be made into an object of enquiry in order to produce novel and alternative ways of acting" (2005: 438). According to them, practices would become epistemic objects when a social actor would analyse the practice with the purpose of improving it. At the time where the actor (e.g. a manager analysing ways of assembling) starts this process, the epistemic object is open-ended as the outcome cannot be foreseen. This suggests that practices themselves can be made the centre of objectual practice—at least on a temporary basis, until the practice under study has been transformed as a result of a reorientation of practice initiated by the designer-manager (but carried by other actors). But the knowledge-centred work of certification officers and inspectors does not necessarily lead to a transformation of how a licensee enacts 'organic'. Only if elements are found non-compliant will they require changes; enactments of organic production which fall within organic standards are not changed (in fact, officers of SACL are not allowed to give advice about how a practice could be shaped). As such I argue that the notion of epistemic practice could be extended to include those activities that routinely question (potentially) available sets

of knowledge—objectual practice centred on instantiations of sociomaterial practice—without the explicit intention to change them.

To allow for this extension however, the 'structure of wantings' needs to be developed so as to include an account of how epistemic trajectories are truncated. To accommodate the active termination of the epistemic properties of the object in the certification process, the structure of wantings takes a different shape than that implied in Knorr Cetina's notion: the unfolding is constrained in its directionality, and interrupted instead of being continued. The mutuality of the relationship between the subject and object suggests that this can stem from the object as much as from the subject. The subject (certification officer, inspector, scientist, expert) can stop acting on the incompleteness of the partial object, for instance when inferring from other partial instantiations that an unfolding the object is not likely to provide a substantially different instantiation (enactment) of the practice. Or the object ceases to be epistemic as it has yielded an answer which is sufficient—it has reverted back to a technical entity which is ready-to-hand and transparent, invisible in the performance of a packaged routine procedure. In suppressing or removing the epistemic conditions of an object, then, either process also eliminates the emotional, affective dimension of scientific epistemic practice, as well as the possibility for lateral or angular branching off as described by Knorr Cetina.

So for short time spans the procedural routines of SACL officers are punctuated by epistemic processes to resolve lacks in the epistemic object to the extent that a practical decision can be taken. While the object of the certification process always has epistemic properties, these are only investigated at set times and within specific time and resource constraints. Furthermore, the assembly of (partial) instantiations of the object is produced anew each year, incorporating knowledge from previous years and accounting for recent changes in how a licensee enacts organic. But the knowledge object of the certification process does not unfold like scientific epistemic objects: although there is an accumulation of

knowledge from successive years through previous instantiations and records[46], the object is truncated each year at a similar stage in its unfolding, i.e. as soon as there is sufficient knowledge available to infer that the licensee enacts organic in accordance with organic standards (or more precisely with authoritative interpretations which were established by the certification committee through similar epistemic processes).

The process of inferring is complex as there are no formal rules about what constitutes 'sufficient' knowledge. Some senior certification officers and inspectors commented that, based on their experience, they were able to focus on critical areas of organic practice, such as specific animal welfare issues and other areas where the integrity of a licensee's organic system could be compromised. If an unfolding of those areas, combined with the checks on paperwork and a 'feel' for how a licensee operates, does not raise questions suggests that the overall way of doing organic of a licensee is compliant with organic standards. This process therefore relies on the professional skills, knowledge and interpretation of the certification officers. Yet, as I will discuss in the next section, it is more difficult for the officers to know when they can truncate the epistemic trajectory of the object—the point at which they decide that a licensee can be (re)certified—as the process of inferring is essentially uncertain.

The necessity of being thorough and the impossibility of doing so

As suggested above, in the certification process many of the aspects of its object are simply not accessible to SACL officers. The temporal, spatial and social distribution of elements of organic practice, combined with the time and resource constraints of the officers, excludes many aspects that could warrant investigation and that could unfold if they were not invisible, not necessarily relevant or beyond resource boundaries. To address this lack of the overall object, the system of certifying licensees is built on the assumption that at least for certain elements of practice (e.g. the traceability of materials and livestock) the unfolding of

[46] Various certification officers indicated that over time they get to know the specific context of a licensee better so that certain findings can be put into context.

one empirical case of an instantiation is sufficient to represent the way in which a licensee enacts an element of doing organic. In other words, the investigated case comes to represent a particular system of organising practice. This assumption, then, provides at least one mechanism through which certification officers and inspectors can stop acting on the incompleteness of the overall object: unknowns are inferred from the elements that are available.

Capturing the (administrative) system of a licensee therefore involves an assessment of the extent to which an audit case relates to an entire system. Inspectors and certification officers need let the chosen case unfold to reveal whether or not there is a system, e.g. by concluding from other documents that it is in place, or by tracing the trajectories of other materials. This can be helped by strategically choosing the (not so) random case through which to investigate the system:

> "... I probably find these [audits] the most interesting part because it's a real chance for you to test and probe their system and see if they are as good as they are." (Christopher)
> *"Yeah, because that's the checksum on their operation." (Maarten)*
> "Yes, you pick something completely at random, me as an inspector I look through and see what other inspectors have looked at in the past, see what could be potentially areas of risk to integrity and I choose something. So, for example if previous reports have been about bedding levels not been very good or something about animal welfare, I would do an audit on straw purchases, things like that. So, I think it's a really good test of the licensee's system. [...]" (Christopher)

Christopher's remark suggests that the audit tests the entire system of producing organically, i.e. not only the administrative system but all of the instantiations through which a licensee enacts organic. However, there is a substantial element of chance in this as not all cases relate to the presence or absence of a system through which the administrative element of organic practice is organised. For example, the absence of a system may be obscured by the presence of documents (which are routinely provided by other actors, such as suppliers), or by material traces which are the result of natural processes which are not managed as part of the organic husbandry system. In reverse, the presence of a system may be obscured by an administrative error (e.g. an employee forgetting to record certain batch numbers in a ledger).

Also, a system could contain idiosyncrasies in the form of some exceptions which cannot be managed through the system (e.g. a supplier whose order process requires manual management of paperwork, potentially leading to errors in the particulars that are recorded). Finally, inspectors as well as certification officers may not spot non-compliances indicating an absent or compromised system.

These examples[47] suggest that the assumption that a check on one or two items is representative of the rigour of the systems that a licensee has in place to account for organic production creates a tension for the officers: they are caught between the necessity of being thorough and the impossibility of doing so. Yet this uncertainty need not lead to paralysis of the certification process (the inability to take decisions) or to arbitrary decision making. Rather, the process must be managed so that practical decisions can be taken—decisions that ideally should be independent from the person who inspected or who certified, and that are open to scrutiny. While the uncertainty cannot be resolved, the epistemic elements of practice are embedded in and managed through procedures: the unfolding of a few randomly chosen items is required for the certification process to function as it provides the knowledge through which a certification decision is taken. But the procedural routines define not so much what should be unfolded in what manner, but rather shape the overall certification process so that the uncertainty cannot lead to arbitrariness in how decisions are made; they standardise the process through which these decisions are taken. How this is achieved is the topic of the next section.

6.4 Controlling paperwork: performing certification

Within SACL, the certification process is standardised on several different levels and through different mechanisms: actors are controlled, activities are verified, knowledge is codified, etc. Some of these controls are clearly visible in the procedures of the SACL officers as described in section 6.2, others are less visible but they still shape those procedures. In this

[47] In fact, these examples were actual non-compliances recorded during the inspection I observed.

section I will explore a number of these controls, but before doing so it is important to note that a number of controls to standardise the certification process extend beyond the boundaries of SACL. There are certain requirements set by other actors (DEFRA, Soil Association charity) who want to ensure that the certification of licensees is done in accordance with organic standards and in a harmonised way. More broadly, attempts to standardise the certification process enact a particular form of doing certifying, which can itself be assessed. In describing how this works I start by considering how the enactment of different mechanisms of control organises the certification process, and then explore two specific routes through which aspects of the uncertainty are managed.

Tracing the certification process

As described in section 6.2, the annual certification cycle includes a number of checks and balances that are performed by different SACL officers: there are various levels of control through which a report is signed off, through which internal corrective actions are followed up and through which complaints can be escalated. Thus, there are many mechanisms of checks and balances that are in place to ensure that each action has been verified and checked again. Moreover, the work of inspectors and certification officers are assessed in various ways: inspector managers accompany each inspector for a certain number of inspections per year, and certification officers grade each report for clarity and content which is fed back to the inspection director; certification managers check how certification officers have assessed reports by 'doing' a number of randomly chosen reports of each officer to verify that no issues were missed and that the decision to certify was appropriate. To accommodate this, a large structure of data and labour has been created. All communications with licensees are logged, and all the paperwork is made available through IT. Assessments by managers are not made available but discussed with the relevant SACL officer and noted in their files so that there are traces of their performance.

Some of these mechanisms, such as the logging of all communications and documents, make available the details of each licensee so that any queries or problems can be picked up

by any officer. Other elements, such as the quality assessments, coordinate how SACL officers go about certifying licensees—not in the sense of prescribing how an inspection should be conducted or how a report should be done, but by controlling the outcomes of the activities that were performed. In principle, this should remove the potential for preferential treatment of licensees, as the outcomes should be similar no matter which inspector or officer dealt with a licensee. However, from the comments of John and Christopher quoted earlier it is clear that there still is considerable scope—and indeed a need for—flexible interpretations of how a licensee enacts organic. The various checks and balances therefore introduce a procedural mechanism through which the certification process is homogenised for each licensee: they affirm that a particular stage of the process has been completed by an officer with an appropriate level of authority.

These efforts of standardising the certification process are important not only for SACL licensees, who pay for and expect an independent and impartial service, but also for the organisation itself. In fact, without these processes SACL would not be able to offer certification services at all: the EU regulation on organic farming stipulates that any certification body must prove that it "(i) has the expertise, equipment and infrastructure required to carry out the tasks delegated to it; (ii) has a sufficient number of suitable qualified and experienced staff; and (iii) is impartial and free from any conflict of interest as regards the exercise of the tasks delegated to it" (EC, 2007: art. 27.5). The regulation also defines the way in which this should be achieved: certification bodies must be "accredited to the most recently notified version [...] of European Standard EN 45011 or ISO Guide 65 (General requirements for bodies operating product certification systems), and [...] approved by the competent authorities" (EC, 2007: art. 27.5). In other words, the way in which the organic certification process is organised is governed by another set of standards containing rules for how general certification processes should be shaped—it does not offer any substantive guidance on how the subject of the certification process (in this case organic farming) should be shaped. Certification bodies are accredited (inspected in similar ways to how SACL licensees are

certified) based on the systems which are in place to ensure that the certification process is performed in a consistent manner in accordance with EN 45011. Thus, the processes of different certification bodies are based on the same, enforced rules relating to the way in which their work is organised, matched by quality control systems[48].

This means that the processes through which SACL organises the certification process are instantiations[49] of a different standardisation process. Analogous to how instantiations in organic farming are both representative and performative, these processes organise the certification process and simultaneously enact a specific way of 'doing' certification—as specified in standard EN 45011. Inspecting licensees, doing and grading reports, assessing SACL officers, logging communications, checking stages of the process, and all of the other processes jointly enact the EN 45011 standard. It is important to note that the epistemic unfolding of items is, in this context, performative too: the traces of the unfolding as logged as requests for information, queries at the certification committee, etc., show that the unfolding took place and therefore that licensees' practices were investigated, and the extent to which this was done. As the United Kingdom Accreditation Service (UKAS) accompanies a few inspections and assesses several reports at random to verify the way in which EN 45011 is implements, tracing the certification process is essential not only for internal coordination but also to allow this external verification to take place: the records, reports, processes and procedures make traceable how certifying licensees is done and consequently allow for accreditation.

In summary, the enactment of different mechanisms of control organises the certification process so that it becomes auditable itself and thereby simultaneously reproduces both a specific, standardised and codified form of certification process and a separation between different corporate actors. Put differently, these processes coordinate 'doing certification'

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[48] This will be further detailed in Chapter 8.

[49] While they are specific to its organisation, this is not to say that other certification bodies may not employ identical or similar processes to manage how they certify licensees.

between SACL officers, between SACL and other certification bodies within and beyond the UK, and demarcate a boundary between certification bodies and other actors in the organic movement. It is important to note that this does not address the inherent uncertainty in the certification process: rather, the enactment organises how the accessible elements of organic practice are assessed. But to manage at least some aspects of the uncertainty, SACL officers employ two additional processes which coordinate knowledge and resources so that the absence of knowledge is minimised within the context of the standardised certification process. In the next two sections I describe them, starting with how knowledge is coordinated.

Coordinating knowledge

Within SACL there are several mechanisms through which knowledge about how to interpret standards is generated, verified and shared. As outlined in the introduction of the chapter, the Certification Committee plays a central role in determining how particular standards should be interpreted. Its decisions contain descriptions of how the enactment of a standard could be problematic, and what interpretations would be allowed. For instance, a standards amendment in 2009 caused some confusion about the requirements for lambs born on a farm converting to organic production. Previous standards required sheep to be kept to full organic standards from the moment they mated for their offspring to have organic status, which included being kept on organic land. To accommodate farmers in conversion, the amendment was introduced to allow the mating to take place on land in conversion rather than on organic land. However, the way in which the amendment was written was ambiguous, leaving open the status of the land onto which the lambs would need to be born so that they would have organic status—it was unclear whether the land would need to be organic or could be in conversion. The committee agenda item for this issue sets out the issue and the three options that could apply, and raises the question about which option would be a valid interpretation. The recorded decision on this is clear that the "requirements or sheep and lamb production should be consistent with other livestock categories", and therefore the committee

states which of the three options applies (ewes can be mated and lambs can be born on land in the second year of conversion).

The consequence of such decisions is that the interpretations are coordinated among SACL officers as in any subsequent case the decision informs how inspectors and certification officers will decide those cases. But the decision does more than that: the choice of one of the three specified options reduces the way in which a practice can be assessed. The descriptions of the three options contain pointers about what would be critical in assessing compliance. In this case, the deciding factor is the status of the land onto which the lambs are born and reared. Thus, it is clear that inspectors and certification officers carrying out a verification of the organic status of lambs need to consider the land status (amongst other things: feed and welfare practices will be other important aspects to consider). Consequently, the certification decision explicitly defines some of the specific points which need to be verified to assess compliance. This means that the uncertainty about a practice is reduced, perhaps marginally, by providing guidance on what very practical checks to include in the certification process.

However, the certification committee is not the only site where interpretations are established: to coordinate how different certification bodies 'do' certification, DEFRA supports the Certification Bodies Technical Working Group (CBTWG) in which all certification bodies participate to coordinate interpretations for the EU regulations (see also Chapter 8). In CBTWG, SACL is represented by Technical Manager Tom, who acts as the liaison between the certification committee and the other certification bodies. While discussing the way in which the certification bodies work together in CBTWG, Tom points out that the coordination of interpretations might lead to harmonised as well as coexisting interpretations:

> "Sometimes we ... at the end of the day we have to be as diplomatic as possible and must be able to work with them because we're not going to go away, they're not going to go away and it just creates problems but saying that at the same time where we do disagree we tell them we disagree and they might disagree with us. Sometimes we agree to disagree, or we agree one of us is wrong and we go with it. But generally we get on, really. [...]" (Tom)

In passing it became clear that while the working group coordinates interpretations, it is also a site where political and economic interests make this coordination a precarious activity. Tom mentioned that the workload of determining valid interpretations was often not distributed fairly and that this made the sharing of knowledge sometimes difficult:

> "[...] So why should they who haven't obviously put any time or effort into it say 'oh you've decided that, thanks very much, job done.' We have to be really careful of that because otherwise you start subsidising other companies." (Tom)

Tom relates the discussions of CBTWG back to the certification committee, where any proposed re-interpretations are reviewed and codified by the regular committee processes.

A similar, if less precarious, process is involved in coordinating interpretations of the additional Soil Association standards. SACL is the only certification body 'licensed' to administer the Soil Association logo. This means that while SACL might want to be flexible towards their licensees and support them as much as possible, they also need to uphold the integrity of the Soil Association standards so as not to lose their 'licence'. As Theo made clear, DEFRA and UKAS required SACL to disentangle from the Soil Association, and so there is no formal audit of SACL's manner of administering the Soil Association standards by Soil Association employees. But as Technical Manager Tamsin described, some control is exercised as the Soil Association has the final sign-off on interpretations of standards that have been developed by SACL. The technical managers meet regularly with employees from the Soil Association charity to discuss issues that emerged from certifying against organic standards. This can range from spelling mistakes to omissions and standards that do not work well in practice:

> "So [during] our bi-monthly meetings I would ask how they're going to deal with it. If they say ... well if it's been one way and they say "we don't agree with you", so I say fair enough. So if they don't agree with me we have to then deal with the interpretation that's in there and find our own way of interpreting it without doing something in the interpretation which they don't agree with." (Tom)

During my observations, Tamsin, Tom and other technical managers were in the process of writing interpretation notes for each standard so that it would be easier for inspectors and

certification officers to assess practice, and these notes would be signed off by the standards department of the Soil Association charity:

> *"What is the problem with a CO having a different interpretation from the standards department? [...]" (Maarten)*
> "[...] it can be very easy to have a basic standard and then suddenly it just goes 'pouf' and it just becomes a huge mass of interpretation 'what about this, what about that, what about this, what about that' [...] There was about, probably six years ago, a few examples where [...] we were referring too much to them and they said 'look, they're written in here, you need to interpret them as you see fit.' [...] Then there were one or two incidents a couple of years later where they went to CC and said 'how are you interpreting like that? That's not the meaning of this standard.' And then they were concerned that we'd gone off on this tangent." (Tom)

Tom's comment that basic rules can explode into many different interpretations is interesting as it suggests that the process of coordinating interpretations—the knowledge which helps contain the uncertainty in the certification process—also codifies how SACL officers relate to and certify licensees. By describing the specific characteristics of the accessible traces of compliant ways of 'doing' organic, the unfolding is directed. This reduces the need for SACL officers to investigate all aspects of an instantiation: codified interpretations define trajectories of unfolding. If an officer finds something which is not described by following this path, this is put forward to the certification committee for guidance. Thus, the differentiated practice of unfolding is organised through these standard procedures.

Managing risk

The second process which is aimed at reducing uncertainty in the certification process concerns risk management. Various SACL employees mentioned that some practices—and indeed types of licensees—were low risk, and that there was a very small chance of them being non-compliant. Other practices and licensees were deemed to be high risk as they were more often non-compliant:

> "[...] If you counted 2000 farmers against a particular standard and said 'we haven't had a non-compliance against that particular standard for five years', you

could probably hide that question to appear only every second year. You could argue you could have done that. That would be a risk based on that thing. I don't think that should actually rely on ... but your inspector, if he sees a problem could open it up again and say 'actually I have seen this.' But you could avoid asking that question." (Craig, Senior Certification Officer)

"So it's trying to streamline the process of inspection, what you're thinking about. (Maarten)

"Yes, and then just agree that [when] one particular standard's never a problem, we'll check that every seven years, but these ones on livestock welfare, all those questions, will be answered every year and thoroughly." (Craig)

There had been various attempts at trying to capture this in tools which would signal to inspectors and certification officers what to look out for. For instance, one such method involved certification officers composing a list of a licensee's critical points prior to an inspection based on available knowledge from previous years. However, this was never rolled out as it ended up being very resource-intensive for the certification officers while not saving the inspectors much time.

Yet, the idea that a tool would be able to point to those licensees and practices that would require specific attention prompted the technical managers to periodically suggest new ways of tackling this issue. During my observations, Tom was working on a tool with which officers might be able to assess the risk level of individual licensees. The tool consisted of a matrix in which different types of licensees were given points according to their history such as the number of minor, major and critical non-compliances in previous inspections, and the risk to a particular industry. Tom indicated that this was the first and very rough version, and that for the tool to be effective it would need fewer categories so that it would be easier to use. Tom explained that the idea of risk-based inspections was that the organisation could then focus on high risk licensees but that there was a need for some kind of way to quantify the risk so that SACL would be able to justify why some licensees were inspected more often. He suggested that this would help to remove the human element and that this could be seen as a positive thing as it would lead to more consistent treatment of licensees. Moreover, this would allow a more efficient use of SACL's resources (inspector and certification officer time).

Thus, the risk-based tools allow critical items to be identified, which then could be assessed in more detail to investigate the integrity of a licensee's systems in more detail—or the reduced attention to low risk elements could reduce the resources required to certify a licensee without compromising the overall certification process. The point is that these tools reduce the uncertainty of the certification process, again making explicit which elements need to be assessed and in what way in order to provide a consistent certification process. In other words, they attempt to define which trajectories of unfolding are likely to uncover non-compliant practices and which ones are likely to explore elements which are only in exceptional cases non-compliant.

It is important to note that the processes of coordinating knowledge (as described in the previous section) and managing risk are also performative: the presence of codified trajectories of unfolding, the process of establishing them, and of classifying risk categories, contributes to the enactment of a certification process in which there are verifiable mechanisms through which uncertainties in the process are contained, i.e. a process through which certification decisions are based on codified, externally verified interpretations and which can be further justified through the presence of rational decision making tools. Procedures like these reproduce a certification process in which its uncertainty is managed through the adoption of standard methods. While this does not mean that uncertainty is removed, this process allows SACL officers to cope effectively with the impossibility of being thorough: by following the agreed method, they are as thorough as they can be given the time and resource constraints.

6.5 Conclusion

Every Tuesday around lunchtime, the certification committee meeting ends when all agenda items for that week have been dealt with. The committee will have dealt with requests for permissions, critical non-compliances found during inspections, missed non-compliances found by certification officers 'doing' reports, queries on how to interpret standards, and appeals against earlier decisions. For each agenda item, the committee will have considered

the problem in relation to the Soil Association standards, the context of the issue and the way in which a licensee did or did not or intends to do something. And each case will have been decided on, often summarily by agreeing with the interpretation proposed by the submitter, sometimes explicitly stating the reasoning behind a decision, sometimes requesting more information, and sometimes referring an issue back to the standards department of the Soil Association charity, to CBTWG or to DEFRA. Having resolved the items that arose over the previous week, the committee's work is done for another week: the boundaries of organic standards that were contested through licensees' practices have been made explicit, delineated and sometimes redrawn, thus reproducing organic standards.

After lunch on Tuesdays, the certification officers who submitted an agenda item but who did not attend the meeting (most officers will indicate that they want to be called in for certain, complex cases to follow the reasoning of the committee members) access the committee database to see what was decided. They then start informing the licensees whose cases were discussed about the decision of the committee. Usually, this consists of a telephone call to discuss the outcomes of the meeting and the implications for the way in which the licensee does something, and to explain the appeal procedure in case the decision was negative for the licensee. After those conversations, the officers compose emails to those licensees to confirm what was decided, to request any necessary actions and outline the timeline for this, and to outline the appeal procedure. Subsequently, one of the technical managers checks whether the certification officers have carried out all the agreed actions and verifies that the licensees were informed in unambiguous terms about the decision and its implications. After having done these checks, the item is signed off, procedurally ending a trajectory that was, temporarily, epistemic. The agenda item has turned from an open-ended entity into a technical object: it has become ready-to-hand for the certification officer as an element in the routine packaged procedure of certifying and maintaining licensee relations. But the object is more than that: it has been added to the database so that in any subsequent similar case the object can be mobilised to inform the trajectory of the new item.

As such, what certification officers and inspectors do in their everyday activities of certifying licensees—how they enact organic standards through practice—raises some important points about how interpretations of 'organic' as applied to food and farmed commodities are enacted through the use of voluntary standards and their certification. As mentioned before, inspectors and certification officers are not merely external observers trying to reveal how a licensee enacts certain standards. While their procedures generate knowledge on the basis of which a decision can be taken about whether a licence will be issued, the activities of producing an instantiation of and subsequent questioning of the knowledge object, are such that inspectors and certification officers—and the certification committee—figure as active participants in shaping this object and therefore shaping how a particular form of farming is enacted by a licensee.

Second, parts of the knowledge object are generated through past interaction with different licensees circulate as inspectors and certification officers refer to previous committee decisions and to internally and externally coordinated interpretations of organic standards in their daily work. While the knowledge underpinning these interpretations is not made available to the licensee in question, it shapes the way in which organic standards are enacted by connecting the context and conditions of the current licensee to those of other licensees, or by questioning how certain contexts and conditions relate to organic standards (if there is no reference to previous cases). In fact, through this mechanism the enactments of different licensees become connected. While this does not necessarily mean that the enactments of organic standards by different licensees are actually uniform, by these means certain aspects of farming practice do become standardised.

Third, voluntary product standards are not only written by the standard setter (in the case of standards for organic agriculture, the EU, the Soil Association and the Biodynamic Agriculture Association), but that they are continually rewritten—re-produced—in the certification process. As such, they *are* alive: with each new interpretation and with each new instantiation they subtly change and reconfigure how a particular form of farming is and can

be enacted. What is more, this reproduction is clearly an accomplishment of different actors: inspectors and certification officers delineate and make explicit the practical meaning of organic standards in relation to how licensees practise farming for each single relevant activity or set of activities; the certification committee resolves contested boundaries by establishing interpretations; and the coordination of knowledge (both internally and externally) standardises different aspects of the certification process. Indeed, the continuous rewriting of organic standards by multiple authors through their everyday practices of certifying licensees is required to enact a standardised certification process.

Chapter 7 Making markets for organic farming

7.1 Introduction[50]

Once organic 'stuff' has been produced through certified practices, it is marketed and sold through a network of different actors (cooperatives, merchants, pack houses and retailers) until it eventually reaches consumers. At this point, a particular organic product is often situated between a number of different alternatives: not only do organic products compete with products that are either conventional or labelled differently 'sustainable' (e.g. Fairtrade), they also compete with other equally organic products. Substitution of organic products is often possible: this can be either like for like (e.g. organic milk of brand a or b), or when products that fulfil a similar role in the everyday practice of consuming food (e.g. organic carrots can be replaced by a different kind of organic vegetable). While this latter form of substitution can be influenced by marketing campaigns pushing a certain foodstuff, this does not depend on the presence of a standard, and is therefore not relevant for the way in which organic standards are enacted. In contrast, the differentiation of organic from conventional or otherwise labelled products does rely on the presence of a standard: an organic product competes with a conventional product *because* of the certified enactment of organic standards in its production.

For this label to have effect, consumers need to be aware of at least some of the differences between organic and other products. However, there is no single difference that is recognised by all consumers as distinguishing organic from conventional produce; rather, different consumers associate organic products with different benefits, including naturalness, health, various environmental benefits, animal welfare, absence of pesticides or GM, and/or taste (Soil Association, 2010a). In addition, organic means different things to different consumers at different points in time. Until recently, the organic sector did not develop any

[50] Central elements of this chapter have been published as part of the proceedings of a workshop (van der Kamp, in preparation).

concerted action to change its image—the sector grew from £100m in 1993/1994 (Soil Association, 2004) to £2.1b in 2008 (Soil Association, 2009) without a large campaign to explain what organic farming is in simple terms[51]. However, the contraction of the organic market in 2008 and 2009 as a result of the recession led to three separate major advertising campaigns to boost sales. For the sector, the scale, reach and organisation of these campaigns was unprecedented: the joint budget of the three separate campaigns topped £8m with two of the campaigns featuring TV adverts. Moreover, two of the campaigns involved a collaboration between producers and processors to promote the general concept of organic. Running from the autumn of 2010 onwards, these initiatives emphasise only some of the differences between organic and conventional production, thus strengthening specific messages about how organic is different.

The first campaign ran from 30 September until the end of 2010, and featured a TV advert in which computer-animated black and white spots on grazing cows depicted the multiple uses of organic milk (see Figure 7.1 for video stills of the advert). The message of the advert was that to change to organic milk would cost less than £1 per week for an average family, and that this was "a great way to make your day more organic". Organic equals naturalness in this advert: the images of grazing cows, and the jug of milk in the grass at the end of the advert, suggest that there have been no further processing steps apart from what cows naturally do. The strap line invited consumers to make organic milk a regular purchase: "organic milk, go organic every day". This £1m campaign was funded by the Organic Milk Suppliers Cooperative, and did not promote any specific brand of organic milk; it was intended to increase demand for the approximately five hundred dairy farmers associated with the cooperative.

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[51] The Soil Association has been active in connecting many of the recognised aspects to the 'organic brand' through various campaigns. Indeed, as Inspector John commented in 2009: "The only really solid organisation promoting the concept of organic is the Soil Association."

Figure 7.1: Stills from OMCSo (left) and Yeo Valley (right) TV adverts

The second campaign, by Yeo Valley[52], was launched on 9 October 2010, with a two-minute long TV advert in one of the breaks of the popular reality TV show 'the X-factor' in which contestants compete by singing. The advert was set up as a hiphop-style music video, and features four actors posing as farmers rapping a tribute to their work for Yeo Valley and their location in the West Country (see Figure 7.1 for stills). In addition, the lyrics contain references to the environmental achievements of Yeo Valley, and this positioned the company as a 'real leader by far' (for the full lyrics and a scene description, please refer to appendix 4). The advert is part of a £5m campaign to promote the rebranded Yeo Valley as being a premium organic brand (previously Yeo Valley also had non-organic product lines, which disappeared due to the rebranding). This campaign is based on the slogan "live in harmony", by which the company means 'live in harmony with nature'. Besides emphasising the environmental achievements, the lyrics construct organic farming as an authentic kind of farming. After the first airing, the TV adverts continued but in a regular length (30 seconds)[53],

[52] Yeo Valley is one of the largest dairy producers in the UK organic market.

[53] The full length advert was posted on internet, and went 'viral', with over 1.6m views in the middle of January 2011.

and consumers were also targeted by magazine adverts and a website with video footage of the farm and with interviews with some of the staff of Yeo Valley.

In January 2011, a third advertising campaign was launched to promote not any specific product but the organic sector as a whole. The initiators and coordinators of the campaign were the Organic Trade Board, representing the interests of producers and processors in the organic trade, and Sustain, an alliance of public interest groups promoting sustainable food and agriculture policies and practices. They secured £1m of EU funds for an information campaign which would respond to the issue identified in the 2003 EU Organic Action Plan that "consumers didn't understand what 'organic' means" (DEFRA, 2008). The funds were conditional on match funding from the member state in which the campaign was to be held, and the OTB and Sustain gained the financial support of over seventy organisations including producers, processors, certification bodies, merchants, consultancies, research centres, advocacy organisations, a bank and two major retailers. In other words, this campaign is supported by the entire organic sector, and aims to increase sales by 15% over the three years that it will run.

This campaign does not run through the medium of TV, but through adverts in some women's magazines and in the magazines of the major supermarkets. It is aimed at increasing the consumer base of organic by "[...] help[ing] consumers to discover exactly what it means and why it's worth it, with the ultimate aim of driving sales up. The adverts aim to challenge perceptions by featuring everyday individuals who would not normally be associated with buying organic" (Huw Bowles, chairman of the Organic Trade Board, quoted in Farmers Weekly [FWI, 2011]; see figure 7.2 for the two magazine adverts). What organic means according to this campaign is explained by highlighting the benefits of organic food in terms of animal welfare, environment, health and taste. This is done through a website associated with the campaign, which provides brief explanations of these benefits, and elaborates on the theme of the campaign 'Why I love organic' by providing a quiz through which consumers

can determine their reasons for buying organic. This quiz results in four different profiles which relate to the benefits listed above.

Figure 7.2: Magazine adverts of the 'Why I love organic' campaign

As such, each of the three campaigns emphasises only a few aspects of how organic is different from conventional, instead of addressing the multitude of aspects potentially recognised by consumers. They do not elaborate on the multitude of ways through which organic stuff is produced: organic is represented as a homogeneous entity. Also, none of the campaigns refers to the standards that need to be enacted in order to produce organic food. While the lyrics of the Yeo Valley advert refer to being with the Soil Association, this is not explained—rather, it provides a rhyme word for 'conservation' which is brought in to inform consumers about the environmental management that is undertaken by Yeo Valley. Explaining what organic is towards consumers consequently takes the shape of constructing difference with conventional products through a selection of benefits that organic farming delivers.

Organic standards, therefore, are invisible for consumers. What is visible is an effect of organic standards: a label indicating that a product is 'organic'. Indeed, as mentioned above, this visibility is essential for organic products to compete with other products on retailers' shelves. This raises questions about how organic standards structure difference between conventional and organic; how do standards relate to the markets that are constituted through their presence? In this chapter I specifically focus on how the enactment of standards shapes markets, i.e. the specific doings through which new markets are created. This chapter does not explicitly describe the everyday activities of market actors, as things like buying, selling and marketing are largely the same in organic and conventional markets. What I do focus on is the mechanism through which difference between conventional and organic is created and maintained, the organisation of the organic 'space', and the activities of actors attempting to provide additional coordination mechanisms in this newly created space.

The chapter will proceed as follows. In the next section I will suggest that this dynamic can be conceptualised in terms of standards being a market device, a sociotechnical arrangement through which a market is constituted, and that the process of singularisation—making something recognisable for other actors—is useful in conceptualising how boundaries between markets are made. I argue that the market device of organic standards fulfils two main functions: it establishes a clear difference between conventional markets and organic markets, but at the same time ensures that organic markets are compatible with each other. I then briefly introduce the setting of organic agriculture in the UK before arguing on the basis of my empirical data that the distributed enactment of standards results in a multiplicity of 'organics' the contours of which define a fragmented common space demarcated by boundaries that can only be partially maintained. This space and these boundaries do enable singularisation of many products (united by the organic label), but this is only possible as a result of activities to remove or suppress the multiplicity of organic standards at the final stage of marketing.

7.2 Standards as market device

The label 'organic' on a product does not tell consumers about how this product was produced; as noted above, organic standards remain invisible as consumers are only informed about the effects of the 'standards at work'. The specific trajectories of products that are governed by organic standards are folded into the single notion of 'organic' on the packaging of these products. The organic label is vital in separating markets for 'sustainable' and conventional products. But as we have seen, this status does not necessarily matter for how food is consumed: a consumer may prefer to buy an organic carrot for its 'sustainable' credentials, but this will not substantially alter the way in which the carrot will be cleaned, chopped, cooked and eaten. In short, the effect of an added quality—being organic—is most obviously important for how it segments the market. The segmentation of a market depends on two specific processes both accomplished by voluntary product standards: the first is to coordinate elements in a sociomaterial landscape (see chapters 4, 5 and 6), the result of which is (or can be) used to differentiate between products (this chapter). Second, standards specify properties of objects and processes, separating them out and making them available as a distinct category. Once established, this category can be positioned in relation to others, for example in terms of environment, health, welfare or morality. Both processes have been theorised within sociology, anthropology, and economics (e.g. Katz and Shapiro, 1985; Brunsson *et al.*, 2000; Egan, 2001; Henson and Reardon, 2005).While there are notable exceptions, many of these accounts are limited in that the market is conceptualised as a given entity, i.e. standards supposedly help organise an economic reality. As such, these accounts fail to analyse how markets are made through practice and consequently do not theorise how the enactment of standards shapes (aspects of) markets (for a brief overview of a practice based approach to markets see for instance Kjellberg and Helgesson, 2006, and Araujo *et al.*, 2008, or for a longer argument for studying the enactment of markets see MacKenzie, 2009b, and Araujo, *et al.*, 2010a). For the purpose of this chapter I mobilise two conceptualisations which specifically address the enactment of markets (Callon, 1998).

To conceptualise the way in which standards coordinate elements in a sociomaterial landscape, I draw on the idea of a market device as proposed by Muniesa *et al.* (2007). They see this as a specific form of an economic agencement, i.e. a socio-technical agencement that enacts particular forms of what it is to be 'economic' (2007: 4). In other words, a market device is the arrangement of actors, institutions and objects through which specific objects or processes are rendered 'economic', where Muniesa *et al.* emphasise 'rendering' rather than what 'economic' should mean. They argue that the meaning of 'economic' in the context of a particular agencement is the outcome of a process of "economization" which is historical, contingent and disputable. Thus, market devices are "...objects, instruments, tools and techniques (i.e., technologies in the largest sense, that enable market activities" (Muniesa, 2008: 291). For instance, Sjögren and Helgesson (2007) discuss how different pharmaceuticals and treatments are made commensurable, i.e. economised, through the concept of the quality-adjusted-life-year (QALY). The metrology of the QALY mediates between different pre-existing classification schemes for drugs and allows policy makers to determine which treatments will be reimbursable. Therefore, the QALY as a market device allows the comparison of differently framed treatments on an economic basis: through a historical, contingent process different treatments have become economic (exchangeable) within the space created by the QALY. Other examples of market devices are things like pricing equations which contribute to the construction of financial markets (MacKenzie, 2006), telephones which configure how trades are made in trading rooms of financial institutions (Muniesa, 2008), or schemes through which different carbon markets are made commensurable (MacKenzie, 2009a).

Applying the concept of market device to a sociotechnical arrangement formed by standards and the associated complex of actors and objects implies that voluntary product standards, unlike the QALY, construct an additional quality on the basis of which a completely new set of markets is made. More precisely, an existing market is redefined as 'conventional', and in parallel a similar market emerges which is 'qualified'. The main point

is that the presence of standards makes the conventional market fundamentally incompatible with the 'qualified' market: conventional products are by definition excluded from the 'qualified' market. Thus, by coordinating a sociomaterial landscape through classification (Bowker and Star, 2000), standards create markets and simultaneously erect a boundary between those markets and the 'unqualified' markets. However, as suggested above, they do more. If a standard governs more than one market (for instance organic standards govern arable and livestock agriculture as well as aquaculture and processing), all of these 'qualified' markets become compatible: products from one market can serve as input to products in other markets (this is not dissimilar to what the QALY does). This coordination of markets internal to the market device is a result of the specifying property of standards: when technical properties of objects and practices are specified in similar terms, these objects and practices become compatible—they can circulate in the common space defined by organic standards.

The process of differentiation is about how to make the boundary between conventional and 'qualified' products visible for consumers and actors within supply chains. Actors such as the standard setter, the adopter and the actor verifying the adoption are involved in this, as they classify products and processes within what Callon *et al.* (2002) termed an 'economy of qualities'. They argue that competition in an economy of qualities is structured through singularisation of products and the attachment/detachment of consumers to goods. Crudely put, singularisation is a process of making something distinct, bounded, familiar, recognisable. But this process of letting something (a product) stand out requires that there is a basis of resemblance with other products: "[t]he singularization of a product, which allows its attachment to a particular consumer, is obtained against a background of similitude" (Callon *et al.*, 2002: 203). Hence, the visible presence of an additional quality (such as a standard or its associated label or logo) helps in making a product singular in a particular way: this product was produced in accordance with additional standards whereas another, similar, product was not. In other words, the process of singularising products reproduces one or more

of the boundaries introduced by the market device. Therefore, the singularisation of products enacts the market-constituting component of the market device.

Thus, the concepts of market device and singularisation are powerful tools to analyse how markets are performed: they draw attention to the ways in which markets are constituted through different sets of practices (see also Kjellberg and Helgesson, 2006, and Araujo *et al.*, 2010a). Yet, although these concepts do help shed some light on how constellations of actors are involved in enacting standards and markets, they do not reveal the specific practices through which boundaries are created and maintained between conventional and 'sustainable' markets, or show how compatibility within 'qualified' markets is organised. In the next section I therefore examine how these processes relate to the enactment of standards for organic agriculture in the UK.

7.3 Cultivating exclusion

> *"But for an inspector coming along is it easy to verify which one is which and which variety, physically do they look different?" (MvdK)*
> "No. No, they look identical, except that maybe the organic [grain] will have more weed seeds in it, in the sample, and the non-organic will be a cleaner sample, maybe. Having said that all the crops go through a cleaner so by the end of it, it should be fairly similar." (Farm manager Fergus)

From the moment a crop is harvested and cleaned, there are few ways, if at all, of distinguishing whether it was grown organically: it is impossible for consumers, and even for processors in a supply chain, to assess how a product was grown. Thus, the visible application of the label 'organic' is the only way through which products can be singularised on retailers' shelves and throughout supply chains. However, this label 'organic' itself is not singular: as discussed in the previous chapter and in Chapter 3, there are multiple certification bodies which all have their own ways of certifying licensees—even with the standardised certification processes and the coordinated interpretations. Moreover, the historical importance of the Soil Association in setting organic standards before the introduction of the EU regulation, the UK policy context is particular in that private standard setters are allowed to add standards beyond the regulatory minimum. This means that DEFRA requires each of

the seven certification bodies to administer the European regulation as the legal minimum, but beyond that each body can include additional standards against which practices will be assessed. Most notable, two schemes, the Soil Association and the Biodynamic Agricultural Association, have additional standards which are regarded as higher (stricter) than the legal minimum. Some of these additional standards are prominently marketed in the public domain with claims that these schemes for instance provide better animal welfare and restrict the presence of Genetically Modified Organisms (GMOs) even further.

As such, there are multiple versions of organic standards. They have the EU regulation in common, but beyond that they vary in their interpretation of how organic agriculture should be practised. Therefore, producers have access to different channels through which they can singularise their products: as Soil Association organic, Biodynamic (Demeter) organic, or 'plain' organic (which means according to the EU regulations, not including additional standards). Being certified by for example the Soil Association may require compliance with standards beyond the legal minimum, but in return provide additional benefits in the market due to the Soil Association's stance on animal welfare. This would suggest that the certification bodies are in competition with each other over what their version of organic standards offer producers. However, for most farmers this seems less relevant than other factors:

> "I honestly think that most farmers are making choices based on what they know their neighbours to be doing, or in some cases looking at the cost of the certification scheme rather than a detailed consideration, what the differences and standards are. I think the standards are too long and complicated for most farmers to spend a lot of time making contrasts, so if their neighbour says something they'll go with it or if their adviser says something they'll go with that." (Roland)

For producers in the smaller nations of the UK, social identity is an additional dimension to choosing a scheme: Roland added that over the last few years farmers in Wales and Scotland had chosen for a regional scheme specifically because the scheme is operated for Welsh or Scottish producers.

But social networks and cost of the schemes are not the only deciding factors. My respondents described how in general farmers navigate a complex world full of general and specific farming practice, regulations, European and UK agricultural policy measures, standards, and markets for produce as well as services. In attempts to coordinate some of these elements and to manage their implications in relation to the characteristics of individual farms, farmers, consultants, contractors, managers and NGOs take on varying roles and provide a wide range of services to each other. Farmers can buy in services ranging from technical expertise and agronomy to marketing support and from equipment and manpower to administrative services. In this field, certification bodies, dedicated sector organisations, trade associations and mainstream service providers are competing to deliver different levels of service with different levels of competence. To help producers manage some of these complexities, some of the organic schemes offer additional services alongside organic certification, such as general farm assurance schemes and access to advice. For farmers this is attractive as in a combined scheme multiple certificates are assessed during one inspection, an arrangement that reduces the number of inspections. For one of my respondents this was a sufficient advantage to remain licensed with a certification body while being dissatisfied with how the organisation had failed to support her on some organic matters:

> "There is a lot of story to that, but I sort of felt somewhat let down by them and I have considered going, there are other smaller organisations and I'm somebody who the smaller the organisation is the more I like it, but what they're offering me now, which has kept me with them is the […] general farm assurance certification as well as the organic in one package." (Farmer Frances)

So rather than contrasting the technical details of different sets of standards, most farmers choose a certification scheme based on social, economic and operational considerations which relate to the setting in which the scheme is to operate. While certification bodies cannot shape the social network of a farmer, they can influence these considerations through the cost of the scheme and the additional services provided. This suggests that, rather than there being a market just for standards, there is a market for services surrounding certification: different versions of organic standards are not in direct competition but can coexist as each certification

scheme provides a slightly different package. The EU regulation provides the common basis on which the different schemes can connect (a point I will return to below), but other than that each individual set of standards and related services constitutes a distinct package.

However, this is not to suggest that the specific interpretations of how organic agriculture should be practised are not relevant: the farmers who do choose actively between different certification bodies do so, according to a consultant, based on their 'ethical' stance towards organic farming. He suggested that if the organic principles are leading in the choice, farmers would choose higher standards, but where going organic is essentially a means to access that market, farmers might choose lower standards. This was echoed by a number of respondents:

> "So there's a tension there between producers who are driven by the organic principles and who use the standards way of supporting and being able to achieve those principles; and producers who are looking just to access the market and the standards are a necessary hurdle to get over but they're not particularly worried about going any further steps." (Researcher Roland)

> "So, you have the purist is too strong, but the people who really take the principles to heart and say the true road is the only one we should go. You've got the Soil Association who are a bit below that. They certainly got far above the minimum standards but they still see the practical issues. Then you've got a few people, you've got another, you then grade down through that to people who are looking at it very much more on a commercial basis and the standards, and the actual production that's happened is much ... has come together much more over time, certainly." (Policy maker Peter)

These comments suggest that that the way in which standards are positioned and viewed differs: for commercially minded producers compliance with standards is a means to market, but for producers for whom there is an ideal organic to work towards organic standards provide guidance on how to get to that point. As such, this leads to the enactment of different 'organics'. But while these producers might still draw on the same sets of standards, there are other ways in which different 'organics' are enacted:

> "That provides quite an interesting issue for debate at the moment as to who owns the organic idea. Is organic just defined by the standards and the regulations? Is there any other concept of organic that is separate from that? There is a group which will say 'we are uncomfortable with the way organic is now reflected in standards, but we believe it should be more than those' ... People talk about

> 'beyond organic' as a sort of phrase. ... It seems to me this division between certified organic and other more radical ideas is a matter of degree rather than a fundamental split but that's one of the debates that's ongoing." (Roland)

> "... there's quite a lot of Eastern European, Eurasian organic arable production that is very dubious in terms of the certification and I don't mean that in terms of 'oh well, it's conventionally produced and they just falsify documentation and sell it as organic'. There is quite a lot of evidence that natural grass load is being ploughed in order to produce cereals ... [but] it isn't what I would consider to be organic in terms of there's no fertility building, there's no rotation of the land ... I see that as an exploitation of natural resource which doesn't for me fit very comfortably with the organic principle." (Merchant Michael)

Again, this implies that there is a multiplicity of 'organics': they are different objects which are enacted through different instantiations of market making. Some versions are codified by standards, but there are also 'organics' which are enacted at a distance from standards. It is nonetheless important to remember that differences between standards and approaches to implementing them are suppressed so as not to confuse consumers (although some specific differences in codified 'organics' are emphasised, e.g. Soil Association welfare standards)[54]:

> "Yes, which is where the danger is, that the consumer doesn't care about the plethora of standard bodies, it just wants to buy organic food and it thinks it's all the same and it thinks it's all organic. … because if we give the consumer all this confusion they're just going to walk away." (Adviser Adrian)

Many respondents made similar comments, which suggests that competing over standards is difficult: most differences between schemes need to be suppressed in relation to the consumer. Thus, boundaries within the organic sector are subdued so as to protect it from losing consumers to schemes perceived to be less ambiguous (such as free-range). In effect maintaining the boundaries of this essentially homogenised image of organic with

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[54] It could be argued that if consumers would choose their products arbitrarily, retaining the notion of different 'organics' would not be necessary. While this may appear so for many products, the difference between some of the codified organics is emphasised towards consumers through a small selection of products. What is more, while for consumers there might not be a discernible difference between products marketed through different instantiations, it is relevant to actors in supply chains as it affects the markets for inputs and feeds (as I will explain below).

conventional agriculture depends on glossing over differences in the practices that are allowed. Some respondents gave specific examples of this: the fact that animal feed rations can be partly non-organic (due to shortages in organic supply), and how conventional marketing mechanisms (which, to some, do not always reflect the organic principles) had become part of organic trade in response to supermarket pressure. Merchant Michael, who was concerned with the marketing mechanisms, suggested that all actors in the organic sector had "become part of the conspiracy" so as not to "undermine what the organic brand is". He suggested that disentangling organic products from their 'conventional' (and essentially anti-organic) market structures would be near impossible as this would inevitably lead to disqualification of a substantial range of products which would damage consumer confidence in organic agriculture. In contrast, Adrian, who talked at length about the feed issue, suggested that the organic sector would need to inform consumers about the way in which the current standards allow non-organic elements in organic production systems—mainly to pre-empt negative publicity which would damage the organic sector. He described current practice as 'near organic' and argued that the separation between organic and conventional should be complete rather than partial.

These points seem to suggest that even if the enactment of these organics in local practice is very different, the diffusion of 'organic' in general depends on preserving this as a coherent term. This diffusion is possible through the qualifying mechanism in organic standards: what counts for consumers are the elements which draw on moral claims, i.e. the differences between organic and conventional products (see for example Larssæther, 2010); the technical elements of how organic farming practices and certification are coordinated and performed are irrelevant to consumers in their everyday consumption of organic foods. Hence, the detail of organic standards remains invisible.

But consumer markets are not the only markets which are shaped through the market device: the markets for inputs and livestock feed are configured as well. For instance, most cereals grown will go into feed rations for livestock; they 'disappear' in the supply chain

before hitting the shelves. This means that the differences between multiple 'organics' within supply chains need to be managed to facilitate trade. Moreover, there is not one single organic market, but many different markets that need to be made compatible. As such, the different organics need to be managed throughout supply chains. The EU regulations form the basis for this, and my respondents indicated that actors regard certified organic ingredients as unproblematic within the supply chain (see also the next chapter). Trade within supply chains is managed on a practical level by going back to legal minimum—all products are singularised as 'plain' organic. Therefore, the regulations coordinate between different organics by providing common standards through which different, partly overlapping markets become compatible. However, as the Soil Association and Biodynamic standards are in some areas higher than the EU minimum, there are issues of equivalence for some products. For example, if a product like a chicken and leek pie is to be sold as Soil Association certified, all ingredients must be in line with Soil Association standards—including the chicken or egg which might come from a producer licensed by a different certification body. This is resolved by an abbreviated checklist of items that other certification bodies need to have checked while inspecting their licensees. There are sometimes tensions around this process, but it seems that differences in 'organics' have been negotiated away at least as far as the supply chain is concerned.

But the coordination provided by the regulation is not complete: while the practical trajectory of crops and products is made possible by the regulation and equivalence checks, this does not mean the linked markets are coordinated. For example, some respondents commented that there is a disparity between the supply and demand of organic cereals and protein crops for the dairy and beef industry. They suggested that the organic dairy and beef sectors grew rapidly, but that the arable sector was not able to grow at the same rate[55]. This led to the allowance of non-organic protein and cereal crops as livestock feed, making it

[55] As will be clear from my discussion in Chapter 4, converting cattle based enterprises to organic is fairly easy, especially compared to converting arable operations.

harder for organic arable producers to find a market for their organic crops. Adrian argued that this had 'stunted' the development of the organic cereal sector. He suggested that if the growth of the markets had been coordinated, this would have resulted in a more balanced organic sector—although the sector overall would have grown slower. This suggests that the common space delineated by the diverse organic markets—the organic sector—is fragmented[56]. This stretches beyond disparities between markets: several respondents described how they attempted to provide coordination mechanisms beyond those provided by organic standards so as to help producers navigate this fragmented space.

For instance, to address the opacity that characterises organic market transaction, a marketing organisation is trying to coordinate market transactions so that there is more transparency in the supply chain and so that farmers can gain a reasonable profit while leaving others in the chain with equally reasonable profits. To improve the quality of advice services available to farmers, a group of consultants is trying to establish standards for organic advice. Consultancies host events to facilitate the sharing and exchange of knowledge between farmers and consultants. Meanwhile, the certification bodies coordinate on how to interpret common standards so that the integrity of organic standards is maintained and so that farmers are inspected in a comparable way. DEFRA is trying to coordinate how standards for organic agriculture as enshrined in the EU regulations are administered, how new standards will be implemented and how the organic sector is supported. The two main research centres for organic agriculture are trying to coordinate research that is conducted and ensure that information and knowledge is disseminated, for example by organising discussion groups among farmers.

Although not all of these coordination attempts are aimed at the same level, their presence implies that the actors involved want to provide some kind of integration or sharing

[56] While this is noticeable at the level of producers and traders, for consumers this is not visible: the greatest fragmentation is between grain-fed livestock enterprises and feed cereals (cereals used in consumer products—e.g. bread or steak and ale pie—are of a different grade than feed cereals, and therefore this fragmentation is not visible through cereal shortages in consumer markets).

in areas related to organic standards but where the standards do not reach. More importantly, these actors are all situated in the organic sector: there are no coordination attempts which specifically address the organisation of the organic sector by actors active in both the conventional and organic spaces (e.g. the National Farmers' Union, large corporations). In fact, the practices of boundary-spanning corporate actors result in strong interactions between qualified markets and their conventional counterparts. For instance, the price fluctuations of organic cereals over the past five years tracked the fluctuations of conventional cereals. Various respondents indicated that although there are a number of specialised merchants who trade only organic produce, large quantities of organic produce is marketed by large traders who mostly trade conventional produce and for whom organic is a niche market. This implies that while organic standards constitute principally and technically different markets from their conventional counterparts, the organisation of trade in these markets strongly links conventional and organic markets. Put differently, as a market device organic standards configure only specific aspects of the markets they constitute: they render organic products 'economic' but do not necessarily configure the socioeconomic relations through which these markets are enacted.

7.4 Conclusion: enacting standards, multiple organics

This chapter illustrates some of the ways in which standards enable market activities. It is clear that from a theoretical point standards could be considered a very strong market device in that they make 'qualified' products fundamentally incompatible with 'unqualified' products. However, as the empirical case shows, it is not possible to establish a market for 'sustainable' products through standards alone. The multi-sited reproduction of different versions of organic standards results in a multiplicity of organics which are enacted through a horizontally and vertically segmented array of markets. These markets require additional coordination mechanisms to maintain the compatibility required for the functioning of the organic sector—these mechanisms are integral to the market device. But the resulting boundaries with other markets, and the constructed compatibility among 'qualified' markets,

are homogenised only to a limited extent. While diverse organic standards act as market device that renders organic products 'economic', this is not the whole story. The distributed enactment of multiple organic standards results in a multiplicity of markets which is characterised by a fragmented common space and boundaries that can only be partially maintained. This space and these boundaries do enable singularisation of products, but to do so require the performance of three related activities by a number of actors: simplification of 'organic' to consumers, active suppression of controversies and internal differences towards consumers and within supply chains, and the provision of coordination mechanisms not embedded in organic standards. A crucial aspect here is the need to remove or suppress the multiplicity of organic standards at the final stage of marketing as part of a 'totalising' strategy to format market exchanges (Araujo *et al.*, 2010b: 236) so that 'organic' can be constructed as a homogeneous entity which provides clear and distinct benefits.

Chapter 8 Policy interventions for organic farming

8.1 Introduction

In Chapters 4 and 5 I described different aspects of 'doing' organic, and discussed some implications of 'going' organic. But doing organic is not only set in general farming practice, it is also set in a policy context which in part shapes how organic can be done. For example, in the stage prior to going organic, a farmer explores and finds out what going and doing organic would entail for his or her farm. Some farmers will attend events where organic farming is explained, others may visit colleagues on organic holdings, and yet again others may discuss options with a consultant or with a representative of a certification body. Apart from these routes, there is one formal channel through which farmers can receive information and advice about organic farming and the conversion process. The DEFRA-funded Organic Conversion Information Service (OCIS) provides support for farmers thinking about conversion by offering information leaflets, a freephone helpline and free on-farm visits where experienced organic consultants provide advice about whether a holding could be run to organic standards, about the certification process and about what conversion would mean for the farm in terms of business planning, marketing of produce and some agronomic considerations. Since converting a farm will lead to a substantial loss of income during the conversion time (usually two years) as land is taken out of production to build fertility in the soil, the advice will certainly include information on funding available to support farmers going and doing organic. In England[57], there is currently one scheme offering subsidies for this: DEFRA funds the Organic Entry-Level Stewardship (OELS) to provide a conversion grant and subsidies for the organic management of land.

As a policy intervention by DEFRA to support organic farmers, OCIS and OELS apply equally to dairy farmers in the West Country, arable farmers in East Anglia, poultry rearers in

[57] In Wales, Scotland and Northern Ireland there are nation-specific schemes funded by the devolved governments of these nations.

Lincolnshire, sheep farmers in Cumbria, and vegetable growers in Kent irrespective of the social, economic or material conditions of the farm. Another intervention for the organic sector regulates the certification process by controlling and coordinating between the certification bodies. These interventions therefore are intended to (re)shape how complexes of practice are or can be enacted. As policy makers cannot go out and monitor and steer each and every individual enactment, they try to structure at least some of the dimensions of possible enactments by providing rules, incentives, penalties, etc. Some of these mechanisms enable a practice by constraining possible performances (regulatory structures), others try to shape individual performances (funding). Thus, the policy interventions for organic farming in England shape certain aspects of 'doing' organic in all of its multiplicity. How is this achieved? In particular, how are these interventions configured to enable and constrain how organic can be enacted in the UK? In this chapter I examine the national and international layering of regulation on organic farming and the policy support for the organic sector in England.

As such, the empirical story moves away from specific organic standards like the Soil Association standards as the policy interventions discussed here are based on the EU regulation. Therefore, this chapter is not about the enactment of standards in a direct sense, but about "how policy functions in the shaping of society" (Wedel *et al.*, 2005: 35), or more precisely in the shaping of a particular segment of agricultural practice. In this, I do not attempt to deconstruct what the policy[58] for organic farming is or whether this is effectively achieved. Instead, I focus on the configuration of specific policy interventions, a term which I will use to describe the actual instruments employed by policy makers in attempts to reshape how practices are enacted. Although I will provide some details of the policy goals around which these interventions are designed, I will not examine in detail how these goals were

[58] (Public) policy as a concept is very hard to authoritatively define, as Wedel *et al.* (2005) have pointed out, and trying to do so would not be of interest to the current discussion.

defined or how they shape specific discourses around organic farming. For more details about the historical emergence of these goals, see Tomlinson (2008, 2010).

The chapter proceeds as follows: in the next section I argue that policy interventions are at the intersection of practice and the doing of policy making, the latter being a situated practice itself. I suggest that the way in which they affect sets of practices requires describing them in terms of the type of instrument (regulatory, incentives, etc.), which practices are targeted, the components and infrastructures which are required for their enactment, and the conditions under which they were designed. Based on this notion, I suggest that there are two policy interventions for organic farming in England in the form of a regulatory structure and financial and advisory support for farmers. In sections 8.3 and 8.4 I describe how these policy interventions are configured. I suggest that the regulatory structure forms a precondition to doing organic, and that the support for farmers is framed as providing public benefits. I argue that this support is based on devices which establish a simple, quantifiable relation between organic farming and environmental benefit—devices in which a singular organic is mobilised. In section 8.5 I argue that policy makers are actively involved in homogenising the organic sector in a way which proceeds alongside, but not in the same way, as that involved in the construction of 'organic' as a single, recognisable category in terms of which consumption can be organised. I conclude that policy making does not determine what organic is, but that it establishes a frame in which farmers respond and to which they adjust what they do.

8.2 Shaping practice through policy interventions

Interventions at the intersection of practices

Policy interventions are usually designed to provide benefits to particular societal segments or even entire societies through the reshaping of what actors in that sphere of social interaction do. While governments cannot "flick a switch [so that] everything happens" (Lang, 1998: 110), policy makers can try to influence practitioners by means of a number of different instruments, such as legislation, subsidies, sanctions or discursive framings, which can be

applied to specific classes of activity and in particular (or sometimes general) settings depending on the conditions of the intervention. When they take the form of general rules (for example the culling of all animals at risk of Bovine Spongiform Encephalopathy [BSE] whether or not they have the disease; Hinchcliffe, 2001), policy interventions are intended to affect interconnected sets of practices carried by different actors rather than focus on changing one particular practice (in the example of BSE, this included farmers, vets, administrators, etc.; see Law, 2010). But to talk of general rules does not mean that they are generic, or context independent: the trajectory of a policy intervention is the outcome of a social and political process governed by historically contingent administrative and (dominant) discursive practices. As various practice-based studies of policy making (e.g. Hajer, 1995; Wagenaar and Cook, 2003; Wagenaar, 2004, Laws and Hajer, 2006; Tomlinson, 2008) have shown, interventions are not just designed and implemented in a top-down approach: they have a much more emergent and negotiated character as general rules need to be tinkered with to make policy interventions work.

Despite the interesting insights that these studies offer, the relation between the 'doing' of policy making and the reshaping of practitioners' doings has not been conceptualised in terms that are useful for the current discussion. Also, in accounts that develop theories of practice (e.g. Giddens, 1984; Schatzki, 1996), the intersection of practices carried by different sets of actors (such as policy makers and farmers) has not been explicitly described. For instance, Schatzki (1996) refers to the possibility of orchestration through which practices can be directed, but this would, as I read it, still come from actors associated with the orchestrated practice. Finally, accounts which describe how practices change over time and space (e.g. Shove, 2003; Shove and Pantzar, 2005, Warde, 2005, Shove *et al.*, 2007; Shove *et al.*, 2009) focus on the dynamics of emergence, reproduction and disappearance of individual practices; they do not necessarily examine the relation between practices and the policy context in which these practices are enacted.

One recent study describes more specifically how policy and practice are related: Shove and Walker (2010) provide some useful considerations of how policy interventions influence practices. Their account contributes to a debate in the literature on infrastructural transitions towards sustainability by opening up questions about how such transitions can be governed by policy makers given the dynamics of how practices are reproduced and how they emerge and disappear. They illustrate how interventions have unintended consequences alongside intended outcomes, and argue that both types of outcomes are unstable and emergent in that constituent elements are continuously reconfigured in relation to each other. As there is "a central role that practitioners themselves play in generating, sustaining and overthrowing everyday practices" (2010: 476), the governance of practice cannot be understood adequately if the role of practitioners is limited to being mere 'users' of a infrastructure which is shaped solely by policy makers and corporate actors. Instead, by emphasising the uncontrollable character of how practices change, Shove and Walker argue that policy makers and corporate actors can no longer be regarded as the key players in how practices change and transform into more or less sustainable configurations. This implies that policy makers and corporate actors can only control a limited array of conditions governing the enactment of practice. What is more, they do not steer from an external position:

> "[...] it is misleading to imagine or suppose the existence of sources or forces of influence that are somehow external to the reproduction and transformation of practice. [...] Yet these actors can and do influence the availability and circulation of elements knitted together in the course of daily life." (2010: 475)

As such, policy interventions shape *some* of the conditions which enable and constrain how practices are enacted—not as an external influence on practice but perhaps by modifying the 'elements' of which practices are constituted. Hence, a policy intervention is located at the intersection of practices: they connect particular activities in administrative practice to the activities of groups of actors enacting interrelated sets of practice, i.e. complexes which are to be reshaped or adjusted through the policy intervention.

To conceptualise how policy interventions relate to the complex patterns of practice, it is helpful to consider one of the empirical cases in Shove and Walker's article—the introduction of the London congestion charge scheme in 2003. In its simplest form, this scheme depends on enforcing a rule: a fixed charge applies to those who drive a car into the central London charging zone between defined times during the day[59]. On its own, this rule would do little to change patterns of mobility in and around the congestion charge zone. To enforce it, many further elements are required, for example traffic cameras, signage, a complex technological infrastructure, pay-points, a financial management and debt recovery system, and many more. Jointly, these elements make up the infrastructure through which the policy intervention is made real. From this example, several relevant points can be made: firstly, this intervention is based on several components, namely rules (codified in legislation), money and legally sanctioned mechanisms for its administration. Some of these instruments are only available to policy makers: no other actor would be able to capture rules in legislation or mobilise sanctions such as fines. Secondly, the constituting components are mobilised not in isolation, but as entities that hang together as the intervention contains prescriptions of how they refer to each other. Thirdly, each of these components comes with its own, often complex infrastructure(s) for its enactment (e.g. a banking system, a system of sanctions). In fact, without these systems such components could not be mobilised.

These components set conditions for certain modes of doing things—including an attempt to re-structure practices. This attempt is based on an ability to control elements which are likely to influence what practitioners do. For example, coercive resources set different conditions compared to incentives or information provision; but not all actors are equally susceptible to coercion—for some, other instruments may be more suitable to effecting change. Moreover, as noted above, policy making is itself locally situated. Policy goals and

[59] When the scheme was introduced, the charge was £5 between 7am and 6.30pm. In 2005 the charge was elevated to £8, and in 2007 the charge period was shortened to 6pm while the charge area was extended.

priorities are subject to changes in the social, economic and political context of 'doing' policy making. For example, initiatives to cut red tape for practitioners, budget cuts, and political changes in government affect the extent to which certain instruments (e.g. rules, sanctions, incentives, enforcement mechanisms, with their infrastructures) can be mobilised.

These points suggest that to examine the way in which policy interventions affect sets of practices requires describing them not only in terms of the type of instrument (regulatory, incentives, etc.) and which practices are targeted, but also in terms of the components and infrastructures which are required for their enactment, and the conditions under which they were designed. Before analysing in detail the policy interventions for organic agriculture as enacted in the UK in subsequent sections, I briefly sketch out the historical emergence of the policy context for organic farming, and describe the two policy interventions which shaped the organic sector at the time of my fieldwork.

Policy interventions for organic farming

> "[...] I think the big changes in the last two decades organic farming has become an accepted part of government policy for achieving marketing and environmental marketing rules and long term goals; whereas right through until the late 1980s most governments would have felt that it was contradictory to what they were trying to achieve so there's been a big shift in government attitude. That has changed the types of policies that are available." (Researcher Roland)

Until the late 1980s EU agricultural policy was aimed at increasing productivity through technological development. In organic farming, a number of those key technologies were rejected which meant that there was no government support for organic farming. From the mid-1980s, the increase in consumer demand for organic produce and problems with environmental degradation and surplus production led to the recognition that organic farming could potentially contribute to policy objectives (Padel and Lampkin, 2007). After national standards were drawn up in various EU member states in the 1980s (mostly to protect consumers from fraud), the first EU regulation on organic food (EC, 1991) was published in 1991 (to be effective from 1 January 1993). In accordance with this regulation, the UK

government passed its own Organic Products Regulation in 1992, in which the requirements of the EU regulation were embedded in UK law. After a number of updates, the UK government passed a revised regulation in 2004, and again in 2009, the latter on the basis of the updated EU regulation on organic production (EC, 2007).

Secondly, the Ministry of Agriculture, Forestry and Fisheries (MAFF) introduced financial aid for converting farms in the UK in 1994 alongside support for marketing initiatives and research, followed by the Organic Conversion Information Service in 1996 (Padel, 2001). Both policy interventions were specifically intended to expand consumer choice and support an infant industry to the point where it could independently compete in established markets (Padel and Lampkin, 2007). Specifically, the objective of increasing the market was tied to the proportion of organic produce supplied by British farmers to the home market: in 2002, they supplied around 30% of all organic produce consumed in the UK, and DEFRA policy was to increase this to at least 70%, mirroring the UK market share for home-grown conventional produce (DEFRA, 2002). However, the financial aid was delivered as part of an EU-wide scheme promoting the management of environmental objectives through farming (albeit that individual member states could define how much would be paid), and by the time I did my fieldwork, policy support was formally no longer to support a fledgling market but only for the 'public good' aspect of organic farming:

> "The department's policy is to encourage and support organic farming because of the environmental public benefits that it delivers. We recognise that it's good for consumers to have a choice and the organic farming adds to that choice but that's more a recognition of the fact rather than a reason for a support." (Policy maker Philip)

Philip explained that the main environmental benefit provided by organic farming is the increase in biodiversity on organic farms. He also indicated that organic farming "could be a tool for climate change mitigation", but that this is not formally recognised yet. A secondary driver for policy support is the benefit that organic farming can deliver "for the rural economy, partly in terms of employment but partly organic farming, the research evidence seems to show, attracts a younger, more dynamic type of farmer who is interested in

something new". But Philip was also quick to point out that "we don't, I'd better say quickly, support it because we think it produces a more healthy, more nutritious product." (Philip).

Combined with the regulatory requirements for enacting the EU regulation, this general policy translates into two policy interventions for England[60]:

- implementing of the EU regulations in the UK context and controlling the certification bodies through direct and indirect control;
- supporting farmers through information provision, including through OCIS, the Institute of Organic Training and Advice (IOTA) and research institutions; and supporting farmers financially, through an organic option in the agri-environment scheme available in England.

In the sections that follow, I will examine for each of these interventions how they are shaped and what the implications are for how certification and farming are done.

8.3 Coordinating a UK-wide interpretation of the EU regulation

To organise the enactment of the EU regulations in member states, the EU regulation on organic production stipulates that each member state should appoint a so-called competent authority to oversee the "organisation of official controls in the field of organic production in accordance with the provisions set out under this Regulation..." (EC, 2007: art. 2.n). In most EU member states, including the UK, this means that a ministry (usually of food and/or agriculture) is legally responsible for the effective implementation of the regulations in the context of the member state. These 'official controls' required to implement the EU regulation include at least three things. Firstly, competent authorities must ensure that the EU regulation is embedded in their national regulatory systems. In the UK, this is achieved through a Statutory Instrument (HMSO, 2009), which makes a number of clauses in the EU regulations

[60] In Wales, Scotland and Northern Ireland the support for farmers is shaped by the devolved governments. This means that DEFRA is the competent authority and legislator for the EU regulation for the whole of the UK, and responsible for farmer support only for England.

specific to the UK context. For example, it defines relevant actors (such as the competent authority), states the exceptions and derogations that can be administered by certification bodies without reference to DEFRA, provides the conditions under which organic products can be imported into the UK, stipulates the structure of sanctions, etc. This means that through these generally applicable rules, rather than replicating the EU regulations, the UK regulations make explicit how the EU regulations are administered in the UK.

The second aspect of implementing the EU regulation is to organise the certification of producers. The EU regulation allows the competent authority to devolve the day-to-day activities of inspecting and certifying licensees to either a public administrative organisation or to one or more "independent private third part[ies]" (EC, 2007: art. 2.p). In the latter case, the regulation stipulates that member states should "designate authorities responsible for the approval and supervision of such bodies" (EC, 2007: art. 27.4.b). The EU regulation includes a number of criteria that an organisation needs to comply with before it can be considered for a licence to operate as a certification body, the most important being that it is accredited to EN 45011 (CEN, 1998) or ISO Guide 65 (ISO, 1996)—which are standards stipulating how certification processes should be shaped (see also Chapter 6).

As outlined in Chapter 3, until 2003 the competent authority in the UK was the United Kingdom Register of Organic Food Standards (UKROFS). This executive non-departmental public body gave licences to operate to certification bodies, controlled their performance through witnessed inspections and audits, approved all inspectors doing organic inspections, and provided certification services to research centres. In 2003, UKROFS was replaced by ACOS, which took over the role of approving and controlling organic certification bodies (next to providing advice to DEFRA about interpretations as described below). However, some of UKROFS's control measures, such as the approval of inspectors, were abolished. The accreditation of certification bodies according to EN 45011 was taken over by the United Kingdom Accreditation Service (UKAS). After a review of ACOS in 2007, the additional checks (control inspections where qualified inspectors carry out an independent inspection of

a licensee) of the certification bodies—which were routinely carried out by ACOS—were replaced in 2008 by additional control inspections by UKAS.

While from a regulatory perspective (both UK and EU) this is an adequate and even desirable way of organising how certification bodies are controlled, for the certification bodies this is problematic: as SACL's Technical Manager Theo suggested, DEFRA has no ability to audit UKAS, making it impossible for DEFRA to control the capabilities and resources that UKAS mobilises to accredit certification bodies[61]. Thus, although UKAS accreditation is a condition to operate as a certification body, the lack of control of DEFRA over this process fragments the policy intervention from the perspective of the certification bodies. However, as Peter explained, the choice of UKAS was a way to help reduce the cost for DEFRA and the administrative burden on the certification industry:

> "With shortage of funds the role [was] given to UKAS and the certification bodies themselves to ... it all fits in with the government policy of reducing burdens on the industry as a whole." (Peter)

Therefore, the delegation of regulating organic certification to certification bodies, UKAS and, until recently, ACOS, helped achieve other policy aims of reducing the cost of government and to cutting red tape. Yet, as Theo explained, DEFRA has not devolved all elements of the regulatory policy intervention:

> "[DEFRA] will issue us a letter to operate, permission to operate each year, which is dependent on (1) predominantly UKAS's interpretation of what's going on and whether we are compliant with ISO65 or not; and (2) anything else they think is important and current, and not necessarily being completely covered by ISO65 and DEFRA's interpretation of it." (Theo)

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[61] Another controversial issue around UKAS is that it has a monopoly on accreditation in the UK, but no remit outside the UK. For accreditation valid in other countries, certification bodies require accreditation from the national accreditation bodies in those countries, or from an independent accreditation body such as the International Organic Accreditation Service (IOAS). This means that certification bodies are faced with at least two accreditation processes if they are offering services to overseas producers.

One prominent issue raised by DEFRA around the time of my fieldwork was about conflict of interest between the shareholders and certification activities of the certification bodies. According to Theo, DEFRA imposed further requirements, beyond those in EN 45011, about how the financial and managerial independence of the certification bodies from their shareholders should be guaranteed. Without these guarantees, there could be conflicts of interest where shareholders could pressure on their certification body to certify (or refuse to certify) certain practices or producers, resulting in an unfair advantage for certain licensees. As this would distort the regulation of the consumer markets for organic produce, DEFRA required detailed plans of how the interests of shareholders would be separated from the certification decisions taken by the certification bodies.

This means that DEFRA, in the role of regulator, has devolved inspection and certification of licensees to certification bodies, and the accreditation of these bodies to UKAS—while maintaining a role in setting and controlling further requirements for compliance before certification bodies can operate. This results in a recursive organisation of the certification process relying on a complex system of checks, balances and paperwork through which particular standards are enacted: certification bodies are inspected and accredited through a process analogous to how they inspect and certify organic producers.

The final aspect of implementing the EU regulations on organic production is to coordinate what they mean for the context of the member state (for example, requirements of providing access to a range for poultry may need a different interpretation in Scandinavian member states compared to other geographic locations due to the climate; the competent authority can define additional provisions to accommodate such aspects of organic production). At the time of my fieldwork, DEFRA was in the process of drawing up a formal guidance document which would set out the way in which the EU regulation would be interpreted in the UK context (the guidance was published in January 2010; DEFRA, 2010b). In order to do this, DEFRA organised various consultations with stakeholders such as the certification bodies, the National Farmers' Union, food processors and retailers, and was

informed by the Advisory Committee on Organic Standards (ACOS). As researcher Ruth explained, the remit of ACOS was to consider the "wider impact [of the EU regulation] on the organic sector in a broader sense". Whereas other stakeholders, such as industries, certification bodies and NGOs, would have clear commercial or political agendas on the topic of how the EU regulation would be enacted in the UK, ACOS provided scientifically informed advice on the development and implementation of standards—advice which was not connected to any particular political position but which aimed to set out the consequences of different interpretations.

According to policy maker Philip, the objective of these consultations was to construct "as broad a consensus as possible on the basis of the most practical approach as possible" to manage the enforcement of the EU regulations. However, the interests of some actors are more prominently present in the guidance that was ultimately produced, notably the certification bodies and industry. For the former, DEFRA partially funds two additional coordination mechanisms through which certification bodies establish common positions on how the business and practicalities of certifying farmers is organised in the UK (the UK Organic Certifiers Group, UKOCG, for business, and the Control Bodies Technical Working Group, CBTWG; for the latter, see also Chapter 6). In particular, the positions adopted by CBTWG are also based on consensus about which interpretations are allowed of specific rules; in some cases the consensus among certification bodies meant that specific interpretations of the EU regulation would no longer be allowed in the UK. For instance, SACL Technical Manager Theo explained that the certification bodies had agreed to no longer certify the conversion of non-organic pigs—although this would still be permitted in the EU regulation—because "the UK industry has gone beyond that".

In contrast to the certification bodies, no other actor relates to DEFRA through such mandated coordinative mechanisms. Yet, the interests of industries in the organic sector are prominent due to the political dimension of policy making: Philip indicated that the strict enforcement of a principle could mean that an industry would no longer be able to meet the

resulting standards and therefore collapse. He suggested that for the Ministers heading the department this would be a major concern for the interpretation of the EU regulation in the UK context:

> "[...] let's take a concrete example. The poultry industry, the organic poultry industry like the conventional poultry industry by and large depends on bought in feed. So, that means it's very sensitive to the price of feed and it's very sensitive to the problems of producing an adequate ration for different types of poultry. So, you can see that we will have some difficulty in saying to Ministers, 'well you have a choice, you can obey organic principle, or you can put this sector out of business', because that's the choice. I don't think you will need me to tell you what that means in terms of the political decision." (Philip)

This implies that the guidance is constructed as largely reflecting current practice in the organic sector in the UK: what industrial sectors are doing beyond the minimum standards is codified, and what would jeopardise these industries is managed so as to protect the sector from collapse and from what the sector deems unfair competition from organic producers in other EU member states—even in cases where this contradicted the input of other actors, like ACOS. Thus, through the guidance document, DEFRA mediates interpretations of the EU regulations in ways that reflect existing UK interests. In this context, DEFRA's consultation processes are important in modulating the way in which EU rules are interpreted. The fact that many organisations are involved seems to mean that potential disputes about interpretation and market disruption are muted, thus facilitating the enactment of organic standards over spatial and temporal distances.

Jointly, these components—the embedding of the EU regulation in UK law, the control of the certification process, and the coordination of a UK-wide interpretation of the EU regulations—constitute a structure which enables organic production by regulating it in the UK context. Characterised by a delegated and recursive organisation, this structure involves certification bodies and UKAS, which in turn mobilise complex systems of checks, balances and paperwork to make production of organic stuff and its verification traceable. Moreover, the Statutory Instrument and the control of the certification process contribute to a homogenisation of organic agriculture as both components refer to a singular 'organic' as the

object of these controls. This implies that this regulatory structure stabilises the meaning of this undifferentiated 'organic': consumers, farmers, certification bodies and other actors can, in principle, rely on the fact that products labelled organic were produced under certain, enforced conditions which apply equally to all organic producers in the UK (and to imported organic products). As such, this arrangement is a precondition for enacting standards for organic agriculture in the UK.

8.4 Supporting farmers

So far, I have discussed the implementation of the EU regulations in the UK context. In this section, I turn to more local, English concerns—as outlined earlier, the support for farmers in Wales, Scotland and Northern Ireland is organised by the devolved governments in those nations. In England, the support for organic farmers consists of two components: the provision of information and funding for organic agriculture. I discuss these in turn below.

(Not) developing a market for organics

In 1996, MAFF (the precursor to DEFRA) introduced government aid for farmers wishing to convert to organic production. As part of this, the Organic Conversion Information Service (OCIS) was started "[t]o provide farmers with adequate information to be able to make an informed decision on whether or not organic farming is an option for their business" (ADAS and Organic Centre Wales, 2005: p. 1). The services included a free helpline and information packs which were provided by the Soil Association charity, and free on-farm visits by experienced consultants of the Organic Advisory Service based at the Organic Research Centre at Elm Farm (ORC). Until 2006, OCIS was run with the objective of increasing the market for domestically grown organic produce. The idea was that by providing some basic information about the agronomic, economic and business management implications of converting to organic production, by pointing to other information sources and through the on-farm visits, farmers would be able to assess the business case for conversion more adequately. This would mean that farmers who would otherwise not have considered

conversion would be able to do so, and farmers for whom conversion would be inappropriate would not have to invest before finding out that organic would not be suitable for their farms.

MAFF decided to fund this service fully as the free access to this information would help to fulfil public policy goals by providing wider consumer choice, reducing consumer prices and supporting the development of an emerging market[62] (thus benefiting consumers). By providing knowledge as a public good, the scheme would provide another public benefit as it would help to minimise environmental damage during conversion (ADAS and Organic Centre Wales, 2005). As Peter suggested, the rationale at the time was that the environmental benefits could only be achieved through the development of 'the market', and therefore they would be a consequence of the policy intervention rather than a specific policy goal. However, in 2006 OCIS was suspended for about a year, but then reinstated with different objective:

> "[...] this new scheme is, we are managed, project managed by Natural England whose brief is for the environment, habitat management, sensitive farming, all of those environmental issues, and the objective is to increase the number of hectares in the organic entry level scheme. There is no longer any emphasis on market [...]" (Rory)

The organic entry level scheme Rory refers to is the mechanism (also delivered by Natural England) through which farmers can get subsidies for going and doing organic; I will discuss this in more detail below. The point is that although the policy objective changed from developing markets to providing particular environmental benefits, the services offered by OCIS are much the same as before 2006 (though now delivered fully by the Organic Advisory Service). This means that the rationale for the policy support has inverted. The use of Natural England to manage the scheme on behalf of DEFRA, and the reframing of policy goals and associated management targets, demonstrate that the focus of the policy has changed from market development to public benefit provision—but without changing the content of the information provided.

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[62] My respondents all referred to the development of 'the organic market' rather than to markets. I have retained here their use of the singular, but would like to emphasise that, in line with my argument in Chapter 7, they were actually speaking about the development of organic consumer markets.

Indeed, researcher Roland argued that there are still traces of the market development component present in some aspects as he suggested that policy makers "are not always clear whether they're supporting [organic farming] for market reasons or supporting it for environmental reasons". He explained that there is a tension in supporting the financial viability of farmers in conversion as part of an agri-environment scheme while needing to regulate a market for consumer protection. This means that the EU regulation, while mainly about consumer protection, helps formalise the forms of support that can be given to organic farmers. By setting minimum standards, the additional support for organic farming can be justified to actors with a stake in how subsidies are distributed in terms of the additional environmental benefits it delivers:

> "[...] it is a consumer protection issue. It's also a justification issue to the conventional farmer as to why the organic farmer should get paid more. It's assuring the conventional farmer that the rules are being adhered to and therefore they're not getting extra money for doing the same as they're doing and cheating. [...]" (Policy maker Peter)

Peter's comment indicates that the policy intervention of providing direct support to organic farmers was contested, which constrained the scope of the intervention. At the time of my fieldwork, the extent of farmer support still needed to be negotiated in relation to conventional farming, even though financial and advisory support for organic farming had become an established part of DEFRA's agricultural policy. This means that the amount of support for each farmer is restricted, not only by budget but also by the amount that can be justified to other policy makers and to conventional farmers.

In addition to these knowledge based forms of support, DEFRA supported other forms of information provision, for instance, the Institute of Organic Training and Advice (IOTA), an association of consultants working in the organic sector, received government funding to prepare reviews of previous DEFRA-funded research on organic farming and technical leaflets summarising key practical recommendations from existing research. The purpose of these documents was to improve the advice available to farmers. Other research outputs, such as the outcome based standards for animal welfare developed by Bristol University on animal

welfare (see also chapter 6) were introduced as a learning tool for interested farmers. But at the time of our interview, the direct funding stream for organic research had ceased within DEFRA, and Roland explained that research activities and dissemination were now funded in a more haphazard fashion.

This component of the policy intervention to support farmers described here focuses on sharing research and knowledge such that an individual farmer can draw on knowledge about organic farming which is generated outside of his or her immediate social network. But this is not primarily done for the farmers' benefit: currently, the support is framed in terms of increasing the size of the area under organic management for the environmental benefits that this delivers. As such, it is shaped by a policy objective which is based on a singular notion of organic: the specifics of organic management (enterprises or land use) are irrelevant—they are not specified in the policy targets for Natural England; organically managed land, as a singular entity, delivers certain qualified environmental benefits. The implications of this become even clearer when considering the second component (financial support) below.

Calculating organic environmental value

In 1994, MAFF introduced financial support for farmers during organic conversion. In 2003, financial support was extended under the Organic Farming Scheme (OFS), providing subsidies which extended beyond the end of conversion. The conversion option of the scheme (support for five years from the start of conversion) was framed in terms of growing markets for domestic organic produce, but the maintenance option (for a further five years after the conversion option) was framed in terms of environmental benefits. However, the OFS was superseded in 2005 as a result of the reform of the EU's Common Agricultural Policy (CAP). These reforms replaced production-based subsidies (guaranteed prices for farmers) with incentives to maintain land in good agricultural and environmental condition. This meant that payments for organic management of land were embedded in EU regulation as part of the European Agricultural Fund for Rural Development (EAFRD). In the specific regulation covering rural development (EC, 2005), farmers can receive payments for their voluntary

commitment to achieve environmental objectives on agricultural land; as organic farming is in principle voluntary, the payments which are made available to farmers are such agri-environment payments. These payments compensate farmers for their agri-environment commitment by paying for the additional costs farmers have incurred to manage their land in a particular way, but also for the loss of income for the farm as the amount of marketable produce will decrease (I will explain this in more detail below).

In England, there is currently one agri-environment scheme open to farmers, namely the environmental stewardship scheme. This scheme is managed for DEFRA by Natural England, and has four strands, one of which is dedicated to organic farming. The Organic Entry Level Stewardship (OELS) strand is one of three equivalent, basic (entry level) strands, which is open to farmers who are registered with an organic certification body, or who have been accepted by a body for conversion. Farmers commit to the scheme for five years, for which they receive £60 per hectare per year. If converting, this is supplemented by another £175 per year for a maximum of two years as conversion support[63]. Under the fourth strand, the Higher Level Stewardship (HLS) larger amounts of funding are available, but this strand is based on more extensive modes of environmental management which are site specific, and therefore depends on the particulars of individual agreements. In contrast, the entry level strands are based on a number of standard management options for different environmental farm features, and farmers need to select options to provide a set amount of value in terms of environmental management.

Going or doing organic counts as fulfilling £30 per hectare of environmental benefits, provided that organic farmers select an additional package of measures through which they achieve another £30 per hectare[64]. This means that just being organic is not sufficient to

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[63] For farmers growing top fruit such as apples, plums or pears, this is £600 per hectare per year for three years.

[64] The other two entry level schemes are based on this £30 of benefits per hectare. So conventional and organic farmers need to provide the same amount of environmental benefits in order to be eligible, but organic farms receive an additional £30 per hectare for being organic.

qualify for payment: farmers are required to deliver further benefits such as conserving hedgerows or stonewalls, preserve biodiversity or conserving species, managing woodland, conserving historic or landscape features, protecting soil or water courses, grazing cattle in specific ways, managing arable fields in environmentally sensitive ways etc. Each of these options carries a number of points, and farmers need to deliver at least 30 points per hectare in environmental benefits across the farm above the 30 points per hectare provided by farming organically. For instance, managing a hedgerow on both sides of the hedge delivers 22 points per 100m of hedgerow, protecting a tree which is in a field which is part of the organic rotation delivers twelve points per tree, introducing or maintaining plots which form habitats for skylarks delivers five points per plot, and sowing nectar flower mixtures in organic grassland delivers 550 points per sown hectare. In total, there are 49 different management options for organic farms in ten categories, and farmers can choose those options that are best suited to their farm conditions and configuration of farming practices. The handbook which describes the options also contains the rules and conditions for each option. For example, the rules for hedgerow management contain prescriptions about the minimum height of the hedgerow and when and how often to cut it, prohibitions to use fertilisers, manures and pesticides within a specified range around the hedgerow, and guidelines for ensuring that the hedgerow is not eroded by livestock or weather; the rules for sowing nectar flower mixtures contain prescriptions about when and how to sow and mow the plants, the minimum number of plant species and ratio between species in the mix, and the minimum and maximum dimensions of the area sown, and guidance about how optimise environmental benefits for nectar-feeding insects.

In this case, the component of financial support in this policy intervention comes with strings attached, requiring farmers to change their practices—beyond those required by the organic conversion. It includes additional paperwork and calculations of how the adopted options relate to the existing features of the farm. The paperwork is controlled every year by administrators of Natural England who include checks on end dates for conversion aid,

reference checks with the Rural Land Register for field details, and controls of field use by means of satellite imagery. Also, the body administering the cross compliance scheme and processing the payments for the single payment and environmental stewardship schemes, the Rural Payments Agency (RPA), sends out inspectors to verify at least 1% of contracts per year. These inspections focus on compliance with the Environmental Stewardship rules, and do not duplicate any aspects of an organic inspection; Natural England relies on the certification bodies to provide the verification of the organic status of a farm.

Therefore, what matters in how the policy intervention is shaped is the way in which the level of payments is linked with the doing of organic. By means of a calculation, DEFRA has defined that doing organic provides environmental benefits to the value of £30 per hectare per year in income foregone. This figure was calculated in the same way as the points for the other options are determined. Calculations underpinning the number of points per unit for each option are based on the costs of doing something in a particular way, the income that cannot be generated by doing so and the costs that are saved by not producing a crop. Paul, who had been involved in these calculations, explained that they include not only the variable costs but also the overheads and even the savings that farmers make on bank interest payments for not needing to invest in seed etc. The calculations are done on a national basis, using average figures for costs and revenues which are forecast over a five year period. After the calculations are complete, the underlying assumptions about commodity prices, input prices and the way these were included in the model underpinning the calculations are verified by an external expert associated with a UK agricultural college. Then, DEFRA take a view on how much compensation to offer, based on judgements about the likely uptake of various options, their environmental benefits and the budget available:

> "[...] that percentage depends upon those judgments as to whether we will get the uptake of the scheme without paying the full amount or not. [...] Dead weight means uptake that we get without paying anything because some farmers do things without being paid. So why do we need to, if we've got a fixed budget we don't need to pay the full amount." (Paul)

Whereas all additional options are restricted to a maximum of 100% income foregone (meaning that an average farmer would not make a profit on doing environmental stewardship), the £30 of environmental benefit delivered by being organic covers 115% income foregone to encourage farmers to consider conversion. Namely, the calculations for the organic option—the cost of merely maintaining organic certification—arrive at an average cost of £26 per hectare per year. While this means that the policy intervention provides a notional incentive to convert to organic farming, in combination with the additional options, the commitment to an environmental stewardship scheme may mean that not all costs and incomes foregone are covered. Moreover, when farmers enter into the scheme, the administrators of Natural England dealing with the scheme usually advise them to build in a buffer in terms of number of points they choose. This does not mean that they get paid more; rather, it means that, while they deliver benefits for which they do not get compensated, farmers are less likely to be penalised when situations change and some of the options end up being reduced in 'value' (through a reduction in area, length or number of features for those options) or removed completely during the five years of the agreement.

Even so, committing to the OELS scheme provides a guaranteed, stable source of income for an organic farm. Adviser Alistair commented that for most farms "[i]t's a no-brainer". But he explained that for some enterprises, the required additional options could conflict with cropping programmes (high value horticultural enterprises) or animal rotations (specialised pig and poultry enterprises). Moreover, for these enterprises, the rate of return on these high value products would exceed the £60 per hectare per year return from doing environmental stewardship. Thus, uptake of the scheme is not spread evenly over the organic sector.

In fact, the environmental benefits delivered by the OELS scheme were analysed by the National Audit Office (the NAO reports to Parliament on the value for money achieved by government departments). Its reviewers argued that while "[r]esearch indicates that organic farming delivers environmental benefits, and in particular has been shown to have benefits for biodiversity [...] [t]he Department has insufficient research evidence to quantify the extent to

which the Scheme has contributed to achieving benefits of this kind, or how the impact may vary between farming sectors" (p. 6). Indeed, most options chosen could be considered 'deadweight', since "[m]any of the more challenging options are rarely implemented" (p. 7). This suggests that existing policy strategies might not be delivering the results expected of them. Here the relation between doing policy and configuring what practitioners do is made visible: the policy intervention is shaped—and is likely to be reshaped as a result of the review—by policy targets which require the mobilisation of farmers to deliver targets by changing farming methods. But as Alistair explained, for farmers the financial support has a different function: it constitutes a guaranteed income, providing stability when commodity prices fluctuate as a result of factors beyond their control.

At this point it is important to note that although the scheme offers financial support to organic farmers, it is an intervention aimed at providing a public benefit—the provision of information as described above and the financial support are linked in this respect. As such, the targets for the intervention are not to provide all organic farmers financial and advisory support but to deliver a set number of organic hectares under agri-environment management. Thus, as a policy intervention, financial and advisory support for doing organic is intended to help farmers act in certain ways such that these activities help meet policy targets for environmental benefits: the activities of farmers are turned into a resource for policy makers to achieve certain policy objectives.

This requires a move in which 'relevant' activities are standardised and qualified: by constructing environmental benefits in terms of the costs and incomes foregone for an average practitioner enacting an option according to its rules, they become calculable as costs the state is willing to pay for achieving targets about biodiversity, conservation etc. Put differently, they are calculative devices (Callon, 1998) which establish a relation between the support provided to farmers and the environmental benefits delivered through them as a public good. Through these calculative devices, policy makers can tinker with this relation: for example, uptake of different options can subsequently be modulated by attributing a percentage of

'deadweight' to them. But as the NAO review illustrated, and echoing Shove and Walker's (2010) observation about the unpredictability of how practices are reconfigured as a result of a policy intervention, this does not necessarily lead to the desired uptake of the 'more challenging options': the method of designing a system of options which can be assembled in numerous ways depending on the site-specific arrangements on a farm (physical and organisational) means that policy makers cannot fully control how practitioners reshape their practices.

8.5 Enabling and constraining practice

I began this chapter with the observation that the policy interventions for organic farming in England matter for the enactment of standards for organic agriculture. Having examined the two interventions (the regulatory structure and the support for farmers), it becomes possible to outline how they shape the doing of organic. To start with the regulatory structure, this intervention defines the outermost contours of what it is to do organic. Namely, the EU regulation contains a basic set of standards which need to be adhered to for produce to be legitimately labelled organic. But it also contains prescriptions for how this needs to be controlled—which are embodied by DEFRA's organisation of those controls. Thus, the enactment of the regulation demands that there are actors capable of doing organic, doing certification, and doing accrediting of the certification. Secondly, the UK-wide coordination of interpretation (between different actors in the sector) harmonises some of the boundaries of what should be considered organic. Constraining the multitude of ways in which these boundaries could be interpreted enables the protection of industries so that doing organic remains economically and politically feasible in the UK as well as the advancement of the interests of these industries in international markets. While the second intervention (advice and subsidy) enables the doing of organic by supporting farmers during and after the conversion process, it does this by constraining the kind of organic which is enacted: currently framing it as an environmental benefit.

This latter form of policy making takes place in a dynamic 'field'. For example, Philip commented that uncontrollable commodity price fluctuations could have a significant effect on the delivery of the public benefit targets, strongly echoing Shove and Walker's (2010) point that instances of policy intervention happen not in isolation but in an ongoing flow of events. At the same time, the regulatory structure shapes conditions which matter for the enactment of specific practices, and for the organic sector as a whole.

These points suggest that policy makers are actively involved in homogenising the organic sector in different ways: by regulating and coordinating how the EU regulation on organic production is enforced, DEFRA places farmers and certification bodies within a single regulatory regime through which consumers are protected from fraud. Thus, this regime provides the space in which multiple 'organics' can be singularised as 'plain' organic (see previous chapter), and therefore afford trade and the constitution of supply chains. Yet, this homogenisation of organic proceeds alongside, but not in the same way, as that involved in the construction of 'organic' as a single, recognisable category in terms of which consumption can be organised.

Farmers and their farms are standardised in another way as well: through the support available, the site-specific enactment of standards for organic agriculture is singularised as providing an amalgam of environmental benefits. To make this work, policy makers operate generally applicable rules and conditions that are nonetheless capable of being adopted and implemented in very many different circumstances. These rules reduce the local material conditions of farms to a limited number of features, turned into a points system designed to represent environmental benefits and the cost of achieving them. Yet, the discussion on uptake of the OELS shows that policy making is an approximate instrument to shape what practitioners do. In fact, this is unavoidable: these policy interventions do not determine what is 'organic'. However, they establish a frame in which farmers respond and to which they adjust what they do. And organic is the outcome of this interaction.

Chapter 9 Living standards

9.1 Introduction

The starting point of this thesis was a sense of curiosity about multiple 'sustainability' labels on an inconspicuous, everyday consumption object. Through the example of a flapjack, I raised some questions in chapter 1 about how labels advocating more sustainable practices and lifestyles got onto the packaging of certain consumer goods. The main aim of this thesis emerged from these queries along with the ambition of uncovering the invisible, taken-for-granted infrastructure through which the standards underpinning such labels are enacted. To capture the active role of how standards organise and coordinate different practices (such as farming, certification, marketing) I suggested in chapter 2 that standards 'come alive' through the activities of different actors, and that in turn they affect what these actors do and the context in which they act. In the five empirical chapters, I have examined this dynamic in relation to the practices of distinctly different actors.

While the separation of these different points of view and different activities was analytically necessary to capture some of the intricacies of each form of enacting organic standards, it will be clear that those standards only 'come alive' through the everyday interaction between these practices: for example, a farmer can only sell the 'stuff' he or she produced after the farming practices were certified through the certification process. Put differently, while each of these sets of activities provides a necessary part of the story of how organic standards are reproduced, it is only through the interrelations between them that organic standards organise and integrate the activities of individual actors into an infrastructure through which 'doing' organic (in all of its multiplicities) is constituted. Therefore, in this final chapter I reflect on how organic standards coordinate between these different practices, and discuss the theoretical implications of this for the understanding of how standards, as ordering devices, shape social and material relations in everyday life.

I start by summarising the key points of the empirical chapters in the next section, and then revisit my research questions to consider how organic standards coordinate the practices of different actors (section 9.3). In particular, I suggest that voluntary product standards distribute the local site-specific enactment of organic standards between the practices of farmers and certification officers due to a relocation of discretionary space. I argue that this arrangement results not only in unique, site-specific enactments of organic, but also in the continuous rewriting of organic standards by certification officers and certification committee. I suggest that standards for organic agriculture organise more than only markets or farming practices, and that the necessarily distributed reproduction of organic standards results in a multiplicity of different 'organics'. I argue that this multiplicity coexists with global, homogenised and coordinated notions of a singular 'organic', which implies that that the diffusion of 'organic' as a coherent concept is perfectly possible, even if the enactment of 'organic' in local practices is very different.

I argue that all site-specific enactments of organic standards are abstracted into various formal spaces where they are made commensurable, and that the uniformity of organic 'stuff' is not located in the individual enactments through which it was produced, but in the way these enactments are conjoined. I argue that therefore the infrastructure through which standards for organic agriculture 'come alive' remains invisible to consumers outside this infrastructure, and suggest that standards are vectors of practice which provide an ordering force which shapes the enactment of specific practices in particular ways. As such, I suggest that voluntary organic standards can shape different forms of agriculture—or more precisely a related set of agricultural systems—dependent on the local practices, coordinative structures, calculative devices, mechanisms of verification and discretion and systems of valuation which are mobilised in their ordering.

In the final section of the thesis I conclude with some more general considerations about the use of voluntary product standards in shaping alternative modes of agriculture. I argue that the move towards the use of voluntary standards in creating a more sustainable form of

agriculture (however that may be defined) and that this has implications that stretch far beyond debates in which the relative merits of one system over another are compared in supposedly 'objective' terms; I conclude that the way in which voluntary product standards shape agricultural systems has political, organisational and ethical consequences for how 'sustainable' products are constituted.

9.2 Summary of the empirical chapters

In chapter 4 I began by describing how the rules in organic standards exclude products and practices from the repertoire available to farmers to produce food and farmed commodities. I suggested that the rules in organic standards, while not prescribing how farming practices should be configured, have multiple, unpredictable consequences as an effect of prohibiting certain practices. In their local enactment, individual rules become process injunctions which produce frameworks for action for farmers, guiding how local farm arrangements (of activities, materials and tools) need to be configured such that they are compliant. I then examined the consequences of this for the temporal and spatial configurations of 'doing' organic farming. I suggested that these configurations, while multiple in their performances, are specific to organic farming and that they enact a mode of farming which is preventative rather than reactive. I concluded that the 'doing' of organic is characterised by multiplicity: each enactment of organic standards is unique. I argued that this is irrelevant for the organicness of products: as long as all relevant rules were complied with, each configuration is a permitted way of organising an organic farm.

Chapter 5 continued the discussion about how organic standards shape farming practice by exploring how certain practices and tools—in all of their necessarily multiple performances—define the 'doing' of farming. I showed how a particular form of farming economics, the integration of enterprises, the choice of varieties and breeds and the extension of farming practices through administrative activities are shaped by injunctions which do not directly follow from specific rules in organic standards, but from the practicalities of interpretation in everyday life, and of 'doing' of organic itself. I suggested that these practices,

along with the temporal and spatial configurations of organic farming practice, enable the production of organic 'stuff', and concluded that this results in farm systems which are agronomically, economically and socially feasible and which allow the traceability of the organic status of their produce.

In chapter 6 I described the certification process, and suggested that it is based on an interpretation of standards and practice in the context of each other. I suggested that inspectors and certification officers are not mere external observers trying to reveal how a licensee enacts certain standards, but that they are active participants in shaping this object and therefore how a particular, 'sustainable' form of farming is enacted by a licensee. I argued that the licensee-specific knowledge object underpinning this process can be characterised as having partial epistemic properties (drawing on Knorr Cetina, 2001) which need to be managed through a standardised process to avoid paralysis or arbitrariness in the certification of licensees. I showed how parts of the knowledge objects of different licensees circulate, thereby shaping the way in which organic standards will be enacted by connecting the context and conditions of the licensees. As such, I concluded that standards for organic agriculture are not only written by the standard setter, but that they are continually rewritten—re-produced—in the certification process. As such, they are alive in yet another sense: with each new interpretation and with each new instantiation they subtly change and reconfigure how a particular form of farming is and can be enacted.

In chapter 7 I drew on the concept of a market device (Muniesa *et al.*, 2007) to describe how organic standards organise markets for organic products. I argued that the multi-sited reproduction of different versions of organic standards results in a multiplicity of organics which are enacted through a horizontally and vertically segmented array of markets. I showed how the heterogeneous sets of standards as market device render organic products 'economic' in a necessarily incomplete way. I argued that the distributed enactment of standards results in a multiplicity of markets which is characterised by a fragmented common space and boundaries that can only be partially maintained. I suggested that this space and these

boundaries do enable singularisation of products (compared to conventional products), and that doing so requires that the multiplicity of organic standards is removed at the final stage of marketing so that 'organic' can be constructed as a homogeneous entity which provides qualified benefits.

Finally, in chapter 8 I turned to the policy interventions which shape the ways in which 'organic' can be enacted. Starting from the idea that policy interventions are located at the intersection of different practices, I then explored two strategies mobilised by EU and UK policy makers in their attempts to enable and stabilise organic and to turn the activities of organic farmers into a resource for different policy objectives. I showed that a regulatory structure based on EU and UK regulations provide a precondition for doing organic farming by shaping the outermost contours of possible organic enactments. In this context, policy also has an interest in treating organic as 'one' and as I showed, various devices (points systems etc.) are used to establish a simple, quantifiable relation between organic and environmental benefit. I argued that policy makers are actively involved in homogenising the organic sector and suggested that this homogenisation of organic proceeds alongside, but not in the same way, as that involved in the construction of 'organic' as a single, recognisable category in terms of which consumption can be organised. I concluded that the two policy interventions for organic agriculture establish a frame in which farmers respond and to which they adjust what they do.

9.3 Living standards

Enacting standards is a distributed activity indeed: this thesis has shown that organic standards 'come alive' in fields and barns, in processing plants, in certification bodies' offices, in Whitehall, in traders' offices, etc. Having delineated how standards for organic agriculture shape the separate situated practices (Suchman, 2007) carried by distinctly different actors, it becomes possible to analyse how standards coordinate constellations of actors, objects, activities and knowledge across time and space (Timmermans and Berg, 1997). To structure this discussion, I return to the research questions I posed in chapter 2, and in doing so I will

reflect on the contributions of this thesis to the sociological understanding of standards and standardisation.

Standards as living entities

My first research question was about how standards 'come alive' through the practices of different actors, and in turn how they, as living entities, shape these practices.

A first observation, already made, is that in contrast to the medical protocols documented by Timmermans and Berg (1997, 2003) and others, standards for organic agriculture do not explicitly script work sequences. As such, they do not intervene in work practices as directly; rather, the rules in organic standards exclude certain activities and packaged entities. How farm practices are configured depends on the injunctions which emerge from interpreting and applying rules in a local setting, so as to produce frameworks for action. Thus, what configurations underpin local enactments follow from locally constructed frameworks for action rather than direct prescriptions inscribed in standards for organic agriculture. This suggests that notions of deviance and compliance (Akrich, 1992) are not sufficient to capture how voluntary product standards like standards for organic agriculture are enacted: as I concluded in chapter 4, the local conditions of a particular farm make the enactment of organic standards unique. As such, there is no detailed script that farmers comply with or deviate from. I therefore argue that, in the context of voluntary product standards, understanding 'standards at work' requires the notion of locally produced injunctions to capture how individual rules in those standards (re)configure practices in their local settings. This forms the basis of the enactment of organic standards through farming practice, and expresses the particular configuration of how 'stuff' is produced at a given farm. It is at this point that notions of deviance and compliance become useful in describing and determining whether generic rules have or have not been included in the situated detail of farming practice.

There are some significant differences between this account and how Timmermans and Berg conceptualised the implementation of protocols through the simultaneous transformation of actors, practices and protocol. While the enactment of product standards also requires a

simultaneous transformation of practices, actors and standards, these transformations are configured differently. As farming practices are assembled site-specific from pre-existing elements rather than pre-scribed in organic standards, the location of the script through which practices are transformed is different: I suggested that situated 'scripts' and ways of doing farming are written *on that farm*, using standard elements. Typically, organic farmers need to transform practices and themselves from a reactive to a preventative mode of farming, and they need to change the infrastructures in which they farm so that organic configurations of practice are economically and socially possible.

This implies that the form of the rules in organic standards—what they prescribe and how they do this—shapes what needs to be made specific: whereas a protocol requires the transformation of practices, actors and the protocol itself, a voluntary product standard requires the reconfiguration of farm arrangements and the transformation of actors and infrastructures. This means that Timmermans and Berg's (2003) argument that standards partially delegate tasks from actor to text (the task of organising, sequencing and shaping activities is partially located in the text of a protocol) and therefore enable an increase in overall complexity of work (as actors can accomplish more) does not apply to product standards. Indeed, for organic farming the reverse seems to be true: the farmers in my research commented that farming organically was more challenging than conventional farming. For them, finding and tinkering with configurations of interrelated elements introduced additional considerations that needed to be resolved. As such, the process injunctions emerging from rules in organic standards pose additional requirements that need to be included in the active transformation of practices, actors and farming systems.

A second, related observation is that organic standards are transformed through their local contextual enactment and their continuous rewriting by certification officers. In contrast to the enactment of protocols, the discretion to 'adapt' is different in form, character and location than suggested by Jasanoff (1998). For organic farmers, the adaptation is achieved through the farm-specific configurations of farming practice. While this requires extensive

knowledge of the local agronomic, economic and social conditions of a farm and of a wide range of standardised elements and their interrelationships with each other and with the local conditions, there is no professional discretion, and no scope for tinkering with organic standards themselves. Rather, tinkering is done with each of the elements that jointly constitute the local, contextual enactment—the localised universality—of organic standards. This does not mean that the discretionary space has dissolved: on the contrary, it has shifted from the practitioner (farmer) to a different actor (certification officers and committee). Thus, the consequences of the incompleteness and overdetermination of standards (Timmermans and Epstein, 2010) are negotiated between farmers and certification officers; it is not left to farmers to decide how to interpret or deviate from a standard. As a result, the discretionary space is highly formalised and documented—whatever discretion is granted is recorded so that justifications are retained for future reference[65] (these justifications and records also enable accreditation of the certification process). This space is placed outside of the practices to which discretion is applied: any consideration for discretion must be referred to an actor who is external to the context in which a standard is enacted. This suggests that the local universality located in the site-specific enactment of organic standards is, in fact, distributed between the practices of farmers and certification officers. This arrangement results not only in unique, site-specific enactments of organic (the local universality) but also in the continuous rewriting of organic standards by certification officers and committee: the unique enactments are used to define and redefine how standards should be interpreted and how these interpretations should be assessed by inspectors and certification officers.

A third observation is that inspectors, certification officers, the certification committee and policy makers all are actively involved in shaping how farmers can enact organic standards. This corresponds with Zeiss's (2004) argument that standards are mobilised in different ways by different actors: they act as rules or guidelines for farmers, as a yardstick to

[65] To a very limited extent certification officers still have an informal discretionary space in dealing with particular licensees.

assess farming practice against for inspectors and certification officers, as a resource for policy makers, and as a market device for market actors. While the way in which inspectors and certification officers mobilise organic standards is scripted in those standards, this is not the case for the other actors. This suggests that the notion that standards redirect the course of trajectories (Timmermans and Berg, 1997) must be extended to include actors whose trajectories are not precisely defined. Even so, the way in which organic standards can be mobilised is not arbitrary: standards for organic agriculture are specifically third party certification standards. This is a particular arrangement of actors (Hatanaka *et al.*, 2005) and practices in which particular mobilisations of organic standards by specific actors are possible, while others are not.

With its focus on the current arrangements of the infrastructure constituted by standards for organic agriculture, my study does not provide insights into how this system evolved into its current form. Thus, there is scope to build on the argument in this thesis by examining the conditions under which standards and third party certification coevolved. Such a study would provide insights into how certifiers have been able to assume a position as apolitical, external and objective observers of practice (Hatanaka and Busch, 2008).

Multiplicity and singularity

The second research question was about how the multitude of unique enactments in farming practice relates to the singular concept diffused by this standard.

The reproduction of organic standards is necessarily distributed due to the specific practices that constitute them and that are performed by different actors: farming in particular ways, inspecting and certifying licensees, coordinating activities, setting standards, trading produce, advising producers, suppressing issues while emphasising others, etc. As such, the multiplicity of how different 'organics' are enacted is unavoidable. In the empirical chapters, I have shown a number of tensions between multiplicities in enactments and attempts to create singular entities. For example, site-specific reconfigurations of practices are collapsed through the certification process so that produce can be traded; calculative devices permit comparison

between diverse farms, sites and sectors, organic labels constitute a single market, overwriting differences of farming practice; and in policy, there is a similar need to construct, approach and support 'a' single organic sector; and so forth.

In each of these instances there are moves between the multiplicity of enactments and a singularised 'object'. For example, organic produce can only travel because the specific characteristics of its production have been removed and folded into the label 'organic'; exactly how the produce was grown or reared has become irrelevant—it simply meets generic conditions. At the same time, this labelled produce is transformed into an income in the profitability calculations for a farmer, and into a certain agronomic and economic value for another farmer or into a singularised product for a consumer. This suggests that the enactment of organic standards in highly localised settings coexists with global, homogenised and coordinated notions of a singular 'organic'. As I wrote earlier, this implies that the diffusion of 'organic' on the basis of a coherent term is perfectly possible, even if the enactment of an 'organic' in local practices is very different.

As is clear, the enactments of organic standards are standardised—uniform—as well as internally differentiated (Hatanaka *et al.*, 2006). This suggests that the notion of uniformity (e.g. Busch, 2000; Brunsson, 2000) requires qualification: what is it that is made uni-form through organic standards? This thesis has shown that local enactments are not homogenised or made uniform by reference to a shared template of organic. Rather, the ordering of local sociomaterial practices through organic standards allows the folding of complexities, idiosyncrasies and peculiarities of enactments into singular notions which can circulate between different practices and between heterogeneous metrics (Bowker and Star, 2000). The processes of third party certification provide one mechanism of achieving commensurability between different enactments; they provide a device "'to abstract', that is, to transport, transform and displace an action into a formal, calculative space" (Loconto and Busch, 2010: 527). This means that all site-specific enactments of organic standards are abstracted into a formal space where they are made commensurable: each enactment undergoes an external

verification of compliance with the rules in organic standards based on a standardised and accredited certification process and hence becomes available in the organic space that is thereby created. The uni-formity of organic 'stuff' is not located in the individual enactments through which it was produced, but in the way these enactments are made commensurable. It is this particular uniformity, then, that provides the basis on which goods can be singularised as products having certain qualities (Callon *et al.*, 2002) and which can be integrated in pre-existing practices of consumption (e.g. Gronow and Warde, 2001; Halkier, 2009).

But as I have shown, 'doing' organic is abstracted in other ways as well. Loconto and Busch (2010) focus on the obvious processes of third party certification (verification of compliance, accreditation of certifiers and sanctions for violations), but I argue that, when considering organic standards as an infrastructure, their 'coming alive' requires other devices which abstract different aspects of 'doing' organic (e.g. calculative devices such as farming economics). This implies that how standards mediate between multiplicities and singularities in the constitution of the infrastructure extends beyond what is written in those standards. In each of these abstractions, the purpose is to make products or practices not the same but in certain respects comparable. It is in this way that voluntary product standards shape different forms of agriculture—or more precisely a related set of agricultural systems.

As this thesis has only considered how organic is 'done' in the UK, and England in particular, I have described only one form of agriculture which is situated in a particular context. However, the last point implies that in different contexts (e.g. the Netherlands, Egypt, China or Tanzania), a different form of organic agriculture will emerge—even if the same standards are used. As such, a further research project would be to examine how standards 'come alive' in different contexts (for a first attempt, see Loconto and van der Kamp, 2011).

Standards as vectors of practice

My final research question was about how standards produce order for different actors, and therefore the disorders they attempt to eradicate.

The moves between multiplicities and singularities described above mark out specific points at which differences emerge and (are made to) disappear. I argue that these changing representations are bound up with the movement of produce through the total system of provision and that this representational work would not be required if produce remained within its original context. For example, organic 'stuff' produced in a particular instantiation of doing organic becomes an organic commodity when its specifics of production are removed through the application of the label 'organic'. It is at this point that other actors (buyers, consumers) can integrate the commodity into their practices—the trajectory of the artefact is no longer shaped by farming practice but by practices of marketing and consumption. Simultaneously, the disparate practices of farming and of marketing and a particular practice of consumption are coordinated. Thus, only when other actors become involved in the shaping of a particular trajectory is a singular notion required to facilitate the transition from one actor to another. As such, those moves signal a pattern of interaction between different actors, i.e. sites where coordination between 'disparate elements' take place (Berg, 1997; Timmermans and Epstein, 2010). This implies that at every move to a singular notion, the practices of different actors intersect as they are coordinated through the trajectory of an object or practice. Also the subsequent trajectory—as a singularised element integrated in a new practice—is coordinated in part by organic standards. In effect, organic standards include orders for different actors (Berg and Timmermans, 2000). To reveal these orders, it is useful to start from the practical strategies (logistics; Seltzer, 1992) which embody specific rationalities, before considering the order and its disorder coproduced by organic standards (Berg and Timmermans, 2000) for each set of actors.

First, the process injunctions emerging from organic standards result in specific ways of doing farming, which in turn require particular abstractions of farming practices in the form of calculations and standard techniques which are specific to organic farming systems. As discussed in chapters 4 and 5, these farming systems are organised around distinctive agronomic and economic strategies, often involving a different way of conceptualising time,

risk and response. For example, since fluctuations in agronomic performance cannot be eradicated, they need to be included as a standard cost in the calculations of profitability. Moreover, while organic farmers can produce systems in which external inputs are minimised, the need for them cannot be eliminated: livestock will occasionally need veterinary treatments, and sometimes new seed needs to be bought.

Second, certification bodies manage their work and establish organisational procedures so as to comply with accreditation requirements set by DEFRA and UKAS. In fact, the practices and organisational form of certification bodies is almost entirely ordered through different sets of standards. The logic behind the certification system is to prevent consumers from fraud through the independent monitoring of farming practice. However, as is clear from the discussion in chapter 6, the inherent uncertainty in the certification process constitutes a form of disorder that cannot be overcome. Another disorder is provided by the multiple interpretations which are possible for the rules in standards for organic agriculture, and which need to be continuously negotiated and formalised and which can be contested.

Third, in relation to the part organic standards play in structuring markets, singularised organic commodities reproduce and reinforce boundaries with conventional markets while suppressing differences within the organic sector. However, as the example of beef cattle shows (see chapter 5), being organic is rarely the only consideration: other factors, such as the weight, fat content and carcass shape are the prime factors to establish price rather than the organic certificate. As such, other economic orders structure that which is constituted by organic standards. Furthermore, the requirement of additional coordination mechanisms beyond those included in organic standards to help producers navigate the fragmented space within the boundaries of the organic markets indicates that social orders interfere with the economic order of organic standards: organic markets only function because of these additional mechanisms.

Finally, policy makers, in their capacity as regulators, mobilise organic standards to provide the precondition to ‘doing’ organic. In turn, this opens the possibilities for organic

farming, as a singular entity, to be mobilised as a resource for different policy interventions. However, as is clear from the discussion of option uptake that this order cannot be fully managed: farmers choose easy options or do not enter a scheme in the first place.

As these examples show, organic standards contain a number of orders for different actors which relates to the way in which those actors mobilise organic standards. In addition, many of these ordering systems suppress or remove the multiplicities of organic farming, so that the resulting object—organic produce—can enter other markets and orders as a singular, recognisable entity. One consequence is that the processes through which organic standards 'come alive' remain invisible to actors outside this infrastructure: consumers know little or nothing of the intricacies of how something became organic.

There are two more observations that can be made from the argument developed in this thesis. First, I argue that standards are vectors[66] or carriers of certain ways of doing: in this role they provide an ordering force which shapes the enactment of specific practices in particular ways. This ordering spills out beyond the realm of standards themselves: hence the infrastructure constituted by standards provides directionality to the trajectories of many practices—a directionality which is stronger, or more forceful for some practices and actors than for others.

Second, it is important to note that the assembly of practices that fall within the reach of organic standards is not stable. While standards for organic agriculture do provide stability to what actors do at any given point in time, how they coordinate the activities between actors changes over time (as was clear from the history of the organic sector in the UK; see chapter 3). The relative stability at any point in time is an accomplishment which is rooted in the reflexive monitoring of past, present and future performances from and by different actors (Giddens, 1984).

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[66] I draw on an analogy with physics here: in physics, vectors are forces which have magnitude and direction.

These last two points implicitly contain a suggestion for further research beyond the scope of this thesis and for which the presented material provides a starting point: as vectors of practice, standards shape the way in which elements of practice are integrated, not in a static way but as a dynamic influence (I have provided an attempt at exploring this in chapter 8; for a discussion of the dynamics of how different elements of practice are actively integrated over the career of a practice see for example Shove and Pantzar, 2005). Moreover, the reflexive monitoring of past, present and future performances as suggested by Giddens (1984) in what he describes as a 'reproduction circuit' by means of loops of feedback and feed forward provides a set of terms with which to characterise the ways in which practices emerge, change, merge with others and disappear (see also Shove *et al.*, forthcoming). This thesis has presented an account of how standards for organic agriculture 'come alive' in a particular moment in time—a snapshot of the way in which they organise the practices of different actors and shape the trajectories of objects and artefacts. With some small exceptions, I have not discussed the temporal dynamics of how these practices evolve in relation to each other—this is another avenue for future research. For example, how has the emergence of an organic market, as a concept and an economic reality, played into the detailed design of policy strategies designed to promote this sector (for one reason or another)? Has the growth in organic farming changed the strategies of seed merchants and others, doing so in ways that change the future conditions and possibilities of being organic? Such considerations are important in understanding how the possible enactments of these standards change over time.

9.4 Multiple labels on inconspicuous consumption items

In the previous section I argued that voluntary product standards can shape different forms of agriculture—or more precisely a related set of agricultural systems—dependent on the elements which are mobilised in their ordering. Moreover, I suggested that the moves to remove specifics of production from circulating objects make invisible the infrastructure of organic standards for consumers. In this final section of the thesis it is time to return to the

flapjack and consider briefly some general implications of my thesis for the use of standards to promote more sustainable agricultural practices.

It will be clear that each of the standards on the flapjack is based on its own infrastructure, with its own conditions and history, and that they are all implicated in further configuring how farmers produce 'stuff' and in how markets are made. Such infrastructures can be modest (e.g. the Vegetarian label), but they can include a substantial reconfiguration of how farmers operate (e.g. Fairtrade; see for example Loconto, 2010, Reinecke *et al.*, 2010, and Haggarty *et al.*, 2011). Different certifications could imply requirements for different farming arrangements, and will include different multiplicities that need to be singularised in particular ways and in relation to different forms of order that need to be enacted.

In fact, the multitude of standards that farmers can choose from to be certified with provides a meta-standardisation analogous to how consumers are standardised into choice-makers by a range of standardised products (Michael, 2010). Thus, farmers have become choice makers, requiring them to consider strategically which certifications suit their farming system, what potential markets can be accessed and therefore what sort of profitability could be achieved—or perhaps not to bother with certification at all. However, in some contexts a 'differentiation standard' (Hatanaka *et al.*, 2006) may become so standardised that choice is not an option. In other cases, there are forms of meta-certification where compliance with one certification scheme prompts other certifiers to infer compliance with their scheme (see Loconto, 2010). For consumers, Michael's (2010) argument that they have become meta-standardised can also be extended (see also Cochoy, 2005, 2007, 2010): not only do consumers need to decide between a 'standardised' and a 'differentiated' product, but also between differently differentiated products—or, as the flapjack shows, products with multiple differentiations.

Thus, the move towards the use of voluntary standards in creating a more sustainable form of agriculture (however that may be framed) has implications that stretch far beyond debates in which the relative merits of one system over another are compared in supposedly

'objective' terms. As this thesis has shown, the way in which voluntary product standards, through the infrastructures they constitute, shape agricultural systems has inherent political, organisational and ethical consequences for how 'sustainable' products are constituted—my Soil Association organic, Fairtrade and vegetarian-approved flapjack could only end up on a supermarket shelf through distributed practices which were coordinated, organised and ordered through the 'coming alive' of different standards in those practices. This implies that understanding the conditions under which an agricultural system based on voluntary product standards functions requires a detailed look at what these standards do and how this is achieved. In fact, such analyses are essential in uncovering the potential as well as the limitations of using voluntary standards in achieving more sustainable forms of agriculture—in whatever terms that might be defined.

My wonderment and curiosity about the flapjack continues...

Appendices

Appendix 1 Voluntary product standards set by third parties in the UK.

Organic

The first logo displayed here is the mandatory EU-label for organic produce; one of the others may be displayed (the Soil Association has made it mandatory to display its label on packaging. The Soil Association and the Biodynamic Agriculture Association (the Demeter label) include additional standards in their certification process; OF&G and OFF certify against the EU regulation.

Environmental

FSC certifies wood products from sustainably managed forests

The RA certifies products against their own environmental and social standards

The WFA provides a low-cost, grassroots alternative to organic cert. for locally sold produce

The Carbon Trust calculates carbon footprints for products

Animal welfare

FF certifies producers for compliance with RSPCA animal welfare standards

MSC certifies fish and seafood from sustainably managed fisheries

The Dolphin Safe label of the Earth Island Institute certifies that seafood was caught without harming dolphins

Fair-trade

UTZ certifies against their own fair-trade and environmental standards

The Fairtrade Foundation certifies compliance with FLO standards

Individual moral

The VS label indicates that food is free from animal protein and GMOs, and that animal cruelty was avoided

The Vegan trademark indicates that products are free from animal protein and GMOs, and that animal cruelty was avoided

Safety

The Lion stamp on eggs indicates that they are guaranteed salmonella free

Management

The Red Tractor scheme is a general farm assurance scheme, resulting in traceability of produce. Also indicates the Britishness of produce

Appendix 2: Sample of interview guides

Interview guide for Fergus (Gooseberry Estate)

- Introduction – introducing myself and my research, confidentiality, recording, questions
  - *Agenda: Practicalities of 'doing' organic compared to conventional farming*
- History of conversion (in 2000 250ha, in 2004 400ha) – prior to conversion – training Fergus
  - Long rotation, commodity crops – no niche?
  - Arable with livestock tenanted – integration? Separation of business and organic systems?
  - Thistles, docks
- Farm economics, conservation, funding
- How did practices and knowledge change – processes of learning organic
- Market development – routes
  - Challenges, frictions, volatility
  - Coordinating trade
  - Advice
- Use of standards and other regulations
  - Interpretations, translations
  - Boundary work
- Certification – challenges, frictions, negotiations
- Support network
- 'Real' organic – meaning of organic evolving over time
- End of interview – thank you, confidentiality, still OK with everything discussed?

Interview guide for Adrian (adviser)

- Introduction – introducing myself and my research, confidentiality, recording, questions
  - *Agenda: exploring differences and similarities with conventional farming*
- Adrian's history in organic – main changes
- Position in large conventional consultancy
  - Challenges, frictions, opportunities
  - Support network
- Dynamics conventional organic – similarities and differences
  - Agronomy, business management
  - Practices, equipment
  - Learning, training, codevelopment with clients, education
- In web between Certification Bodies, farmers, markets, funding, information
  - Coordination between all of these actors
  - Coordination attempts at different levels
  - Developing markets for organic produce – volatility
  - Links with policy interventions – funding, information, research
- Use of standards and other regulations
  - Different readings between farmer and adviser? – interpretation, translations
  - Boundary work, quantification
- 'Real' organic – meaning of organic evolving over time
  - Formalisation, who owns organic?
- End of interview – thank you, confidentiality, still OK with everything discussed?

Interview guide for Peter (retired policy maker)

- Introduction – introducing myself and my research, confidentiality, recording, questions
  - *Agenda: the policy process from 1980s to now*
- Peter's long history in organic – main changes
- Regulations influencing the organic movement
  - 'Real' organic – how standards coevolve with meaning of organic
  - Formalisation – conventionalisation, tension between principles and economics
  - Direction of organic, who owns it?
- Practicalities of coordinating implementation
  - Policy interventions – funding, information, research
  - Shift from market development to public good (environmental benefits)
  - Volatility in markets
  - Challenges in supporting organic effectively
  - Tension between conventional and organic (e.g. breeds, varieties)
- Organisational complexity – emerging institutions
  - Rapidly expanding industry
  - Coordination between actors
  - Regulation – DEFRA, UKAS, ACOS
  - Practical dimensions of engaging actors
- Market development in new areas? (e.g. aquaculture, poultry)
- Standards
  - Organising interpretation
  - EU connections, negotiations, frictions, opportunities
- End of interview – thank you, confidentiality, still OK with everything discussed?

Appendix 3 Sample of research outline

I have provided the sample sent to farmers—for other actors, sections 5 and 7 were modified to suit the organisation or actor I planned to visit.

Lancaster University
MANAGEMENT SCHOOL

RESEARCH OUTLINE (Farmer)

A standard in action: How organic standards shape and are shaped through practice

1. BACKGROUND. Although regulation of food has a long history, the independent certification of properties falling outside regulatory control is a much more recent phenomenon. Such properties include the control of ingredients for particular types of consumers (e.g. vegetarians) as well as specific ways of growing, processing and trading produce (e.g. organic, fairtrade). The standards that govern these properties are mostly based on ideas promoting more sustainable practices and lifestyles and as such are intended to influence the practices of consumers, manufacturers, farmers and other groups alike. How standards are created and maintained by organisations has been studied in quite some detail. However, most of this research is abstract and formulaic, and it is less clear how standards organise and influence the interaction between different groups relating to a standard. In particular, little is known about how standards shape actions of different groups so as to create a recognisable 'standard' product.

2. THE RESEARCH. Taking a standard as an entity that comes alive through the actions of different groups, I am interested in how a standard coordinates the actions of different groups and in turn how those coordinated actions are essential to make the standard work:

- The standard shapes how groups connect to other groups through the coordination of sets of activities. *How and where do which connections need to come together to make the standard work?*
- Standardisers, accreditation bodies, producers and others read a standard for particular purposes and as such the standard has different practical implications for each of them: individuals in these groups need to say and do things in specific ways for the standard to work. *How do different groups derive different practices from the same document? How does the standard coordinate these practices?*
- The standard works because making and revising the standard, implementing and following the standard, and independently verifying the standard are all routinely carried out by the standardiser, adopters and certifiers. *How do these ways of doing things by different groups help in making the standard recognisable to others and giving it integrity?*

3. THE SITE. I explore these questions by looking at organic standards because:

- They constitute one of the most prominent independent standards promoting sustainable practices in the food industry underpinned by EU regulation;
- Recent substantial increases in conversion to organic farming mark a trend in food certification;
- The spread of farming practices—stockless arable to fully mixed to horticulture—allows useful comparisons by looking at the structures of the cereal, meat and fruit and vegetable industries.

4. METHODS. The groups relevant to my study are:

- Certification officers and inspectors of different certification bodies;
- Farmers specialising in either stockless arable or mixed farming;
- Consultants and farm advisers specialising in organic farming;
- Natural England's OELS team and the OCIS at EFRC;
- Policy makers at DEFRA.

My data come from conducting in-depth interviews with representatives of these groups to understand the context in which organic farming is situated, and from observing the practices that underpin the standards. The focus of my study is on the sets of day-to-day activities through which the standards come alive.

5. FARMERS. Farmers form an essential connection in making organic standards come alive. Indeed, without the farming community there would be no organic movement or market. On the ground, this means changing conventional farming practices according to organic standards, maintaining paperwork to show what was done and how it was done, informing certification officers about certain practices, being inspected, and marketing produce in an organic market. As such, farmers are putting in a lot of effort to make organic standards a reality.

Therefore, I would like to interview farmers about the practicalities of becoming and remaining organic. I anticipate that the interview would last about an hour to an hour and a half, and focus on two aspects: how farmers connect with other groups involved in making organic standards work, and more practically how practices change over time.

6. TIMELINE. I intend to complete my research within 18 months from March 2009, and therefore follow these key dates:

- 07/09 – 12/09: Data gathering
- 01/10 – 05/10: Data analysis
- 05/10: Report to stakeholders (Certification bodies, DEFRA, Natural England, OCIS, participating farmers and processors)
- 01/10 – 09/10: Thesis writing
- 09/10: Submission of thesis to Lancaster University

7. OUTCOMES. My research has a number of potential implications in different domains and for various relevant groups:

- A theoretical contribution to academic knowledge about standards, practice theory and science and technology studies;
- The processes of translation of the organic standard by different groups will provide an understanding of how practising the standard results in intended and unintended consequences for organic farming practice which is relevant for farmers, certification bodies and policy makers;
- More practically, the findings will be relevant for farmers: by understanding how organic standards as a living entity shapes practices it will be possible for farmers to implement organic standards more efficiently.

8. ETHICS. The research is subject to ethics guidelines of Lancaster University, and an assessment has been carried out. For all participants informed consent will be obtained before their input would be used. Also, all data will be kept confidential and where necessary made anonymous.

9. ABOUT LUMS. Lancaster University Management School is one of the leading institutions in the UK for business and management studies. 75% of Lancaster University Management School's research activity has been assessed in the latest UK Research Assessment Exercise as world-leading or internationally excellent in terms of originality, significance and rigour, and on this measure Lancaster is 3rd equal in the UK. Virtually all of LUMS' research (95%) is of international standing, as judged by the assessment. LUMS provides a dynamic research environment in which doctoral students play a full and active part.

10. CONTACT. Maarten van der Kamp, doctoral researcher
Lancaster University Management School
Lancaster, LA1 4YX
t: +44 (0)7932 665463
e: m.vanderkamp@lancaster.ac.uk

Appendix 4 Transcript of lyrics

OMSCo advert

Scene description

Two children climbing on a fence in the country side, looking over a field of Friesian cows whose black patches turn into animations of a cup of tea with a spoon falling in, a bowl with cereal falling in, a pot with steam curls coming off, and a cake, which, when the cow licks the spot, loses its cherry and icing - children smiling - cow with patch with £1 written in it - cows being herded away - children waving, face of middle aged moustached and capped farmer smiling at the children - picture of jug of milk and slogan in meadow.

Text

“If you change one thing to organic, make sure it's your milk; think about it, milk's in your tea, your cereal, your mash, even your cakes; and as organic milk costs less than £1 a week to switch to, it's a great way to make your day more organic. Organic Milk, go organic every day.”

Yeo Valley advert

Scene description

Panorama shot Somerset, over river and rolling hills and farms - close up of farmer 1 and of four farmers hanging around a tractor, farmer speaking the intro - Farmer 2 starts in shed in front of his tractors - shot of Massey Ferguson in field - Shot of farmer 1 drinking glass of milk - back to shot of farmer 2 in shed - Farmer 2 rapping in front of other three farmers hanging around tractor in field - shot of tractor driving, two close ups of silver statuette of cow on bonnet (like Rolls Royce Angel) - Farmer 2 rapping in shed - shot of tractor driving in field - farmer 2 in front of other three - shot of Famer 2 in cap and shirt - rapping in shed - close up shot of cows - in front of other three - Farmer 1 takes over - farmer 1 and farmer 3 in shed next to tractor - close up shot of cows - all four farmers sitting in field next to farmstead, consuming Yeo Valley products with labels clearly visible - shot of farmer 1 and 3 in shed - shot of owl - tractor and lloader driving - owl doing head turns - tractor - farmers 1 and 3 in shed - Tractor doing press-ups with shovel arm on ground - four farmers rapping in front of tractor in field - shot of farmer 3 - shot of milk being poured into a glass from a Yeo Valley bottle - close up of cow - four farmers in front of tractor rapping - close up of farmer 3 in cow shed - farmers walking through shed - shot of cows eating hay - close up of farmer 3 - slow motion clip of farmers walking through shed - revolving shot of Massey tractor driving - Close up of cow - farmer 3 rapping in front of other three - close up of farmer 3 in cow shed - zoom past farmer 4, 3 and 1 hanging in front of cows in shed - close up of farmer 3 - farmer 4 takes over (check out daisy), pointing to cow in shed - close up of cow - farmer 4 rapping in front of cows - close up of farmer 4 gesturing to his head (know how) - show of grazing cows - farmer 4 rapping in front of others hanging around tractor in field - show of cow - farmer 4 looking out of cab of tractor - shot of cows looking around - four farmers rapping, farmer 4 climbing out of cab - more press ups - farmers in shed - shot of wellies stepping out of tractor into grass - farmer 4 walking in slow motion - farmer 1 and 2 laughing in front of farmstead with glass of milk - farmer 3 rapping in cow shed - shot of four farmers in front of tractor in field, cows in the background - final shot over the valley, logo (milk drop with Yeo Valley organic written inside) in view with slogan "live in harmony) and 'Search 'Yeo Valley" at bottom

Lyrics
The sun is up,
the milk is chilled,
it's going to be a good one.
Yo, yo.

Yo, I'm rollin' in my Massey on a summer's day,
chugging cold milk while I'm baling hay.
Yeo Valley's approach is common sense,
harmony in nature takes precedence.
My ride's my pride that's why you never see it dirty,
and I love it here man, that's why I'm never leavin' early.
I'm looking girt in my cap and my shirt,
I'm representing for the West so hard it hurts.

Yeah.

We make this look easy
'cos we're proper modern with this farmin', believe me.
Wind turbines are shining, baby,
it's solar farming no buts no maybes.
Here we're down with the Soil Association
and we do lots of what? Conservation!
Sustain, maintain, it ain't no [?] thing,
We set the bar, real leaders by far.

YEO VALLEY, YEO VALLEY
We change the game, it will never be the same
YEO VALLEY, YEO VALLEY,
Big up ya chest, represent the West

This isn't fictional farming, it's realer than real,
you won't find milk maidens, that's no longer the deal.
I'm in my wax coat 'n' boots, I'm proper farmer Giles,
now look, you urban folks done stole our style.
I'm not a city dweller, me I like to keep it country,
the air is clean and all those cars won't make me jumpy.
It's different strokes for different folks, my man,
Just enjoy the results with what we do with the land.

Check out Daisy, she's a proper cow,
a pedigree Friesian with know-how.
Her and her girls they got their own name,
We treat them good, they give us the cream.

YEO VALLEY, YEO VALLEY
We change the game, it will never be the same
YEO VALLEY, YEO VALLEY,
Big up ya chest, represent the West

Why I love organic campaign

Website text explaining organic

Better for nature

Organic farming works with the environment as it uses fewer pesticides. It's a way of farming that protects and encourages wildlife whilst looking after the health of the soil. Instead of relying on chemicals, organic farmers work with nature to feed the soil and control pests. They use crop rotation and clover to build fertility in the soil. Organic farming uses mainly natural methods, developing a good soil and healthy crops which have stronger natural resistance to pests and diseases, and encourage natural predators to avoid the need for almost all pesticides. Organic farming releases less greenhouse gases and can significantly reduce your carbon footprint.

Better for animal welfare

Organic means free-range. Organic standards insist that animals are given plenty of space and fresh air to thrive and grow more naturally, guaranteeing a truly free-range life. Free-range systems encourage healthy animals and this means fewer drugs or antibiotics. That's better for the animals and good for your peace of mind!

More Natural food

When it comes to organic, you know exactly what's in your food. GM crops and ingredients are banned in organic farming as are hydrogenated fats, artificial pesticides and it does not allow aspartame, tartrazine and monosodium glutamate to be used. Put simply organic food is a more natural choice.

Great tasting food

Organic farmers rely on developing a healthy, fertile soil to grow a mixture of crops that are bursting with flavour. So you can rest assured it tastes great too!

Text of magazine advert 1 (painter)

I love organic because it feels right for my family

I know it might not look like it, but I do try and buy the right food. When you've got little ones, you have to. That's why me and the missus buy organic, because we want the kids eating food that's more natural and tastes great, free from all that GM nonsense and most pesticides too. OK it sometimes costs a bit extra, but I'm not going to scrimp when it comes to my kids.

Text of magazine advert 2 (pantomime duo)

We love organic because we care about animals

I like to see myself as the brains of this outfit, even if my son doesn't agree! But when he told me about organic, well, I never looked back. Organic means fewer drugs or antibiotics, it also means better conditions for animals so they get to thrive and grow more naturally. Surely that's good for them and good for our peace of mind! We're happy to pay a little extra for organic, because we believe that animals deserve a better life (this poor cow certainly does!).

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