



Placing the Apple:

Exploring the Urban Applescape

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Abstract

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Abstract: There is a growing global urban appetite for fresh fruit and vegetables, particularly fruit. There is a further recognised need for agri-food systems that support human health, ecological integrity and social justice (Morgan and Sonnino 2010). This thesis explores the current possibilities and challenges of regenerative agri-food systems through the case of the urban apple. With the lens of political ecology, the thesis presents a relational interpretation of the spaces, natures and relations of the urban apple through considering the practices and the guiding logic of the corporate and agro-ecological urban apple in Hackney, London. The methodological framework, informed by relational geographies, supports a situated and place-based understanding of the corporate and agro-ecological logics through attending to practices in place. The thesis draws upon a number of semi-structured interviews and participant-observation with representatives involved in the production, distribution and trading of the urban apple. As the case of Growing Communities demonstrates, citizens can be supported in practicing more healthy, ecological and just ways of growing, trading and consuming food through agro-ecological communities of practice. Currently, such communities remain politically marginalized, particularly at national government levels. A political framework that fosters physical, economic and political space for regenerative agri-food practices and systems is considered key. The city-region is recognised as a ‘space of possibility’ in scaling-out regenerative agri-food practices and systems. This needs to be supported by multi-scalar, cross-sectoral and participatory processes (Jennings et al. 2015; Moragues-Faus and Morgan 2015), prioritising space for community-led, place-based practice.

Key words: Agro-ecology, political ecology, practice, city-region, regenerative agri-food systems.

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Table of Contents

Placing the Apple:	1
Exploring the Urban Applescape	1
Abstract	2
Acknowledgements	4
Table of Figures	10
Introduction	11
i. Urban Metabolisms	11
ii. Regenerative cities	12
iii. Urban Agri-food Metabolisms	14
iv. Depletive Agri-food Metabolisms	16
v. Regenerative Agri-food Metabolisms	17
vi. Agro-ecological Practices	18
vii. Political Ecologies of Agri-food.....	20
viii. Urban Political Ecologies In Place.....	20
ix. Why the apple?.....	21
x. Regenerative Fruitscapes	22
xi. Research questions	23
xii. The emerging methodological framework.....	24
xiii. Why London?	25
xiv. Why Hackney?	27
xv. Structure of thesis	28
Chapter One: Literature Review	30
Part One: 21st Century Geographies of Agri-Food	31
1.1.1. Industrial Agri-food Systems	31
Controlling Socio-Ecologies.....	31
Controlling Spatio-Temporalities	32
Controlling Socio-Natures.....	33
Controlling Practices	34
Controlling Cultures	35
Corporate Futures?	37
1.1.2. From Alternative ‘Archipelagos’ to Sustainable Food Systems.....	38
Reconnecting Socio-Ecologies.....	40
Reconnecting Spatio-Temporalities	40
Reconnecting Socio-Natures	41
Reconnecting Practices	41
Reconnecting Relations.....	42
Reconnecting Communities	43
Part Two: Relational Geographies of Agri-Food	46
1.2.1. Relational Concepts.....	46
1.2.2. Relational Terms	48
Ambiguities of Locality.....	48
Ambiguities of Seasonality	49
Articulating concepts	49
1.2.3. Relational Geographies of Practice.....	52
Part Three: Communities of Practice	53
1.3.1. Placing Knowing and Growing	53
Practices in Place	53
Natures in Place.....	53
Practices in Place	54
Communities in Place.....	55
Communities in Place.....	55
1.3.2. Scaling-Out Practices in Place.....	57

International Governance	57
National Government.....	58
Local Authorities.....	60
The City and the City-Region	63
Practices in Place	66
Political Ecology	66
Urban Political Ecologies in Place.....	68
Chapter Two: Situated and Relational Practices – A Methodological Framework	71
Part One: Relational Materialities.....	72
2.1.1. The Matter(s) of Mattering(s).....	74
2.1.2. Positionings and Situatings.....	75
2.1.3. Multiplicities of Practice	76
2.1.4. Methodological Multiplicities	78
2.1.5. Situating Relational Ethics.....	79
Part Two: Situating the Research Process	81
2.2.1 Emergent Methods	81
2.2.2. Situating Apples	81
2.2.3. Situating Hackney	83
2.2.4. Situating Methods.....	87
2.2.5. Multiple and Situated Methods.....	87
Documentary Analysis.....	87
Participant-Observation-Action	88
Semi-Structured Interviews.....	89
Situated Iteration.....	90
Part Three: Situating the Sites	93
2.3.1. ‘Direct’ Supply	96
2.3.3. The Multiple Retailers.....	99
Producers.....	99
Suppliers.....	99
Quality Produce Officers.....	100
2.3.5. Asymmetry and the ‘problem’ with relations.....	102
Conclusion: Situated Knowledges.....	104
Chapter Three: The Global Commodity Apple	105
Part One: Global Apples	106
3.1.1. Consuming Global Fruits.....	106
Five-a-day: a global strategy?.....	106
Urbanising Fruits	107
Healthy Produce, Healthy Profits.....	108
Privatising Production, Privatising Regulation	109
3.1.2. Producing Global Fruits.....	110
Intensifying Production: Maximising Yields	111
Integrating Pest Management.....	112
Commodifying Varieties, Contracting Diversity.....	114
Privatising Apples, Brand Cultures	117
Privatising Reproduction, Breeding Brands	119
3.1.3. Part One: Conclusion	120
Part Two: the Global Commodity Apple in the UK	121
3.2.1. Consuming Global Apples in the UK.....	121
Five-a-day: a national strategy	121
Globalising Supply: a national strategy.....	122
Consuming Global Fruits: a national strategy	123
Intensifying Production: a national strategy	125
Privatising Production, Privatising Regulation: a national strategy	126
Consolidating Apple Consumption.....	127

Urbanising Fruit Consumption	127
3.2.2. Producing Commodity Apples in the UK.....	129
Consolidating Orchards.....	129
Intensifying Production: a market-led strategy	131
Consolidating Supply: a corporate strategy	133
Consolidating Varieties: a corporate strategy.....	134
Commodity Varieties: a corporate strategy	135
Branding Varieties, Diversifying Brands: a corporate strategy.....	136
3.2.3. Part Two: Conclusion	138
Chapter Three: Conclusion	139
Chapter Four: The Corporate Apple	140
Part One: Producing Corporate Apples.....	141
4.1.1. Managing Production	141
Retail-led Production.....	141
Retail-led Harvests.....	143
Retail-led Standards	144
Managing Quality	146
Displacing Practice.....	149
Defending the Brand	152
4.1.2. Managing Consumption	155
Managing Matter.....	155
Managing Engagement	156
Branding Engagement	157
Part Two: Managing Varietal Range – From Varieties to Brands.....	159
4.2.1. Archetypes One and Two: the Commodity Apples.....	159
4.2.3. Archetype Three: Pink Lady®.....	160
4.2.4. Archetype Four: Jazz™	163
4.2.5. Archetypes Five & Six: the ‘Own-Brands’	166
Branding British.....	168
Branding Class II.....	172
4.2.6. Globalising Commodities, Localising the Brand	174
Part Two: Conclusion.....	176
Part Three: Redirecting the Corporate Apple	177
Spatio-Temporalities of the Wholesale Apple.....	177
Socio-Natures of the Wholesale Apple	180
Unstable archetypes: Three Pink Ladies.....	181
Socio-Relations of the Wholesale Apple	183
Corporate Influence.....	184
Conclusion: From Apple Varieties to Apple Brands	186
Chapter Five: The Agro-Ecological Apple	188
Part One: Agro-ecological Practices.....	189
5.1.1. Practices of Agro-ecology	192
Sustaining Productivity.....	193
Supporting Efficiency.....	195
Enhancing Diversity	196
In-situ Resilience.....	196
Part Two: Agro-ecological Practices of the Apple	198
Healthy Yields, Multiple Yields	198
Agri-biodiversity of the Apple.....	200
Breeding Cultures.....	203
Agro-ecological Agri-cultures.....	206
Communities of Practice.....	207
Part Three: Communities of Agro-ecological Practice.....	210
5.3.1. Agro-ecological Production	210
Traditional Orchards.....	210
Organic Orchards.....	212

Biodynamic Orchards	213
Agroforestry	214
Place-based Production	215
5.3.2. Agro-ecological Consumption and Co-production	216
Displacing the Agro-ecological Apple	219
Conclusion: Accessing the Agro-ecological Apple	220
Practice- based Communities	220
Economies of Scale	220
Distancing Place-based Production	222
Retail-led Regulation	222
Chapter Six: The Agro-Ecological Apple	225
Part One: Community Agro-ecologies	227
6.1.1. Growing Communities and Agro-ecological Localisation	228
Agro-ecological Subsidiarity	230
Community-led Trade	231
Urban Agro-ecological Agri-Food systems	232
6.1.2. Agro-Ecological Practices of the Apple	234
Producer One: The Apricot Centre	234
Permaculture and Biodynamic Design Principles	234
Producer-led Practices	237
Producer-led Standards	238
Diverse Yields, Diverse Functions	240
Producer Two: Stocks Farm	242
Community-led Design	242
Producer-led Harvesting	244
Community-led Practices	246
6.1.3. Engaging Agro-ecological Consumption and Co-commitment	248
Community-led Production	248
Community-led Trade	249
Engaging Interactions, Engaging Senses	250
Engaging Practices in Place	251
Committing to Practices in Place	252
Part Two: Placing Agri-biodiversity	254
6.2.1. Archetype One: Discovery Apple	255
6.2.2. Archetype Two: The Egremont Russet	257
6.2.3. Archetype three: the Growing Communities apple	259
Part Two: Conclusion	261
Part Three: Co-producing Agro-ecological Agri-food Systems	263
Co-producing Communities	263
Retrofitting Space	266
Multiple Functions, Multiple Relations	267
Conclusion: Placing Agro-ecological Systems	270
Chapter Severn: Conclusion	275
Part One: Corporate Globalisation	277
1.1. Corporate Space	278
Divided Space	278
Standardised Space	278
Hierarchical Space	279
Privatised Space	279
1.2. Corporate Natures	281
Global Commodities	281
Global Standards	281
Brand Ecologies	282
1.3. Corporate Clubs	283
Minimising and Externalising Risk	283
Brand Regimes	283

1.4. Corporate Scales.....	285
Globalising Supply.....	285
Localising Brands.....	285
Privatising Scales.....	286
1.5. The State and the Multiple.....	287
Privatising Production.....	287
Privatising Consumption.....	288
Part Two: Agro-ecological Localisation.....	290
2.1. Agro-ecological Places.....	291
Supporting Agro-ecological Places.....	291
Urban Agro-ecological Places.....	291
2.2. Agro-Ecological Natures.....	292
Place-based Practices.....	292
Engaging Ecologies.....	293
1.3. Agro-ecological Communities.....	294
Community-led Commitments.....	294
Co-producing Communities.....	294
2.4. Agro-ecological Subsidiarity.....	295
Proximate Production.....	295
Community-Based Practice.....	296
2.5. The State and Agro-ecology.....	297
Urban Space.....	297
Rural Hinterlands.....	299
Spaces of Agro-ecologies.....	300
Part Three: Communities of Practice.....	301
3.1. Practices In place, Out of place.....	301
Displacing Practice.....	302
Placing Practice.....	302
3.2. What natures are being nurtured?.....	304
Regimes of Practice.....	304
Communities of Practice.....	305
Dynamic Practice.....	306
3.3. Communities of Practice.....	306
3.4. Scaling-Up, Scaling-Out.....	308
3.5. Politics of Agri-food.....	309
Privatising Practice.....	309
Agro-ecological Practice.....	309
Politics of Practice.....	310
3.6. Regenerative City-Regions and Communities of Practice.....	310
Politics of Practice.....	311
Spaces of Possibility.....	311
Co-productive Politics.....	317
Bibliography.....	319
Appendix.....	350
2.1. Ethical Statement.....	350
3.11. Wholesaler Interview Guide.....	352
3.1. Integrated Pest Management Practices.....	353
4.1. Archetype One: Gala.....	354
4.2. Archetype Two: Braeburn.....	355
4.3. Archetype Three: The Pink Lady.....	356
4.4. Archetype Four: Jazz.....	357
5.1. Soil Association Organic Standards.....	358
6.1. Archetype One: The Discovery Apple.....	359
6.2. Archetype Two: Egremont Russet.....	360

Table of Figures

Table of Contents.....	5
Figure 1: Linear metabolism cities	12
Figure 2: Circular metabolism cities	13
Figure 1.1. Conceptual framework of the thesis	69
Figure 2.1. Fieldwork Matrix	94
Figure 2.2. Key themes.....	95
Figure 3.1.: World Area Harvested of Apples by Region (2000-02 and 2007-09) '000ha.....	111
Fig. 3.2.: Key Apple Categories.....	114
Fig 3.3.: Apple Production by variety In Europe (*000 tonnes).....	116
Figure 3.4.: Volume of Fruit Imports 1988-2010* ('000 tonnes).....	123
Figure 3.5.: Apple Supply to the UK 1988-2010* ('000 tonnes)	124
Table 3.6.: Hectares of Eating Apple Orchards, England and Wales.	130
Figure 3.7.: Home Production Dessert Apples ('000 tonnes), 1986-2010	131
Figure 3.8.: Area of dessert apples, England and Wales, 1988-2010* (Ha)	134
Figure 3.9.: Variety Change in terms of volume of production and area between 1985-1986 and 2008-2009.....	135
Figure 3.10.: England and Wales Orchard Hectarage, 2002-2009.....	137
Figure 4.1. Pink Lady Brand.....	162
Figure 4.2. British own-brands.....	171
Figure 4.3. Class II brands.....	173
Fig 5.1. The agro-chemical treadmill	190
Fig.5.2. Food webs of the agro-ecosystem	193
Fig. 5.3. The Soil Food Web	194
Fig. 5.4. Soil fertility management and integrated pest management synergies	194
Fig. 6.1. Growing Communities Principles.....	228
Fig. 6.2. Food Growing Zones	230
Fig. 6.3. Growing Communities Patchwork Farms Map.....	264
Fig. 6.4. Butterfield Green Community Orchard.....	265
Fig. 6.5. Box scheme pick-up points and Farmers' Market Location.....	268
Figure 7.1. Reiterating the conceptual framework of the thesis.....	275

Introduction

i. Urban Metabolisms

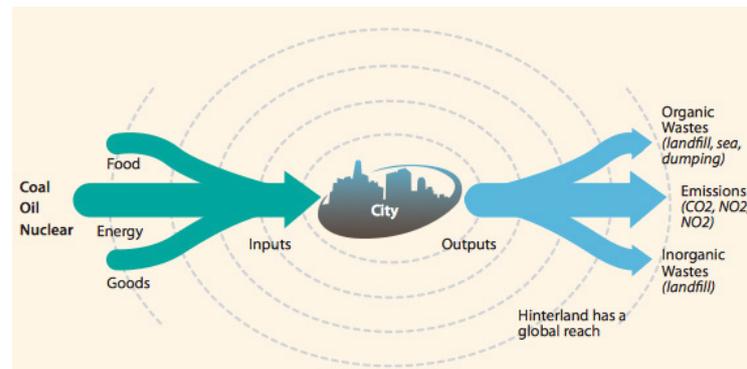
Urbanisation has been described as the “primary manifestation of the anthropocene” (Girardet 2015:13). According to Harvey (1996:38), “the future of most of humanity now lies, for the first time in history, fundamentally in urbanizing areas.” Between 1900 to 2013, global population increased 4.5 fold, from 1.5 billion to 7 billion, whilst global urban population increased 16 fold, from 225 million to 3.6 billion (Girardet 2015:17). By 2008, for the first time, over half of the world’s population were living in towns and cities (UNFPA 2015). The condition of urbanisation is particularly prevalent within the EU, where an estimated 80% of the population live in cities (Low 2005:57).

Considered an apex of urbanisation, the city is characterised by “concentration of economic activities and intense human interaction” (Girardet 2010:1). Harvey (1996) describes the city as an ‘engine’ for the accumulation of capital. This mode of accumulation is fuelled by the processes of economic and financial globalisation, enabling the continuous and efficient supply of relatively high volumes of low per-capita goods (Girardet 2010:1). Dependent upon global hinterlands, modern cities are recognised as globalised ‘mobilisation centres’ (*ibid*).

The modern city has also been described as an ‘entropy accelerator’ - a condition whereby resources are extracted and degraded at a faster rate than they are replaced (Girardet 2015:61). In many cities, the difference between the urban footprint of a city (defined as “the land surface that cities occupy”) and the ecological footprint of a city (defined as “the area required to supply cities with essential resources”) is intensifying at unprecedented rates (Girardet 2015:35). Whilst cities cover only 3-4% of the world’s surface area, it is estimated that they account for approximately 80% of the world resources although they (Girardet 2010:4). In London, for example, the ecological footprint is estimated as almost 300 times its geographical area, an area which translates as roughly the same size as Spain (City Limits 2002:vi).

Currently, the modern city tends to operate according to a linear metabolic system based upon the input of resources in the form of energy and material and output of waste, as demonstrated in the diagram below:

Figure 1: Linear metabolism cities



Source: (Girardet 2015:69)

Neo-liberal ideologies are considered the principal driving forces of the linear and extractive metabolisms of the modern city. The functioning of neoliberal ideologies currently hinges upon accelerated extraction and mobilisation of petroleum and other non-renewable (as well as renewable) resources in order to fuel commerce and consumerism. According to these extractive metabolisms “energy and materials... enter the city from the biosphere and the global economy, and percolate through urban systems before returning to the biosphere in a degraded form” (Girardet 2015:16).

There is, however, a deepening awareness that these linear, urban-centric metabolisms are ecologically and socially depleting whilst further fuelling the commodification, financialisation and privatisation of nature, space and relations.

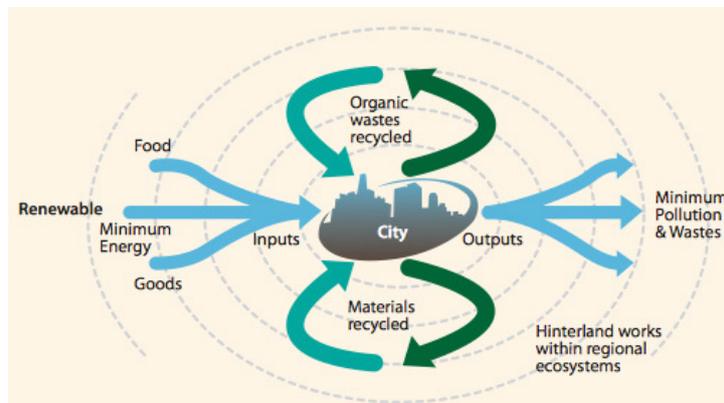
ii. Regenerative cities

It is recognised that there is an urgent need to address the currently damaging linear metabolisms of many urban-centric systems, particularly in the context of the city. According to Davis (2002:363 in Keil 2004:728) “very large cities – those with a global not just regional environmental footprint – are thus the most dramatic end-product, in more than one sense, of human cultural evolution in the Holocene. Presumably they

should be the subject of the most urgent and encompassing scientific enquiry. They are not.”

Girardet (2015) and Foster and Escudero (2014) are amongst a range of scholars and practitioners urging for a move toward more regenerative relationships not only *within the city* but between *cities and their hinterlands*. A regenerative approach recognises the need to *enrich* the landscape upon which the city depends and “support a fairer, *restorative* relationship between cities, the natural world and life” (Girardet 2015:18). ‘Regeneration’ is defined as “to grow after loss or damage” (OED 2015). Girardet (2015:12) suggests the term ‘regenerative’ “encapsulates the actions that can help to continuously renew and restore the ecosystems that underpin the existence of our urban systems.” Girardet (2010; 2015) presents the circular metabolism city as a model whereby renewable energies and materials that enter the city are recycled and renewed whilst waste and pollution are minimised, as demonstrated in the diagram below:

Figure 2: Circular metabolism cities



Source: (Girardet 2015:69)

Circular metabolic processes are based upon the support and creation of bio-capacity rather than the extraction of resources (Girardet 2010; Girardet 2015). They are considered ‘regenerative’ in that they are based upon the reduction of the reliance upon external resources, the increase of renewable inputs and the development of closed-loop energy cycles that support the health and resilience of the system. “Outputs ...become inputs into the local and regional production system” (Girardet 2010:9).

According to Forster and Escudero (2014:9), cities and urban areas cannot achieve transitions to “more equitable, economically viable and resource-efficient patterns of production and consumption...without supporting and supportive rural communities and rural resources.” In framing the city-region in terms of a metabolic system, the healthy functioning of cities and the hinterlands upon which they depend is recognised as supported by fostering *regenerative* practices within and beyond city-regions.

iii. Urban Agri-food Metabolisms

The metabolic processes of a city are considered particularly relevant when considering the agri-food systems that nourish the city. Currently, the dominant agri-food systems that feed modern cities hinge upon linear metabolic processes, driven by neoliberal ideologies. Urban agri-food systems have become increasingly sustained by the global economy, with food imported from further afield at an increasingly large scale (Smit, Ratta, & Nasr 1996:1). Many modern cities have become disconnected from local hinterlands and relationships between production and consumption of food have been distanced. This has led to the rise of what has been described as ‘placeless’ (Ilbery and Kneafsey 2000a) and ‘invisible’ foodscapes (Adam 1998). In London for example, food accounts for over 41% of the ecological footprint, of which fruits and vegetables account for 25% (City Limits 2002:vi). 81% of this food was estimated to be imported from outside of the UK (*ibid*).

Driven by neoliberal ideologies based upon the pursuit of profit via intensifying rates of consumption of high volumes of low per-capita goods, the modern urban agri-food system can be a potentially toxic combination of high densities of unhealthy foods and environments, disconnected from nature and dominated by consuming cultures and market-led forms of governance.

The city has been described as an ‘obesogenic’ environment (Morgan and Sonnino 2010:209). ‘Obesogenic’ environments are recognised as partly determined by the spatial inequities of urban agri-food systems. Obesity for example has been found to be particularly prevalent in areas of socio-economic deprivation in the form of ‘food deserts’, where “access to a cheaper and wider range of food is most restricted for some of the groups who need it most” (Acheson 1998:65 in Wrigley, 2002:2031). Furthermore, the least healthy foods are often found to be the cheapest. ‘Fatty’, ‘sugary’ and processed foods can often be cheaper than fresh fruit, vegetables and ‘wholefoods’ (Lang, Barling,

and Caraher 2009:170). Less healthy foods have also been found to be more likely to be in promotions in some stores (particularly discounters) (NCC 2006:15). Such spatial and economic inequities can perpetuate vicious cycles of ill-health and dis-ease, rather than necessarily fostering health and well-being.

The city has also been recognised as a site of potential ecological deficit, leading to what has been termed ‘nature deficit disorder’ (Louv 2005). ‘Nature deficits’ have been found to deplete mental health and well-being (Ulrich 1984) and are suggested to weaken ecological literacy and forms of environmental stewardship (Louv 2005). Evidence suggests ‘nature deficit’ can be particularly compounded in low-income urban areas. Low-income communities in the city have, for example, been found to be deficient in trees (Heynen 2003:989). According to Francis et al. “in current urban culture, food may be the only remaining connection to nature” (2003:102). Yet potential forms of ecological connection within the city, including agri-culture, can be unevenly distributed. Food for many urban citizens is disconnected from place and agro-ecology.

The neo-liberal ideology that steers much of the modern urban condition is found to have significant impact upon the spaces, natures and relations of the agri-food system upon which it feeds. The increasing extent of the privatisation and financialisation of spaces, services and systems within the urban environment has been documented extensively (Minton 2006). The dominant agri-food system that feeds majority urban populations is included in this neoliberal trajectory. Neo-liberalisation, in the form of “deregulation and other neo-liberal trade policies [*has*] left food supplies to our cities in the hands of vast conglomerates and supermarket chains” (Girardet 2015). Within the UK for example, it is estimated that five multiple retailers account for approximately 80% of the grocery market (Wood 2011).

The socio-ecologically depletive and inequitable conditions of the neo-liberal modern city are partly attributed to the linear, extractive agri-food systems upon which the modern city depends. Determined by dominant neoliberal ideologies focussed upon commercialism and financialisation, production has been marginalised from the city whilst consumerism heightened. London for example accounts for 12% of Britain’s population, yet it requires approximately 40% of Britain’s entire productive land for its produce (Deelstra and Girardet 2000). Simultaneously, green potentially productive land in London has reduced by 35% between 1965-1997 (*ibid*). The neo-liberal modern city has increasingly excluded agri-culture from the urban environment.

iv. Depletive Agri-food Metabolisms

Meanwhile, there is a growing body of evidence demonstrating the extent of the depletion of biodiversity, soil and nutrition caused by the global industrial agri-food system. Globally, it is estimated that crop genetic resources are being lost at a rate of 1-2% per annum (Shand 1997). It is further estimated that soil is being lost at between 10-40 times the rate at which it can be replenished naturally, whilst approximately 40% of agricultural soil is classed as degraded or seriously degraded (Crawford in WEF 2012). According to Herren et al. (2009:247), “the short-term aims of corporate, profit-oriented agriculture are recognised as exploitative of soil and water, lacking the diversity that might support resilience in the face of climate change.”

As topsoil and soil fertility diminish, global agri-business production regimes emerge as increasingly dependent upon external sources for fertility, as well as herbicides and pesticides. One-quarter of global pesticide products sold are estimated to be applied to fruit and vegetables (UK Crop Protection Association 2001 in Pretty 2005:3). According to the European Food and Safety Authority about half of the food of plant origin sampled in 2010 contained some measurable pesticide residue (EFSA 2013:2). The health implications of pesticide exposure is only just coming to light, particularly with regards to chronic exposure to endocrine disrupting pesticides (EDCs) (Zahm et al. 1993; De Roos et al. 2005; Blair, Hoar and Zahm 1995). The cultivation of top fruit is considered one of the most demanding of crops in terms of pesticides used per hectare, exceeded only by vineyards (UK Crop Protection Association 2001 in Pretty 2005:3).

As well as human bodies, pesticides, fungicides and herbicides can have toxic effect upon microbial and mycorrhizal activity of ecosystems (Peck et al. 2011; Verbruggen et al. 2013; Holb, Heijne and Jeger 2006) - considered critical for healthy functioning agro-ecosystems (Altieri, Ponti, and Nicholls 2005). The nexus of nutrition and ecology (DeClerck et al. 2011:43) further demonstrates the importance of soil and biodiversity for human health and the potentially damaging implications of an agricultural system dependent upon agro-chemical approaches that can destroy soil life. Indeed, a number of studies of longitudinal data are suggestive of significant mineral depletion in fruits and vegetables over the last sixty years in the US and the UK (Mayer 1997; Bergner 1991). In one study by the UK Government Royal Society of Chemistry, levels of trace minerals in fruit and vegetable analysed within the UK were found to have fallen by almost 76% between 1940 and 1991 (MAFF 1991 in LDA 2006:37). Eco-nutritionists such as

DeClerck et al. (2011:49) emphasise that “the health of the soils in which these crops are grown can play an important role in ensuring human health.”

Currently, increasing the consumption of fresh produce, particularly fresh fruit and vegetables is actively promoted by a range of official bodies. The World Health Organisation (WHO) and Food and Agricultural Organisation (FAO) (WHO/FAO 2004), the European Commission (EC) (2007; 2010) and all those member states in agreement with the EU Obesity Charter (European Commission 2006) recommend the consumption of five or more fruits and vegetables a day. This includes the UK Government (HM Government 2008). With average current consumption levels significantly below those recommended (DEFRA 2014b), demand for fruit and vegetables is set to rise, particularly within urban environments.

The ways in which these shifting consumption practices of fresh fruit and vegetables and forms of public and private governance affect the spaces, natures and relations of agri-food systems is of key socio-ecological concern. Within the context of the UK, multi-level policies remain predominantly focussed upon forms of ‘sustainable intensification’ and ‘open and competitive markets’ (HM Government 2008).

The ‘city-region’ however is recognised as a useful unit of analysis in working towards more regenerative agri-food systems, strengthening “the sustainability and resilience of food systems in landscapes both urban and rural” (Forster and Escudero 2014:139).

v. Regenerative Agri-food Metabolisms

In the midst of a shrinking arable land base, diminishing agri-biodiversity, increasingly limited supplies of water and nitrogen and a growing context of climate change scenarios and energy crisis projections (Altieri and Toledo 2011) there is an emerging recognition of the urgent need for transition to more sustainable and regenerative forms of agriculture (IAASTD 2008; De Schutter 2014). De Schutter’s UN report on the right to food “any prescription to increase yields that ignores the need to transition to sustainable production and consumption, and to reduce rural poverty, will not only be incomplete; it may also have damaging impacts, worsening the ecological crisis and widening the gap between different categories of food producers” (De Schutter 2014:8).

Agro-ecological practices have been endorsed by a number of globally relevant organisations including IAAKSTD (2008), UNEP (2009), UNHCR (De Schutter 2014) and FAO (2010) as potentially supportive of sustainable agri-food systems. This thesis follows these recommendations in considering agro-ecology as a practice that can be potentially supportive of more regenerative agri-food systems and city-regions.

vi. Agro-ecological Practices

Whilst agro-ecological practices are globally diverse in terms of practice, they are convergent in terms of the underlying principles, which include a. context-dependent soil, water and biodiversity management regimes and b. maintaining and enhancing agri-biodiversity (Koohafkan and Altieri 2010). Agro-ecology encompasses a range of approaches including organics, biodynamics, permaculture and agroforestry. All share the common guiding principles, whereby practices “maintain the resource base upon which they depend” (Gliessman 1998a:3).

According to Gliessman (1998) agro-ecology is united by the principles of the design of diverse, resilient, productive and efficient systems. As a *discipline*, agro-ecology provides basic ‘ecological principles’ for the design and management of agro-ecosystems that are both productive, conserve natural resources, whilst remaining culturally sensitive, socially just and economically viable (Altieri 2004:444). As a set of *practices*, agro-ecology is based upon the enhancement of ecological processes and beneficial interactions that support more resilient and efficient farming systems less dependent upon off-site inputs and less prone to external shocks. Agro-ecology in this sense refers to “a range of agronomic techniques, including intercropping, the recycling of manure and food scraps into fertilizers, and agroforestry, that reduce the use of external inputs and maximize resource efficiency” (De Schutter 2014:9). As a *movement*, agro-ecology is unified in seeking to reclaim the rights to food, rights to production and rights to reproduction through ‘healthy, sustainable and equitable food systems (Holt-Giménez 2011:2).

As agro-ecologist Gliessman (1998:318) notes, “recognising the influence of social, economic, cultural, and political factors on agriculture, we must eventually shift our focus from the sustainability of agro-ecosystems to the sustainability of our food systems.” Agro-ecological practices are considered supportive of biodiversity, soil health and

nutrition (DeClerck et al. 2011). A number of long-term site-specific studies suggest that agro-ecological, organic practices support more nutrient-rich soils and crops compared to conventional practices (Kolbe and Zhang 1995; Mader et al. 1993; Schuphan 1974; Abele 1987). There is an emergent literature suggestive of the intricate links between the health of plants and animals consumed and the health of consumers. This includes compelling evidence based on short time-frames of the anti-carcinogenic nature of organic food (Fahey, Zhang, and Talalay 1997; Hildenbrand 1990) and the potentially healing actions of organic foods in cancer therapy (Gerson 1958; Bishop 1988; Wattenberg 1992; Fahey, Zhang, and Talalay 1997; Plaskett 1999).

Agro-ecology is however recognised as more than just a suite of regenerative farming techniques and approach to nutrition. It is further considered a means of supporting the transition of communities away from fossil dependence to more regenerative metabolisms based on 'local resources, innovation and solar energy' (Altieri and Toledo 2011). In this respect, agro-ecology emerges not only as a potentially regenerative form of agriculture but also as supportive of regenerative city-regions. Pimbert (2012) for example outlines approaches to the recycling of resources, linking food and energy production with water and waste management. As a practice, agro-ecology can support the reduction of greenhouse gas emissions and, in some cases, actively build carbon in to the soil (De Schutter 2011). As Altieri (2012:7) states, the overall aim of agro-ecology is to replace inputs with processes that support "sustainable and productive systems."

According to Low et al. (2005:58), the city is the largest unit that may address sustainability. The agri-food systems that feed a city and the urban environment are recognised as increasingly critical sites through which to consider the possibilities of more sustainable and regenerative practices. This thesis recognises that place-based, knowledge-intensive, community-centres practices of agro-ecology have the potential to support more regenerative agri-food systems and city-regions, countering the neoliberal forces that fuel the currently dominant consumerist focus of the modern city and city-region. The city-region is considered a unit from which we may begin to consider the possibility of more regenerative agro-ecological agri-food systems within and beyond the city.

vii. Political Ecologies of Agri-food

This thesis suggests that the lens of political ecology enables consideration of the practices of agri-food systems within and beyond the city. From a political ecological perspective, attention to political, social, economic and ecological relations and practices is critical in the exploration of the spaces, natures and relations of the agri-food system, alongside attending to the physical realm and physical metabolic processes. Agri-food systems are recognised as ‘constitutive, imperfect, political processes’ which reside ‘alongside’ global forces (Goodman & DuPuis, 2005:359). Political ecology seeks to bridge the micro-level analysis of actor-network theory with wider considerations of governance. It could thus be conceived what (Marsden 2000:22) terms a ‘middle-ground’ approach.

viii. Urban Political Ecologies In Place

This thesis responds to calls from urban political-ecologists such as Swyngedouw and Heynen (2003:912) for a more ‘relational interpretation of space’, from the ‘microtextures of the city’ and ‘ordinary environment’ (Low 2005:58) to more meso and macro levels (Marsden 2000) - to *situate* matter *in place* but not *of place* (Massey 2005). Just as there are many different views of the city landscape, it is recognised that within one city, there are a multiplicity of ‘foodscapes’ (Morgan, Marsden, and Murdoch 2006) and processes of mattering (Roe 2010).

Relational geographers such as Massey (1994; 2005; 2011), Pile (2005), Amin & Thrift (2002) call for an understanding of the city in more ‘relational’ terms, whereby a city is considered an intricate web or layering of times, spaces, objects and events (Amin and Thrift 2002:49). From a relational geographical perspective, the city is recognised as a coming together of ‘place-moments’ of many things, relations and temporalities (Massey 2005). Cities are considered assemblages of multiple sites, complex ecologies and cultures “living at various speeds, intensities and trajectories” (Amin and Thrift 2002:28), always in-the-making (Hinchliffe 2010:309) and in-process (Greenhough 2010; Thrift 2004).

Relational geographies further recognise that non-humans do not just exist within the city “but potentially shape and are shaped by their urban relations” (Hinchliffe and Whatmore

2006:127). Nano-particles to viruses, vegetables to feral animals, humans and machines, are recognized as mutually affecting and affected by their fields of 'becoming' (Hinchliffe and Whatmore 2006:128). Relational geography thus supports an approach that attends to the dynamic and intra-active (Barad 2003; Barad 1998) nature of things 'becoming' food (Roe 2006b).

Relational geography can help in attending to the multiple, dynamic and interrelated agri-food systems that feed a city. Whilst political ecology invokes a critical perspective on the wider influences of the practices of the state and forms of governance from micro to macro scales, relational geography encourages the researcher to attend to how *practices* of things becoming food determine the multiple spaces, natures and relations *in place*. Political ecology, with the support of relational geographical approach, provides a lens from which we may approach a more 'relational interpretation of space' (Swyngedouw and Heynen 2003:912) and *situated* understanding of the 'microtextures' of the agri-food systems of a city as well as the impact of governance on agri-food systems, offering insight into the question of the regenerative city-region.

ix. Why the apple?

In recognition of the need to transition to more regenerative agri-food systems and city-regions, combined with the projected increase in the demand for fruit and vegetables within an urban context, particularly for fruit, this thesis considers the urban apple in the inner city London borough of Hackney. The apple was selected as a prism through which the potential of an agro-ecological agri-food system may be explored in the context of the city-region. There are four key reasons for selecting the apple as a fruit through which to explore the possibilities of agro-ecology within a city context:

First, the apple is one of the most popular fruits consumed. The apple is a favourite fruit across the world and is one of the most globally traded fruits. In a survey by HFMA (2014), the apple was found to be one of the favourite fruits amongst British.

Second, the apple offers insight in to the scalar tensions of localisation and globalisation processes of agri-food systems within the context of the UK. As a temperate fruit, apples can grow well within the UK. For many, the apple epitomises the possibilities of a 'local' fruit. However, currently, the majority of apples consumed and produced within the UK

are guided by the logics of the global apple economy. In recognising the rising phenomena of urbanisation and the growing demand for fresh fruits and vegetables as well as the growing agenda for more agri-food localisation, the apple was considered particularly pertinent.

Third, the apple is highly diverse. There are estimated to be over 7,500 apple cultivars in the world and over 2,300 varieties growing in the UK (Morgan, Richards, and Dowle 2002). The apple is further considered a crop of socio-culturally significance within the UK, with a diverse range of place-based socio-cultural practices associated with cultivation and consumption across apple-growing regions. Simultaneously, apple varietal diversity and associated cultural practices are found to be contracting, standardising and privatising according to a corporate logic. Five apple varieties account for three-quarters of apple sales within the UK (IFR 2009). The majority of apples consumed within the UK are purchased via a small number of multiple retails.

Finally, it is suggested that the apple presents an ecological challenge with regards to regenerative agri-food systems and the regenerative city-region. As stated above, the cultivation of top fruit is considered one of the most demanding of crops in terms of pesticides used per hectare, exceeded only by vineyards (UK Crop Protection Association, 2001 in Pretty 2005:3). Currently, the proportion of agro-ecological production of top-fruit is found to be marginal within the UK. For example, it is estimated that a small proportion of organic apples consumed within the UK are currently cultivated within the UK (c.2%) (DEFRA, 2004 in LDA 2006:40). The challenge of accessing agro-ecological fresh fruit within a sustainable agri-food system remains a challenge for the city-region within the UK.

x. Regenerative Fruitscapes

If increasing demand for fresh fruit supply is to be met within a regenerative city-region framework, mechanisms and practices supportive of regenerative afri-food metabolisms are essential. Currently however, the agri-food system remains dominated by powerful political and economic organisations and institutions that endorse conventional agro-industrial approach, sustainable intensification and market-led transformation (HM Government 2008). Meanwhile research and development for agro-ecological approaches

to agri-food systems remain marginalised (Altieri and Nicholls 2012:22) – particularly at national government level in the case of the UK.

It is suggested that the metabolic processes of a city's fresh fruit and vegetable supply can only be regenerative if they regenerate the soils, ecosystems, landscapes and communities upon which it depends as well as those that it feeds. This thesis aims to consider the logics that shape the urban apple in the context of Hackney, London. The thesis considers the guiding logics of the various practices found to supply the borough with apples, and the implications in terms of space, nature, relation and scale. It is suggested that attending to the multiplicities of practice around the urban applescape¹ can illuminate ways in which agro-ecology can be fostered or frustrated in the context of the city. In turn, the question of regenerative approaches to fresh fruit supply in the context of the apple is considered.

xi. Research questions

How can we explore the logics and practices determining the urban apple in London? Political ecology encourages attention to the logics guiding the practices of apple production, distribution and consumption whilst relational geography encourages attending to the multiple, interrelational and dynamic nature of these practices *in place*. Grounding the work in place yet not of place, the thesis explores the different practices and processes of the urban apple. It does so by focussing particularly on the corporate and the community-led agro-ecological logics – recognised as particularly pertinent to the question of the city-region. The research questions of the thesis emerge as:

1. How can we explore the corporate and agro-ecological logics of the agri-food system via the apple?
2. What are the implications of the agro-ecological and the corporate logic in terms of spaces, temporalities, natures and relations in the context of the apple?
3. What are the implications of the agro-ecological and corporate logic in the context of the regenerative city-region?

¹ An applescape is used as a term to encompass the spaces, natures, practices and relations of an apple supply, from orchard to consumer.

xii. The emerging methodological framework

In following the call amongst political ecologists for more attention to the ‘relational interpretation of space’ (Swyngedouw and Heynen 2003:912) in the context of the city, relational geography leads us to three key points in terms of the urban apple.

First, that the apple is *multiple* in its potential matter(s) and mattering(s). One apple can *become* many things, with a range of possible pathways. Through locating the study in place in London, the multiplicities of the logics of the becomings of the apple can be explored *in place*.

Second, as a senescent thing, the apple is in a state of continuous and dynamic *becoming* (Roe 2006b). Attending to the logics of the *practices* involved in the production, harvesting, quality control, storage, distribution and consumption of the apple recognises the dynamic nature of the apple and allows for working across and between multiplicities of the becoming of the apple.

Third, in attending to the multiplicities of practice *in place*, the *interrelationalities* of practices may be explored. The apples explored are recognised as the result of an interrelation of multiple sites, ecologies and cultures intertwining and interrelating at “various speeds, intensities and trajectories” (Amin and Thrift 2002:49).

It is recognised that there is a need for *situated empirical* work in order to unpack the multiplicities of these forms of mattering(s) and matter(s) within place. According to Greenhough (2010:50), if we are to follow that a multiplicity of space-times exists within a site, there is a need to “explore and experiment with the multiple ways in which the world can and is coming to be.” Hinchliffe et al. (2005) make a case for a “multiplying of accounts and stories, traces and sites”: to consider how these accounts, stories, traces and sites interact. As well as multiple voices, there is a need to attend to the more-than-word *practices of becoming*. As is extended in Chapter two, a relational methodological framework that uses multiple methods, considers multiple voices and practices attends to the multiple, dynamic and interrelational nature of the practices determining the becomings of the urban apple. A *relational* and *reflexive ethics* is further recognised as crucial, as is further discussed in Chapter two.

xiii. Why London?

As a global city, London was recognised as a pertinent case both in terms of challenge and possibility. As the capital of the UK, London is the largest city in the UK and third largest in the EU. Of the 64.6 million living within the UK, an estimated 8.5 million (13.2%) live within the Greater London Authority (ONS, 2014). London presents an apex of urbanisation within the UK and is recognised as one of the most densely populated areas of Europe (Petts 2001).

London is recognised as a diverse and creative ‘global city’ (Sassen, 1991), the hub of many financial, scientific and creative industries of the world. Approximately one-quarter of the population is of ethnic minority (Petts 2001) and over 300 languages are spoken by a diverse population. Whilst London has a globally renowned financial sector and vibrant socio-cultural landscape, the city remains one of intense polarities. As a metropolis, it is a site of inherent polarization where some of the world’s wealthiest live next to intense pockets of deprivation and poverty. There are greater levels of income inequality than any other part of the UK and an estimated 4 out of 10 children live in child poverty (CPAG, 2014).

The agri-food systems that feed London reflect the socio-cultural diversity and socio-economic polarisation that characterize the city. The agri-food sector constitutes a key component of the economy of London, considered the “second largest and fastest growing manufacturing sector” (LDA 2006:20). In her account of Kilburn High Road, North London, Massey (1994) describes a ‘global sense of place’ in the collisions of global within the local on a London high street. At the turn of the century, an estimated 6.9 million tonnes of food were consumed by Londoners in 2000, 81% of which was imported from outside of the UK (City Limits 2002:12).

Whilst socio-culturally diverse, the agri-food systems that feed London are determined predominantly by a corporate logic. Most food purchased for consumption within the home in London is derived from supermarkets, superstores or independent² retailers.

² Independents are defined as non-multiples companies with less than five stores (GLA 2009:17). This includes street markets as well as independent shops. Supermarkets are defined as “stores with a trading floorspace of less than 2,500 square metres, often with car parking” (*ibid*). Superstores are defined as “stores with a trading floorspace of more than 2,500 square metres, with supporting car parking” (*ibid*).

Although 80% of grocery stores in London are classed as ‘independent’, accounting for two-fifths of grocery retail floorspace, only an estimated 13 per cent of grocery expenditure in London is spent in independent stores (GLA 2005:16). The foodscapes of London emerge as heavily dominated by multiple retailers, in the form of supermarkets and superstores. According to the GLA (2005:40), multiple retailers account for 87% grocery spend in Greater London, of which 70% is accounted for by Tesco, Sainsbury’s, Morrisons and Waitrose. According to the same report, the level of concentration in grocery retail is higher in London than the UK as a whole - “70 per cent of one-stop shopping in London accounted for by Sainsbury’s and Tesco (compared to 55 per cent for the largest two supermarkets across the country as a whole)” (GLA 2005:iv).

Whilst there are over 70 street markets in London (LDA 2006), recognised as particularly key sites for speciality and ethnic foods (Potts, Jatana, and Rubin 2006), London’s majority foodscape is dominated by the multiple. Meanwhile, the number of independent retailers, street markets and wholesalers³ have notably dropped dramatically over the last few decades (NEF, 2010). Indeed, the London food sector is recognised as increasingly consolidating in terms of market share, both as a result of mergers and acquisitions (such as the Tesco merger with T&S and purchase of Adminstore) as well as the increase in smaller format stores (such as Tesco Metro and Sainsbury’s Local), particularly in inner city London (GLA 2005:22). According to the GLA report (2005:20), approximately 82 per cent of London’s population is within one mile of a Sainsbury’s and Tesco stores.

Whilst London’s agri-food supply is recognised as global and increasingly consolidating a number of direct forms of supply such as farmers' markets and box-schemes exist within London, considered supportive of access to more proximate, and in some cases, agro-ecological food. There are an estimated 29 farmers’ markets, 20 of which are FARMA accredited (FARMA 2015). Key box scheme providers include Abel and Cole; Eostre; Everybody Organic; FarmAround Organic; FieldFare; FarmDirect; Growing Communities; Riverford and UK5. There are also many local individual and community harvesting projects operating within the city, procuring fresh fruits and vegetables from

³ It is estimated that the wholesale market now provides approximately 20% (or less) of the total supply of fresh meat, fish, fruit and vegetables to London and the south-east (a figure proportionally higher in London than the rest of the UK, partly due to the concentration of the catering trade within the city and surrounding area as well as the wide array of street markets) (Saphir 2005:7).

public and private land including parks, institutions, private gardens and diverse institutions.

In 1997, a London report published by the Sustainable London Trust called for greater connections between the city and the hinterlands (Sustainable London Trust, 1997:7-8). Recommendations included the support of hinterland food production, development of local markets, and the development of ecological education. The 'Healthy and Sustainable Food for London: the Mayor's Strategy' (LDA 2006) '*Cultivating the Capital*' report further advocates food growing in London and the surrounding areas (GLA 2010). Currently, proximate agri-food supply accounts for a very small proportion of the food consumed within the city, with only a small proportion of potential agricultural land located in the peri-urban of the city used for cultivation. Of the 10 per cent of London that is considered 'farmland', a small proportion is used for food production (GLA 2010). An estimated 500 hectares in the capital are under commercial fruit and vegetable cultivation (Petts 2001:4), equating to approximately 3.7% of agricultural land.

xiv. Why Hackney?

Situating the study in a specific borough allowed for the exploration of a multiplicity of *groundings* of urban applescape. As is further discussed in Chapter two, Hackney was recognised as a key site in which to consider the dynamics of an urban apple both corporate logic and the potential of agro-ecological in the context of an inner city environment. Growing Communities, located in Hackney is considered a pioneering case of agro-ecological subsidiarity within London. They manage London's first organic farmers' market and a community-led box-scheme, as well as initiating a patchwork-farming network that includes three market gardens and nine patchwork farms in Hackney. Growing Communities was identified as a exemplar of an urban agri-food mechanism supporting the supply of agro-ecological food within an urban agri-food environment otherwise dominated by a small number of multiple retailers. Hackney was thus selected as a site through which the corporate and agro-ecological logic could be considered within the urban environment of inner-city London.

xv. Structure of thesis

Chapter one outlines the theoretical framework of the thesis. It considers the industrialisation and privatisation of the majority agri-food system in the context of the UK. It then considers the emergent alternative food movement and forms of direct, local food supply, recognised as forms of reconnection with the spaces, natures and relations of agri-food. Part two draws upon recent agri-food literatures that recognise the ambiguities of value-based terms such as local and seasonal. In consideration of these literatures, Part three turns to practice based approaches of agri-food. This section concludes by considering agro-ecological practice as a place-based approach to potentially regenerative agri-food systems.

Chapter two presents the methodological approach of the thesis. It outlines the methodological framework that draws upon relational geographies that are recognised to support a situated, place-based and practice-oriented approach. It presents the participatory-observation-action and semi-structured interview techniques employed, drawing upon iterative techniques and grounded theory. It then situates the research process within the context of Hackney, London, presenting the approach to exploring the practices of the logic of the corporate apple and the agro-ecological apple.

Chapter three considers the rise of the commodity apple in the context of the global apple economy. It considers the intensification of production, consolidation of varietal range and privatisation of varieties of the global apple commodity. It then considers the contraction, consolidation and privatisation of supplies and varietal range of apples grown within the UK.

Chapter four explores the logic of the corporate apple, which is found to influence the majority apple, sold, through the fieldwork conducted on the multiple retailer in the context of Hackney. The forms of management of production, distribution and supply of apples are explored, with a focus on the localisation of apples in the context of the UK and the rise of the club brand and own brand range. The chapter considers two commodity apple archetypes: the Gala and Braeburn and two club apple brands: the Pink Lady® and the Jazz™ apple. The rise of the 'own brand' apple is then explored. The corporate apple is found to be increasingly configured via emergent brand ecologies. Part three then considers how the corporate apple impacts upon other domains of supply, via the case of the wholesale markets of London.

Chapter five explores the practice of agro-ecology, considering the principles that inform the practice. It then focuses upon the practices of the agro-ecological apple, considering the production of the apple within an integrated system, the agri-biodiversity of the agro-ecological apple, the approach to the breeding and reproduction of the agro-ecological apple and the interdependency of agro-ecology and socio-cultures. It then considers mechanisms of supply supportive of agro-ecological systems, before turning to consider the context of agro-ecological production and supply within the context of the UK.

Chapter six considers the case of an agro-ecological apple in Hackney, London via fieldwork conducted on the social enterprise, Growing Communities. It explores the logic of the community-supported, producer-led agro-ecological apple, made available via a weekly farmers' market and community-led box-scheme. The Growing Communities social enterprise is recognised as supporting access to the place-based agro-ecological apple within Hackney. The chapter considers three archetypes of agro-ecological apples: the Discovery, the Egremont Russet and the 'direct' apple. Part three then considers the emergence of the patchwork farming network, a key element of Growing Communities work in reconfiguring the spaces, natures and relations of the urban agri-food system. Although marginal in terms of proportions of apples consumed within the borough it is suggested that Growing Communities provides a case of a community-led distribution scheme enabling the entry of the agro-ecological, proximate apple to the city and thus has relevance for the question of the regenerative city-region agri-food system.

Chapter seven then reflects upon the findings of this work that has attended to the practices of the multiple retailer and Growing Communities. It considers the implications of these practices in terms of space, nature, relation and scale. It is suggested that political ecology supports attending to the asymmetries of power that currently prevail within the agri-food system whilst relational geography supports a more relational and situated understanding of the implications of these asymmetries. Drawing upon the findings of the thesis, the conclusion considers the city-region as a 'space of possibility' for more regenerative agri-food systems in place through supporting agro-ecological practice.

Chapter One: Literature Review

This chapter provides a grounding of the literature informing and provoking this study. Part one presents an overview of the geographies of agri-food. The first section considers the period of concentration and consolidation of the global agri-food system, focussing upon approach to the space, time, nature, practice and relations of the industrial agri-food logic. The second section considers the rise of the alternative food movement and more direct forms of supply, considered potential mechanisms for reconnection with the spaces, temporalities, natures, practices and relations of agri-food systems.

Part two then draws upon recent agri-food scholarship and the ambiguities of scalar and value based terms such as 'local', 'seasonal' and 'direct'. It follows Goodman, DuPuis and Goodman's (2012) call for a shift in attention to practice.

Part three responds to this call, considering agro-ecology as a potentially regenerative practice. A city-region approach is recognised as potentially supportive of place-based agro-ecological practice (Forster and Escudero 2014:45). The multi-scalar challenges and opportunities for supporting agro-ecological communities of practice at international, national and local level. Finally, political ecology is presented as a framework through which to explore the relationalities of the spaces, natures, relations of the urban apple in the context of the city-region, through attending to practice in place.

Part One: 21st Century Geographies of Agri-Food

1.1.1. Industrial Agri-food Systems

Over the last few decades there has been a period of intense globalisation, consolidation and privatisation of agri-food systems. Control is increasingly concentrated amongst a small number of globally powerful corporations. By the turn of the century, it was estimated that 200 buying desks act as 'gatekeepers' for between 3 million producers and 160 million consumers (Grievnik 2002 in Goodman, DuPuis, and Goodman 2012:88). An expanding proportion of agri-food systems are controlled by multiple retailers and retail group consortia. The top ten food retailers, for example, control almost a quarter of the global food market (Clapp & Fochs, 2009 in Tennent and Lockie 2011:33). In the context of the UK, approximately 80% of food purchased is derived from five multiple retailers (Wood 2011). Global markets, according to O'Hara & Stagl (2001:535) are "characterised by alliances and networks of firms which form vertically integrated monopolies." These tend to be driven by 'globally integrated competitive strategies' (Goodman 1997:668). As this first section explores, these concentrations of control and asymmetries of power are heightening the verticalisation and privatisation of the spaces, natures, relations and practices of global agri-food systems.

Controlling Socio-Ecologies

O'Hara and Stagl (2001:536) suggest global agri-food systems share a logic based upon: (i) industrialisation and concentration; (ii) spatial and temporal independence; (iii) dependence upon symbols and (iv) reliance upon expert systems. Maximum yields of homogeneous, standardised crops are achieved via industrial forms of agriculture, dependent upon "high inputs of agrochemicals, and fossil energy, intensification, specialisation, mono-cultural production, mechanisation, intensive livestock production and large-scale production units" (Tivy 1990 in Wibbelmann et al. 2013:1). Indeed most globally reaching, industrial forms of agri-food systems hinge upon linear metabolic systems and a continuous supply of external inputs. These systems of intensive industrial agri-food supply are found to be degrading and depleting soils (Crawford in WEF 2012), biodiversity (Shand 1997; Pretty 1999; FAO 2015) and the nutritional and cultural basis of food (DeClerck et al. 2011). Furthermore, fertilisers and fuel are recognised as the

biggest agricultural contributors to greenhouse gas emissions (Kehagias et al. 2015; Smith et al. 2014).

More recently, global industrial agri-business have been retrofitted in the form of 'sustainable intensification' (Wibbelmann et al. 2013:1) in response to socio-political pressures. However, the underlying logic of these forms of capital intensive corporate-led restructuring remain predominantly based upon the four characteristics as described by O'Hara and Stagl (2001).

Controlling Spatio-Temporalities

Friedmann (1993:221) describes the world food economy as a move to "distance and durability". As Arce and Marsden (1993:304) outline, the food industry is increasingly capable of overcoming heterogeneous climates, regional nuances, seasonal variations through various technological developments and globalised forms of co-ordination. O'Hara and Stagl (2001:358) suggest, "spatial and temporal independence... signify an increase in scale (space-time-boundary) aimed at overcoming local biophysical constraints."

According to Marsden (2011:3), this form of spatial decoupling of production and consumption is "visible in the form of footloose production, international food transport, 'lean' logistics and traceability and the deconstruction and fragmentation of food into different but standardised, value-added components...". Food is increasingly available in standardised form throughout the year and from 'global kitchen gardens'. This is resulting in "the suppression of particularities of time and place in both agriculture and diets" (Kloppenburg, Hendrickson, and Stevenson 1996:3). "What is eaten by the great majority of North American [*and British*] comes from a global everywhere, yet from nowhere that they know in particular" (Kloppenburg, Hendrickson, and Stevenson 1996:34). In the case of fruits and vegetables, these global systems enable a 'permanent global summertime' for consumers (Blythman 2004). Ilbery and Kneafsey (2000:319) suggest these processes are leading to 'placeless foodscapes' – often dominated by "nationally recognisable and homogeneous brand names" (Morgan, Marsden, and Murdoch 2006).

Klett (1990:12) describes industrial production as "independent of time, and of rhythm, for example, day and night, or the seasons." According to Adam (1999) there are several

key ways by which time is managed by the industrial agri-food system. First, via the *seasonal extension* of production and *spatial extension* of production regimes. Second, via post-harvest storage technologies, enabling the suspension, deceleration and acceleration of ripening processes. These forms of temporal management result in what Adam (1999b) describes as the *deseasonalisation* and *detemporalisation* of food, as well as an increasing number of ‘*unknowns*’ around food. Temporalities of harvesting, ripening and storage are rendered ‘invisible’ (*ibid*). Food becomes ‘timeless’ as well as ‘placeless’, whilst notions of ‘freshness’ gain ambiguity (Freidberg 2009). The ability to control the temporalities as well as the spatialities of agri-food has further facilitated control and, in some cases, outflanking of socio-natural processes.

Controlling Socio-Natures

Socio-natures have been progressively sculpted and reconfigured by industrial agri-food regimes. Goodman, Sorj and Wilkinson (1987) present two modes of ‘outflanking’ of ‘nature’ within the agri-food sector. First, through *appropriation*, whereby ‘natural’ processes are replaced or reconfigured. Second, through *substitution*, whereby ‘natural’ products are replaced or reconfigured via socio-natural amalgamations. Both forms of ‘outflanking’ enable further control over the natures of food at a range of scales. These practices of appropriation and substitution are centred upon the creation of *commodities* - in the form of homogeneous goods that are both globally ‘mobile’ and tradeable.

The drive to ‘outflank’ the natures of food is accompanied with a desire to *regulate* the potentially obdurate biophysical nature of food. As Busch and Juska (1994) highlight, markets function on the basis of pre-defined qualities of products exchanged. This emerges as particularly key when considering the extended passage and co-ordination of goods through space and time between various producers and companies. Industrialised and globalised agro-food systems have thus resulted in the defining of quality via ‘common definitions’ or ‘uniform standards’ (Busch 2000:283).

Humphrey (2008:30) suggests standards perform three key functions in the context of agri-food systems. First, the *management of risk*. Second, the *transmission of information* surrounding the product. Third, the *harmonisation of processes of production and supply*. As a result in the rise in globally harmonised standards via global regulations and the privatisation of standardisation processes via consortiums or independent retailers

operating at a global scale (Henson and Humphrey 2008:1), “traditionally diverse products and production techniques have become increasingly homogeneous and devoid of spatial and temporal specificities” (O’Hara and Stagl 2001:538). These processes of global ‘harmonisation’ of standards enable ‘more standardised expectations’ of supplies to major retailers, particularly of ‘cosmetic appearance’ (Morgan and Murdoch 2000:169). ‘Harmonised’ in some senses, private standards emerge as increasingly driven by ‘quality differentiation based *competition*’ (Busch and Bain 2004) - leading to what Busch (2011) describes as an increasingly complex array or ‘bizarre bazar’ of Third Party Certificates (TPCs).

Controlling Practices

Hatanaka, Bain and Busch (2005:355) suggest “the consolidation of the food retail industry, and the rise in private retailer standards” is leading to a shift in responsibility to the private domain. Corporations are found to increasingly hold the ‘power to protect or exclude’ through food regulations (Hinrichs 2014:151). This is a condition that is actively supported by states in some cases. In the UK for example, the government endorse voluntary industry-led and owned measures (HM Government 2010:8). As a result, multiple retailers and retail consortia are increasingly recognised as self-promoting as ‘gatekeepers of the food supply’ (Marsden and Wrigley 1995). TPCs and other forms of private standards are thus recognised as supporting the roll-back of state-led governance, increasing the degree of control amongst multiple retailers and consortiums.

According to Tennent and Lockie (2011:32), private standards constitute a “defining feature of modern food production systems.” They suggest the rise of TPCs signifies a new ‘regulatory regime of private governance of food’ (ibid). Whilst enabling ‘co-ordination’ and ‘control’ of production they simultaneously pass on risk. GlobalGAP (the Global Partnership for Safe and Sustainable Agriculture), for example, is geared towards the “harmonisation of agricultural good practice” - it seeks to locate and regulate ‘hazard analysis and critical control points’ (HACCP). As a standard, GlobalGAP is not marketed to consumers. Nor does it provide extra revenue for producers (Tennent and Lockie 2011:34). Rather, it is considered a corporate-led strategy of ‘defence’ (Freidberg 2007:324), minimising risk and redirecting responsibility.

Private standards and TPC requirements can carry “enormous consequences for the farm,

firms and regional economies that depend on the supermarkets' business" (Freidberg 2007:321). These expectations are not only reconfiguring and shaping the biophysicality of foods but also the wider communities that are involved in the production, distribution and consumption of them. As 'expert systems', private standards and TPCs eliminate context-specific relational interpretations and evaluations (O'Hara and Stagl 2001:539). Reliance upon 'expert systems' results in "adoption of technical knowledge that is related to uniform operations in increasingly standardised food systems" (*ibid*). This can lead to the collapse of heterogeneous 'systems of control' and replacement with "uniform control mechanism[s]" (*ibid*). As Hatanaka, Bain and Busch (2005:365) state, "standards are both epistemological and ontological devices; they make the realities they claim to describe." Standards and TPCs thus not only 'organise' and 'regulate' markets and trade but they "reorganise, transform and discipline people and things...throughout the supply chain" (Hatanaka, Bain, and Busch 2005:365). Privatised standards emerge as influencing and reconfiguring not only ways of growing but also ways of knowing.

According to Freidberg (2007:329), standards and TPCs as forms of 'information' are becoming "surrogate for the world." The brand further 'outflanks' socio-natures. In the form of the brand, 'nature' is not only standardised, harmonised and commodified, it is further privatised. Arvidsson (2005:252) suggests "in the form of the brand...capital feeds directly off life itself." The ideal of the brand is a form of 'ubiquity', making the brand "part of the bio-political environment of life itself...and to thus make life in all its walks contribute to its continuous and dynamic reproduction" (Arvidsson 2005:249). In the context of the industrial agri-food complex, the aim of the brand is to become part of the landscape of everyday life, an expression of both the outflanking of spatio-temporal and biophysical limitations whilst enabling the privatisation of the spaces, natures, relations and practices of agri-food systems.

Controlling Cultures

The rise of industrial agri-business is resulting in what has been described as a process of alienation of communities from agri-culture. Consumers are recognised as increasingly disconnected and distanced from the spaces, temporalities, natures, practices and communities of agri-cultures. Small-scale farms and, ultimately, agri-cultural communities are recognised as threatened by the increasing and asymmetrical power geometries of global agri-business. Intensification of production is leading to the

endangering and, in some cases, loss of indigenous and traditional varieties of plants, knowledge systems and practices. Globally harmonised regimes are found to be diminishing socio-ecological diversity, replacing it with globally harmonised commodities and brand-based ecologies.

This disconnection, distancing and socio-ecological depletion of the agri-food system is leading to asymmetrical relations and non-sustainable practices. According to Trauger & Passidomo (2012:282) “consumers are separated socially and geographically from the places of food and commodity production, keeping them ignorant of and disconnected from the potentially unpalatable processes behind the work they consume.” It is suggested that this disconnect leads to a diminishing awareness of the environmental and social implications of the agri-food systems (Kloppenborg, Hendrickson, and Stevenson 1996) - considered a “fundamental source of non-sustainability” (O’Hara and Stagl 2001). According to O’Hara and Stagl (2001:350), “as local knowledge erodes, fewer and fewer people notice the deterioration of social and environmental services caused by the increasing material and technological demands of standardised industrial type food production systems.”

The rise of the corporate-led industrial agri-food system is recognised as further resulting in the *democratic* erosion of the rights to the production and reproduction of food (De Schutter 2014). De Schutter (2009:5-6) suggests “monocultures, and the top-down imposition of technologies all too often assumed to be superior to local knowledge” are leading to the “de-skilling of traditional farming communities.” The international commercial plant and seed breeding system is found to marginalise breeding as a local, context-specific practice, inhibiting growers from participating in breeding and seed saving, whilst giving further “monopoly privileges to plant breeders and patent-holders through the tools of intellectual property” (De Schutter 2009:2) These monopoly privileges can place farmers in a ‘double jeopardy’, diminishing *in situ* seed-saving and plant breeding systems and skills whilst further diminishing locally attuned forms of agri-biodiversity, upon which agro-ecosystem resilience and productivity depend. In its most extreme form, this form of disconnect, deskilling and disempowerment leads to a lack of feedback within the agri-food system, further “sustaining” unsustainability (Buttel 2006).

Corporate Futures?

The spaces, natures, relations and practices of global agri-food systems emerge as increasingly homogenised, consolidated and privatised, managed via a consolidating number of corporations and private consortia. A small number of multiple retailers and retail consortia are found to be exercising influence over an increasing proportion of global agri-food systems. Freidberg (2007:325) describes how multiple retailers are becoming the 'de facto' policy makers operating on a global scale. She charts the 'imperial pursuits' of supermarkets, as a small number of multiple retailers and private consortia extend and deepen control around landscapes, economies and peoples across the world through privatised regimes of production. Those who agree to “not only the language but also the corporate managerial culture of the supermarket buyers” (Freidberg 2003:34) are recognised as 'fully fledged members' of the corporate 'empire' whilst those who do not or cannot are seen to becoming increasingly marginalised, such as those small-holders who cannot afford to meet the requirements of the implementation of standards (*ibid*).

Neo-liberal forms of governance of agri-food systems are leading to the replacement of agri-*culture* with agri-*business*. This is leading to the verticalisation, standardisation and privatisation of the spaces, natures, relations and practices of agri-food systems. The assertion of asymmetries of power is found to have impact and 'do work' at a range of scales, from the global to nano, from ecological systems to body complexes. Increasing inequities of food and obesogenic environments have been charted by a host of public health scholars. 'Fatty', 'sugary' and processed foods can often be cheap whilst fresh fruit, vegetables and 'wholefoods' tend to be more expensive (Lang, Barling, and Caraher 2009:170). They are also often found to be more likely to be in promotions in some stores and often cheaper than healthier equivalents (NCC 2006:15), with the least healthy foods often found to be the cheapest. Such inequities are found to perpetuate the vicious cycle of poverty, whereby poverty and ill-health are often found to be intertwined. Further spatial inequalities have been charted, whereby healthy foods are often found to be inaccessible in areas of social deprivation (Wrigley 2002).

In the case of fresh produce, the socio-natures of food are being appropriated, outflanked and privatised, via TPCs, labels and brands. Standards and TPCs as forms of 'information' are recognised as means by which to create economically malleable subjects. These homogenising, standardising and privatising forces of industrial agri-business emerge enable “...the creation of subjects who could be manipulated by “the

Economy”” (Gibson-Graham 2006:1049 in Blay-Palmer, Sonnino, and Custot 2015). This is leading not only to the depletion not only of fertile soils, agri-biodiversity and resilient agro-ecological systems but also to the depletion of ways of growing and knowing.

According to Francis et al. (2003:102) “in current urban culture, food may be the only remaining connection to nature.” Yet consumer-led cultures are found to be increasingly determined by brand ecologies. The 'fetishism' of codes of conduct, communicated by a normatively determined 'brand', label or 'standard' (Freidberg 2007) lead to further disconnection from the socio-natural processes of food and the rise of what Klein (2001) describes as the colonisation of public space by ‘brand culture’. The following section considers the emergent alternative and local food movement, considered as counter-force to the rising powers of the corporate logic as explored in this section.

1.1.2. From Alternative ‘Archipelagos’ to Sustainable Food Systems

According to Kloppenber et al. (1996:35), it is this combination of 'placelessness' and a pervading sense that 'unjust' or 'non-ecological' practices may be attached to certain agri-food systems that has initiated an 'alternative food' movement. Over the last few decades, alongside the global privatisation and consolidation of the agri-food supply, various forms of direct and short food supply chains (O’Hara and Stagl 2001; Hinrichs 2000) producer-consumer networks and approaches towards the forging of more sustainable food systems (Blay-Palmer, Sonnino, and Custot 2015; Moragues-Faus and Morgan 2015) are emerging.

A growing body of agri-food research charts these growing 'insurgencies' or ‘alternatives’ to the dominant agri-industrial paradigm. Morris and Kirwan (2007) view 'alternative food networks' (AFNs) as generally characterised by the drive for: the *relocalisation* of food networks, the *reconnection* of production and consumption and, the *reintegration* of ‘nature’ into supply chains. 'Alternatives', according to Maye, Kneafsey and Holloway (2007:2), are determined by values that include “healthy living, community development, sustainability, organic, ethical and green consumption and more...”. Whatmore, Stassart and Renting (2003:389) suggest AFNs could be considered as “‘unified’ in what they ‘oppose’ (global deregulation; globalisation and degradation of ecosystems), as well as

what they 'enhance and value' (redistribution of value; development of trust relations between producer and consumer; new forms of market governance and political association)." Allen et al., (2003:61) suggest that there are two forms of AFNs. First, those which aim to '*reconnect* producers and consumers' and work towards more community-based food systems (such as box schemes, farmers' markets, farm shops, pick-your-own schemes, community supported agriculture schemes as well as institutional forms of procurement). Second, those based around the '*empowerment* of communities' (such as fair trade movements, co-operatives, micro-social enterprises and educational programs).

Local food systems (LFSs) could be interpreted as AFNs in that they seek to reconnect producers and consumers and support more community-based food systems. According to Feenstra (1997:28) "rooted in particular places ... [*LFSs*] aim to be economically viable for farmers and consumers, use ecologically sound production and distribution practices and enhance social equity and democracy for all members of the community." Mount (2012) suggests LFSs are thus as much based upon 'alternative' as they are based upon reconnection. He proposes three key elements of LFS: reconnection, direct exchange, shared goals and values (Mount 2012:117). However, Mount notes that care is needed around the term 'reconnection' which "implies that participants in LFS are looking to re-establish familiar outcomes" - in fact, most participants, he suggests, are "motivated by a desire to find an alternative to the only outcomes with which they are familiar: the negative outcomes of conventional food systems" (*ibid*).

LFSs tend to be associated with more direct forms of supply entail closer relations between producers and consumers. This includes farmers' markets, farm shops, box-schemes, community supported agriculture (CSA) and short food supply chains⁴ (SFSCs). The following section considers the spatio-temporalities, socio-natures, practices and relations of these emergent forms of LFSs and SFSCs with a focus on two forms of direct supply: farmers' markets and community supported agriculture (CSA). It is suggested

⁴ Short food supply chains defined as supply chains involving a limited number of economic operators, committed to co-operation, local economic development, and close geographical and social relations between producers and consumers (Kneafsey et al. 2013:13). SFSCs can also include direct sales by producers and sales with one intermediary (such as internet and retail sales) (*ibid*).

that they are, to varying degrees, based upon *reconnecting* with the spaces, temporalities, natures and relations of agri-food systems and agri-cultures.

Reconnecting Socio-Ecologies

Local, direct food systems and SFSCs have been associated with sustainable agriculture and organic or low-input forms of farming (Hinrichs 2000:295-6). According to Trauger and Passidomo (2012:284) “alternative food networks work to produce healthier food and environments through reduced chemical use in organic systems and decreased food miles through local production.” Research suggests that direct forms of supply and SFSCs can also support the economic resilience of producers by eliminating profit-taking intermediaries such as processors and retailers (Mount 2012). The greatest potential has been found for those producers in close proximity to customers with little processing requirements (*ibid*). Direct and SFSCs can also promote more sustainable agri-food systems, in supporting agro-ecological forms of production, reducing food miles and supporting access to potentially fresher, healthier foods (Scrinis 2007:129).

Reconnecting Spatio-Temporalities

Whilst AFNs and Sustainable Food Systems (SFSs) are recognised as based upon more than just local food systems, according to Trauger & Passidomo (2012:299) “the place of production and the place of consumption are critical elements of sustainable systems and the disconnection between these places is a source of inherent instability and non-sustainability.” Agri-culture, we are reminded, is “an interdependent and integrated component in complex human, cultural and ecological systems” (Marsden 2012:139-140). Hunt (2007:54) suggests that the rise in local markets has in part been a response to otherwise anonymous and geographically distant products. “The localisation trend shifts the focus back to the context-specific ecological and social factors global markets tend to externalise” (O’Hara and Stagl 2001:535). As place-based systems, LFS, direct forms of supply and SFSCs tend to privilege seasonality and locality (Friedmann 1993). According to Klett (1990:12) “agricultural production is the manifestation of the being time.” Place-based, local food systems emerge as partly about reconnecting with these rhythms and cycles.

Reconnecting Socio-Natures

SFSCs and forms of direct, local supply are recognised as potentially supportive of agro-ecological practices and agri-biodiversity. Crop diversity, for example, has been found to be particularly heightened when there are more direct and proximate forms of trading (Brunori, Rossi, and Malandrini 2011; Hunt 2007; Goland and Bauer 2004). Direct relations can further lead to behavioural change amongst producers such as reduced pesticide usage (Hunt 2007; Brunori, Rossi, and Malandrini 2011). Small-scale, agro-ecological production is recognised as particularly rich in diversity of crops and wildlife (Halweil 2002). In a study of CSAs in the UK, it was found that “rare breeds and local varieties often feature in CSA production and are selected to suit the local environmental and market conditions” (Saltmarsh, Meldrum, and Longhurst 2011:27). The study further found that “many initiatives contribute to agri-biodiversity through cultivation of an unusually wide range of crops and raising rare breeds of livestock (*ibid*).

Agri-biodiversity in turn can support socio-cultural diversity and health. According to Trichopoulou (2012:952) “countries, communities and cultures that maintain their own traditional food systems are better able to conserve local food specialities with a corresponding diversity of crop varieties and animal breeds. They are also more likely to show a lower prevalence of diet-related chronic diseases.” In a study by Potts, Jatana, and Rubin (2006), direct markets and independent shops were considered key sources of a wider range of varieties and more unusual and vernacular foods. Local, direct forms of supply are recognised as potentially supportive of socio-cultural diversity and community health as well as agri-biodiversity.

Reconnecting Practices

The rise in AFNs is considered by some as a ‘quality turn’ (Goodman 2004). Quality, according to Sonnino and Marsden (2006:185), is recognised as “a multidimensional concept that can involve anything that the conventional food system is *not*: an identifiable place of origin, traceability, aesthetic attributes, nutritiousness.” Morgan reflects (2008:4) “although the alternative food narrative embraced a number of different variants - organic, local, certified, fairtrade etc – it was to some extent defined by what it was not rather than by what it was. In other words, it was defined in opposition to the conventional narrative, that was indelibly associated with an intensive, industrialised and productivist agri-food system which extolled quantity over quality, price over

provenance.”

Mount (2012) suggests local, direct food is often perceived as *more than a commodity*, largely valued by *intangible* qualities. Part of these intangible qualities are recognised as determined by social and ecological relations. According to Mount (2012:109), “reconnection generates intangible qualities; some piece of added value that is difficult to quantify because it relates to the perception of participants.” In a case study of a farmers' market, Kirwan (2004) for example found consumer belief in the ‘intrinsic quality’ of the produce a key motivating factor for attendance at the markets (such as freshness, ripeness), alongside a desire to access retail terrain outside of the domineering multiple retail sector and the desire to support alternative forms of agricultural production. In this context, “imperfections or blemishes are perceived to denote produce that is natural and unadulterated, in comparison to the ‘perfect’ produce on offer in supermarkets” (Kirwan 2004:403). Social as well as ecological relations emerge as key for those navigating ‘intangible’ or ‘intrinsic’ qualities of produce within more direct food systems.

Reconnecting Relations

According to Kirwan (2004), consumer navigation of variations and irregularities of quality expectations, production and supply depend upon the *transmission of information* and *networks of trust*. Indeed, Reed (2006:43) suggests “the alliance between producers and consumers...is the generative basis of the organic movement.” Hinrichs (2000:295) suggests direct, local forms of agriculture hinge upon “face-to-face links between producers and consumers” and relations that are “immediate, personal and enacted in shared space”. Mount (2012:109) suggests these forms of ‘face-to-face’ direct marketing create opportunities for “interaction and transparency”, “accountability and trust, and, through this, security and confidence.” With reference to CSAs, Lamine (2005:325) suggests that within CSA schemes, “local partnerships translate a conception of quality that results from interactions *between* actors rather than from predefined and exogenous criteria.”

The concept of ‘embeddedness’ emerges as a key component of local, direct markets and SFSCs. LFSs and direct mechanisms, where people exchange goods and service, are considered as ‘embedded’ within a network of social relations and meaning systems of norms and rules (O’Hara and Stagl 2001:540). ‘Embeddedness’ in this sense of “social

connection, reciprocity and trust, is often seen as the hallmark (and comparative advantage) of direct agricultural markets” (Hinrichs 2000:296). According to O’Hara and Stagl (2001:546), “multiple dimensions of interaction and communication are relevant to re-establishing the trust lost in disembedded markets.” Direct and SFSCs emerge as determined by the potential for the development of producer-consumer sustained relations.

Reconnecting Communities

In this thesis, farmers’ markets and CSAs are considered two potentially reconnecting forms of agri-food supply and supportive mechanisms for SFSs. Farmers’ markets are defined as “recurrent markets at fixed locations where farm products are sold by farmers themselves” (Brown 2001:658). A CSA is defined as a “partnership of mutual commitment” (Van En and Roth 1992). More specifically, it is considered as “any food, fuel or fibre producing initiative where the community shares the responsibilities, risks and rewards of production in a spirit of mutual trust and openness. This may be through ownership, investment, sharing the costs of production, or provision of labour” (CSA Network UK 2015).

Farmers’ markets have been described as ‘alternative markets’ whilst CSAs have been described as ‘alternatives to the market’ (Stevenson in Hinrichs 2000:298). Both are considered potentially supportive of the provision of locally or regionally produced food and sustainably produced food (Francis and Griffith 2011:264). Farmers’ markets and CSAs are recognised as potentially resilient forms of exchange, whereby producers and consumers form an alliance which can be supportive of diversified systems capable of accepting small volumes of a diverse range of crops according to flexible time-frames. For small-scale producers, farmers’ markets and CSAs can provide “better returns to small farms disadvantaged in conventional commodity” markets (Hinrichs 2000:298). Via these mechanisms, small-scale farmers can receive a more stable and secure income, more autonomy regarding production practices and closer connection with their community. Simultaneously, consumers can benefit by accessing fresh, seasonal, locally grown food, often “at reasonable prices” (Hinrichs 2000:297).

Hinrichs (2000:300) suggests a CSA share is purchased primarily for “high quality, locally produced food” but also for a “system of agriculture that produces food in an

ecologically and socially beneficial way.” Food systems in this form are recognised as providing “closer and more personal (physical) feedback mechanism than virtually any other sector of the economy given the close connection between food and human health and well-being” (O’Hara and Stagl 2001:551). Indeed, Groh and McFadden (1997:34) suggest CSAs move toward “decommodifying food through the special transaction of the share and through its explicit emphasis on *community*.” According to Trauger and Passidomo (2012:299), community scale farmer-to-consumer interactions “create new economic subjectivities through relations of interdependence and mutual reliance between consumers and producers.”

O’Hara and Stagl (2001:549) suggest CSAs enable a “‘re-embedding’ of markets into their physical, social and ethical context.” They argue that CSAs offer “more direct feedback and shorter feedback regarding the impact of human economic activity; more direct communication between producers and consumers that allows a multiplicity of valuation criteria and values to be articulated and lowers the dependence on the symbolic tokens characteristic for global market systems; and, more occasions for re-emphasising local knowledge systems and trust expressed by ‘face commitments’” (O’Hara and Stagl 2001:549-550). Whilst farmers markets do not challenge the commodification of food and tend to involve “less deliberate, proximate ties and personal connections” (Hinrichs 2000:300), they may provide an alternative to more conventional markets (Hinrichs 2000:298).

Both CSAs and farmers markets cause people to congregate and associate with one another, providing opportunities for personal encounter and exchanges of knowledge (Hinrichs 2000:298). However, Hinrichs (2000) and Kirwan (2004) emphasise the important not to relegate the notion of decent livelihoods and the economy (small e). In his study of a farmers’ market for example, Kirwan (2004) found that producers key reason for selling at farmers’ markets to be an economic one, alongside notions of sociability. Hinrichs (2000) argues that for direct forms of supply to ‘persist and thrive’ “costs must be covered, farmers deserve a living wage (as well as benefits) and the physical and natural infrastructure need to be stewarded” (Hinrichs 2000:301). According to Hinrichs (2000:301) “social ties, personal connections, and community good will are often appropriately seasoned by self-interest and a clear view of prices.” Hinrichs further suggests “a more critical view of embeddedness recognises that prices may still matter

and that self-interest may be at work, sometimes even in the midst of vigorous, meaningful social ties” (2000:297).

Direct forms of supply and SFSCs are recognised as “vehicle[s] for reconnecting and re-embedding food markets into their physical/spatial, social and ethical context” (O’Hara and Stagl 2001:545). However, whilst place-based, AFNs are not necessarily territorially bound or locally limited - as evidenced by the growth of various forms of food networks reaching beyond the local, in the form of co-operatives, alliances and various forms of certification. Social movements in the form of anti-supermarket, anti-corporation and ‘boycotting’, as well as a range of social justice movements seeking more equitable forms of agri-food production, supply and consumption, are all recognised as key components of what is framed as an AFN stretching beyond the local landscape or region.

At this junction it is critical to note that reconnection, embeddedness, local and direct are recognised as terms that need to be treated with caution. Morris and Kirwan (2010:132) warn of treating the concept of ‘reconnection’ “normatively, as something to be worked towards as a desirable end goal rather than a process that needs to be subject to critical analysis.” As Goodman (2004:5) emphasises, it is difficult to capture the ‘meaning’ of scalar or value-based terms which are highly contingent and continuously renegotiated and redefined rather than ‘ontological givens’. DuPuis and Goodman (2005) make a call to explore further the ‘ambiguities’ and ‘subtleties’ of ambiguous terms and value-based assumptions based on “fixed sets of norms and imaginaries” (DuPuis and Goodman 2005:360). The following section explores the need to attend to the relationality of terms and recognises the potential in engaging a practice-based approach.

Part Two: Relational Geographies of Agri-Food

1.2.1. Relational Concepts

Many scholars of agri-food systems problematise the depictions of globalisation as a homogenising monolithic force and localised, alternative food systems as more ecologically sound and ethically just. Over the last few decades, there has been a strengthening case for more nuanced, empirical approaches to the complexities of agri-food systems. As Sonnino and Marsden (2006:184) note “the conventional dichotomy between standardised and localised food does not thoroughly reflect the present reality of the food sector.” As DuPuis (2002) reflects, the ‘perfect’ or the ‘anti-perfect’ story “ignores the diversity of practice and existence of multiple styles, or systems of farming.”

Murdoch and Miele (1999:469-470) suggest there is a tendency to bifurcate the agri-food sector into two zones of production: “standardised, specialised production processes responding to economic standards of efficiency and competitiveness on the one hand; localised, specialised production processes attempting to trade on the basis of environmental, nutritional or health qualities on the other.” Whilst industrial global agri-food systems and various forms of ecological localisation may emerge as outwardly polarising and oppositional forces, it is recognised that on the ground, in place, they are often found not only to co-exist but also to coincide, collide, exchange and collaborate, as well as transform, hybridise or co-opt.

Whatmore and Thorne (1997:1) warn against representations of 'globalising, industrial and conventional food provisioning'. They suggest such categories imply a “colonization of surfaces, which, like a spreading ink stain, progressively colours every spot on the map” (*ibid*) Focussing upon processes of industrialisation and globalisation, Whatmore (2002) suggests, may only lead to heightened accounts of various ‘hot spots’ that exemplify such concepts such as the North Carolina hog industry, the plains of East Anglian grain plains or the plasticulture of Almeria. Similarly, much of the work on the ‘local’ and ‘embeddedness’ has considered local food systems such as farmers’ markets, CSA schemes and co-operatives as unified categories, with little attention to the seepage or overlap with other systems of provision.

Rising, diverse forms of 'localisation' and 're-localisation', and the 'conventionalisation' and 'co-optation' of what are considered by some to be 'alternatives', such as organics, are further adding to these complexities. Guthman's (2004) study of the industrialisation of organics within Californian saladscapes, for example, demonstrates how 'organic produce' may not necessarily be conceived as a counterpoint or antidote to the industrialised food complex - rather, it can paradoxically become part of it. Guthman (2004:307) charts how "the logic of intensification" is resultantly unleashed within the initially 'alternative' world of organics. Her work demonstrates how 'organic' as a concept carries with it the capacity for potential reconfiguration, imitation and/or co-optation by others.

Whatmore (2002:123) critiques the tendency of much of agri-food scholarship to produce 'bi-partite' and compartmentalised accounts that focus upon production or consumption, alternative or mainstream; local or global with little interconnection. As Goodman (2001:9) states "producer cultures and consumer cultures are not 'purified', separate categories of social life but rather mutually constitutive." Food provisioning and food consumption are recognised as 'co-determined', worlds 'conjoined' and 'mutually constituted' (Lockie and Kitto 2000). In response, Lockie and Kitto (2000) encourage more *methodological* work around the production and consumption. DuPuis (2002:221) further makes a call for work that engages with a multiplicity of narratives: to consider institutional structures of food provision – producers, distributors, processors, transnational corporations international trade organisations and consumers.

1.2.2. Relational Terms

Goodman (2004) notes the difficulty of capturing the ‘meaning’ of scalar or value-based terms such as ‘local’, recognised as highly contingent, in a process of continuous negotiation and translation. This section considers the terms ‘local’ and ‘seasonal’ as indicative of these complexities.

Ambiguities of Locality

Local is defined in the Chambers English Dictionary as “relating to position in space; of or belonging to a place or places; concerned with a particular place or area” (Allen 1994). However, according to Morgan (2007:17), there is difficulty of ever achieving consensus around issues around the 'local' since there is no consensus around the term. As Sonnino and Marsden (2006:188) emphasise, “ ‘localisation’ is then, a very problematic concept to define and utilise in the context of food.”

Within the UK, definitions tend to be quantifiably determined according to mileage and Euclidean measure or regional spread. An example of some of the definitions of 'local' demonstrate how the term emerges as highly ambiguous in the context of the UK. The National Farmers Union for example equates 'local' food with British food (NFU 2015). DEFRA (2003) present a looser interpretation of 'local' food as “being food both produced and sold within the same relatively limited area” (DEFRA, 2003). Meanwhile, according to the British Retail Consortium (BRC 2015), “there is no formal definition of 'local' food, and customer perception of 'local' will vary with region and product.”

A number of organisations define ‘local’ as a term with far more spatially-determined exactitude. The Campaign to Protect Rural England (CPRE), for example, specify 'local' food with more exactitude as raw food, or lightly processed food and its main ingredients, grown or processed within 30 miles of where it was born” (CPRE 2012:2). FARMA, the organization representing farmers, farmers markets and local direct retail in the UK defines 'local' in two ways (2015). First, as “a radius from the market. A definition of 30 miles is ideal, up to 50 miles is acceptable for larger cities and coastal or remote towns and villages” (*ibid*). Second, they recognise 'local' as a “a county boundary or other geographic boundary such as a National park that is similar in size to the radius option” (*ibid*). Thus ‘local’ according to FARMA could be defined either by the region or proximity of production to the site of purchase. The Soil Association offer a less

quantifiable definition, framing local food as ‘more than mileage’: it means “a system of producing, processing and trading, primarily of organic and sustainable forms of food production, where the physical and economic activity is largely contained and controlled within the locality or region where it was produced, which delivers health, economic, environmental and social benefits to the communities in those areas” (Bashford et al. 2009:8). In this case ‘local’ refers to the values upon which the whole food system is based, as well as proximity or territoriality.

Ambiguities of Seasonality

Seasonality is recognised as a similarly ambiguous term. According to the Chambers English Dictionary, seasonality has been defined as “according to the seasons; available only in certain seasons” (Allen 1994). DEFRA (2012:1), define seasonality as: “food that is outdoor-grown or produced during the natural growing or production period for the country or region where it is produced.” ‘Eat Seasonal’ campaigns led by DEFRA and UK NGOs and retailers tend to be centred around *British* produce. Other local food movements may refer to the seasonal produce of a region or area.

In contrast, the UK Fresh Produce Consortium (FPC) define seasonal produce as what is ‘in season’ in the place of production “regardless of its country of origin or whether it is locally grown, farm-assured produce and an assurance that a portion of fruit is cheaper than a portion of hot or cold dessert” (Fresh Produce Consortium 2009). According to a representative of the FPC “limiting food choices to the UK only would reduce the diverse range of produce available to consumers, particularly during certain growing seasons” (The Grocer 2010). As with the term ‘local’, ‘seasonality’ is recognised as a term that can be interpreted in a range of ways from global to place-based forms of seasonality.

Articulating concepts

For some, notions of ‘local’ and ‘seasonal’ are associated with ‘better’ values of food. Franck (2005:9) for example suggests “when the food we eat, grow or buy is local, we also experience a connection to the region, the seasons and the ground we inhabit.” According to Berry (1992:35 in Kloppenburg, Hendrickson, and Stevenson 1996:33), “to draw in our economic boundaries and shorten our supply lines so as to permit us literally to know we are economically. The closer we live to the ground that we live from, the

more we will know about our economic life; the more we know about our economic life, the more able we will be to take responsibility for it.” Born and Purcell (2006:195) reflect, “the local is assumed to be desirable; it is preferred a priori to larger scales. What is desired varies and can include ecological sustainability, social justice, democracy, better nutrition, and food security, freshness, and quality”. Yet as demonstrated, notions of 'local' and 'seasonal' emerge as ambivalent.

Whilst some suggest that localisation is an important component of understanding sustainable food systems (Friedmann 2007:389), as Selfa and Qazi (2005:457) note “‘local’ food systems do not always or easily map onto a bounded or proximate geographic space or necessarily equate with sustainable practices.” Born and Purcell (2006) emphasise the need to avoid falling into the ‘local’ or indeed ‘scale’ trap, whereby values are placed upon scalar notions. They argue that there is a need to resist assuming that the local is necessarily associated with “higher quality, fresher and healthier food” (Born and Purcell 2006:203). Scale, proximity and other spatially determined relations do not necessarily correspond with values. Indeed, Sayer (2001:698) warns against equating social relations with spatial relations – this, he suggests, can “inadvertently produce an overly benign view of economic relations and processes.”

As Allen et al. (2003:63) note and as has been explored in this section, “the local is not everywhere the same.” DuPuis and Goodman urge the need to 'let go' of the notion of “a local that fetishises emplacement as intrinsically more just” (2005:364). As they reflect, the local “is not an innocent term” (DuPuis and Goodman 2005:361). DuPuis and Goodman further warn of the danger of an ‘unreflexive localism’ which can also be associated with certain ethnic and class groups (*ibid*). This can lead ultimately to “a-political, anti-democratic, anti-reflexive bent in current food localism” (DuPuis and Goodman 2005:360). Goodman (2004:5) notes that terms such as ‘local’, ‘seasonal’ can be utilised as an 'ontological givens' rather than a 'contingent outcome of “social processes and relations of power that produce, reproduce and restructure the scale of the local.” As Harvey (1996) explores, localism can be at risk of ‘militant particularism’ based around notions of affections for certain place, often developed and controlled by a “narrow, sectionist, even authoritarian elite.” Such a localism can reinforce local elites, lead to inter-regional competition and can be co-opted and utilised in a ‘glocal’ logic (Swyngedouw 2004), whilst also fuelling “a defensive politics...elitist and reactionary, appealing to nativist sentiments” (Hinrichs 2003:37).

In recognition of these limitations, Goodman (1997:666) suggests we need to consider “*articulations* and *mediations* between locality, region, nation-state and world economy...reconfiguring socio-spatial organisation rather than to erase the question of spatial scale by subsuming it hierarchically under the global” (Goodman 1997:669). DuPuis and Goodman (2005:369) advocate the view of ‘local food systems’ as “mutually constitutive, imperfect, political processes” that interact with 'global' forces. As Mount (2012:111) notes, “local food systems arise within a context largely shaped by the prevailing systems and with which they will necessarily interact and coevolve...alternative and conventional food systems do not exist as isolated ideal types.”

1.2.3. Relational Geographies of Practice

Relational geographers such as Swyngedouw, Harvey, DuPuis, Goodman and Massey resultantly call for a reflexive standpoint in order to avoid the risk of notions of bi-partite accounts or ontological givens. They forward a relational approach to the spatio-temporalities and socio-natures of agri-food based upon emergent processes, practices and relations *in place* but not *of place*.

Massey (2005) forwards a more cosmopolitical form of relationality. This implies a different politics of scale that is open, plural and contested – recognised as mutually constitutive, imperfect, continually emergent (DuPuis and Goodman 2005:369). Whilst processes, practices and relations are located *in place* they are not bound *to place*, thus breaking free of the ‘local trap’ (Born and Purcell 2006) or ‘militant particularisms’ (Harvey 1996). As Marsden (2008) elaborates, practices are continually emergent and can be iteratively informed by social networks *within* and *beyond* the locality.

Goodman, DuPuis and Goodman (2012:172) propose that agri-food scholars concerned with sustainable agri-food systems focus upon *practices* rather than value-based or scalar-dependent concepts. According to Goodman, DuPuis and Goodman (2012:245), a focus upon *practice* supports a relational approach to agri-food systems, recognising them as plural and heterogeneous yet connected as ‘communities of practice’ (Friedmann 2007; Blay-Palmer, Sonnino, and Custot 2015). The following section considers how agroecology could be recognised as a practice *in place* but not *of place*, connected by ‘communities of practice’.

Part Three: Communities of Practice

The following section considers agro-ecology as a place-based practice. It considers the spaces, natures and relations of an agri-food system based upon an agro-ecological logic concluding with a reflection on the possibilities of the scaling out of agro-ecological principles and practices through what Blay-Palmer, Custot and Sonnino (2015) describe as ‘communities of practice’.

1.3.1. Placing Knowing and Growing

Practices in Place

As suggested in Part one, the disconnection of the globalised agri-food system is leading to distortions of feedback mechanisms from the local landscape (O’Hara and Stagl 2001). According to O’Hara and Stagl (2001:541), the “temporal and spatial disconnect between the source and the effect of identified spillover effect results in a lack of feedback.” In contrast, agro-ecological systems hinge upon the interconnection of energy cycles and processes and the strengthening of inner metabolisms. Agro-ecology is recognised as a set of *principles* and *practices* that aim to support the sustainability of agri-food systems (Silici 2014). As context-dependent practices (Koohafkan and Altieri 2010) agro-ecological practices are responsive to feedback mechanisms from the local landscape. Indeed this ability to respond determines the inner resilience of the system. Agro-ecological practices aim to be supportive of a resilient system *through* time as well as *in* place. An agro-ecological system supports diverse ecologies operating according to multiple time streams. For example, some crops may not bear fruit for a long time or may only produce for a short period whilst some practices may require a lot of labour in the early stages. The long-term approach to agro-ecological practice is recognised as supported by place-based practices.

Natures in Place

As eco-nutrition studies demonstrate, human health and agro-ecosystem health are implicitly interconnected and interdependent (DeClerck et al. 2011). Soil health and crop diversity are recognised as supportive not only of agro-ecosystem health but also the health of the wider community. Agro-ecological practices are centred upon the support of health. This includes maintaining and enhancing agri-biodiversity (Koohafkan and Altieri 2010), defined as “the subset of biodiversity that results from selection processes

performed by farmers over generations, and which depends on the traditional knowledge and the free exchange of genetic materials and seeds” (De Schutter 2009:3-4). The agri-biodiversity of the agri-food system is considered not only matter of ecological diversity and community health – but also as a matter of democracy. The support of agri-biodiversity hinges upon the rights to *produce, reproduce* as well as *consume* a diverse range of crops (Buiatti et al. 2013). Agro-ecological practices and agri-biodiversity are therefore implicitly connected with the project of democracy in reclaiming farmers’ rights to the production and reproduction of food. This hinges upon supporting ways of knowing as well as growing in place.

Practices in Place

Agro-ecology has been described as knowledge and labour intensive (Altieri and Nicholls 2012). Place-based forms of learning, adaptation and innovation are necessarily embedded within the management of agro-ecological systems. Agro-ecological practitioners demonstrate the practice of ‘*métis*’ (defined as “forms of knowledge embedded in local experience”) (Scott, 1998 in Pimbert 2006:15). *Métis* is recognised as “plastic, local and divergent” (*ibid*), based upon intimate knowledge of flora and fauna, rhythms and cycles and micro and macro landscapes developed through forms of cognition and perception (Altieri and Nicholls 2005:78). These embedded forms of *métis* contrast with the rise in harmonising, privatising standards and TPCs that are found within the industrial agri-food system, described as “universalising perspectives that are generated in the nowhere/everywhere of the laboratory and the experimental plot” (Kloppenburg, Hendrickson, and Stevenson 1996:5). Within agro-ecological systems, growers are considered ‘co-creators’ of knowledge that is dependent upon ‘acute observation’ and ‘experimental learning’ (Altieri and Nicholls 2005:79). Agro-ecological ways of knowing and growing emerge as necessarily place-based and context-dependent.

Within industrial agri-business, quality tends to be based on quantitative, technically determined standards. Yet food is recognised as dynamic, particularly in the case of fresh fruit and vegetables. As Bloksma et al. (2001:23) state “conventional nutritional theory... tends to focus only on nutrients and external quality.” In contrast, quality aspects such as “vitality, structure and coherence’...inextricably linked with an organic philosophy based on the life processes” are harder to rationalize within technical systems although they are recognised as “reflected in properties of the final product” (*ibid*). The development of

community *métis* is considered supportive of the translation of ‘intrinsic’ (Kirwan 2004) and ‘intangible’ qualities (Mount 2012). These forms of community *métis* are supported via direct producer-consumer relationships and community participation within agro-ecological systems of production and trade. This includes the support of community awareness of flora and fauna, rhythms and cycles and micro and macro landscapes. Indeed, it is suggested that agro-ecological practices hinge upon the support and development of community engagement and *métis* (Altieri and Toledo 2011).

Communities in Place

Agri-cultural systems are recognised as the result of “the coevolution that occurs between culture and environment” (Gliessman 1998:324). Gliessman (1998:324) suggests “a sustainable agriculture values the human as well as the ecological components of food production, and recognizes their linkages and interdependencies.” Social relationships are recognised as vital to the functioning health of the agro-ecological system. According to Kloppenburg et al. (1996:7), a sustainable agro-ecological community as one that is ‘commensal’, a word describing a relationship between two organisms whereby one organism derives food from another without damaging it. Kloppenburg et al. describe healthy agro-ecological agri-food systems as ‘commensal communities’ “which encompass sustainable relationships both between people (those who eat together) and between people and the land (obtaining food without damage)” (*ibid*). As Marsden (2012:140) notes “we... can no longer divorce agriculture from the wider social and ecological spaces in which it is created, or the complex interdependencies it helps to sustain.” Sustainable agri-cultural systems hinge upon sustainable social relationships.

Communities in Place

Whilst agro-ecological practices are place-based, they are considered unified in seeking ‘healthy, sustainable and equitable food systems’ (Holt-Giménez 2011:2). Agro-ecology is recognised as a global community of practitioners and practice (Holt-Giménez 2011; Friedmann 2007; Blay-Palmer, Sonnino, and Custot 2015). ‘Communities of practice’ are recognised as horizontal networks that collaborate through shared *practice*, although worldviews may differ (Goodman, DuPuis, and Goodman 2012:160). ‘Communities of practice’ thus enable work *across* difference rather than *through* difference (Goodman, DuPuis, and Goodman 2012:32). The *practice* emerges as the ‘nodal point’. Friedmann (2007) and Blay-Palmer, Sonnino, and Custot (2015) suggest that *connecting* and

integrating a network of sustainable agri-food systems through ‘communities of practice’ may enhance resilience and bring about broader food system transformation without compromising the foundational motivational principles of sustainable agri-food systems. Whilst recognising difference, ‘communities of practice’ come together through diverse, dynamic yet shared *practice*.

Recently there has been a shift in debate from AFNs to sustainable food systems (SFSs) (Moragues-Faus and Morgan 2015) - indicative of the intention to extend more sustainable agri-food systems beyond ‘alternative’ and the ‘local trap’ (Born and Purcell 2006). There is recognition of the limited influence SFSs may gain through locally entrenched, disconnected practice. As Marsden and Franklin (2013) emphasise, there is a need to avoid conceptually *marginalising* alternative food movements, because of their place-based nature. Rather it is suggested they are considered as the nascent beginnings “of an antidote to neoliberal orthodoxies and corporate-controlled bio-economies” (Marsden and Franklin 2013:637). Sonnino (2009) notes the need to embed gains at higher governance scales in order to overcome the ‘fragility’ of local action. Blay-Palmer (2009:2) suggests for example fragmented food policy councils at regional level “while extremely important...are disconnected initiatives that have not yet resulted in system change.” Conversely, another challenge for SFSs is the scaling-up (or out) “without compromising the foundational motivational principles of sustainable, local food” (Blay-Palmer, Sonnino, and Custot 2015:526). According to Blay-Palmer, Sonnino and Custot (2015:4), “rather than re-replacing the local with the global” ‘communities of practice’ present opportunities for processes of ‘scaling-up’ at the most appropriate scale.

The development of ‘communities of practice’ emerges as a political project based upon not only sharing local place-based initiatives, but developing a globally powerful lobbying force and political force to counter the agri-industrial food system through solidarity (Goodman, DuPuis, and Goodman 2012:160). According to Blay-Palmer, Sonnino, and Custot (2015:1) “sharing community-derived good practices can support and reinforce global networks of sustainable community food systems, foster knowledge co-creation and ultimately cement collective action to global pressures. In turn these networks could enhance the sustainability and resilience of community food systems and facilitate wide scale food system transformation.”

The scaling-out of agro-ecological agri-food systems are considered “impossible without social movements that create political will among decision-makers to dismantle and transform the institutions and regulations that currently hold back sustainable agricultural development” (Altieri 2009:111). For agro-ecology to scale-out, it is further recognised that there is a need for major reforms in policies, institutions, research and development frameworks supportive of agro-ecological and sustainable agri-food systems. The following section thus considers the various scales at which these communities of place-based agro-ecological practice may be supported.

1.3.2. Scaling-Out Practices in Place

International, national and local government has a crucial role to play in the support of agro-ecology and the wider SFS movement. According to Altieri (2012:15) “a major constraint to the spread of agro-ecology has been that powerful economic and institutional interests have backed research and development for the conventional agro-industrial approach, while research and development for agro-ecology and sustainable approaches has in most countries been largely ignored or even ostracised.” Altieri (2009:110) states, decision-makers need to be encouraged to “dismantle and transform the institutions and regulations that presently hold back sustainable agricultural developments.” According to DeSchutter (2014) this includes not only horizontally extending the areas under cultivation by agro-ecological techniques, but also vertically creating an enabling policy framework. In order to scale-out, agro-ecological practices and SFSs require an enabling and supportive framework at international, national and local scales. This section considers how various scales of governance can foster or frustrate agro-ecological practices and SFSs.

International Governance

According to the International Commission on the Future of Food and Agriculture (ICFFA 2006:16) “the challenge of agriculture must no longer be to produce huge quantities of nutritionally unbalanced food, but rather to produce nutritionally balanced food in a sustainable way.” Agro-ecology is recognised by a widening international community as a way of improving the resilience and sustainability of food systems (De Schutter 2014:8). It has been supported by a number of international organisations including the IAAKSTD, UNEP, the FAO and Biodiversity International as well as by the

special rapporteur to the UN Human Rights Council on the right to food, Olivier De Schutter.

International normative policy has the potential to encourage a more “integrated, holistic approach to rural and urban development” (Jennings et al. 2015:59). Forster and Escudero (2014:40) for example suggest international institutions can advocate certain perspectives around agriculture, nutrition, health, agriculture and the environment through invoking change and a ‘dashboard approach’ for national and local government. This could include the support of the development of policy tools and regulatory frameworks at national and local level (Forster and Escudero 2014). International institutions could further advocate the development of enabling frameworks for agro-ecological spaces at national and municipal and local levels (De Schutter 2014).

At present however, global structures favour the continuation of business-as-usual for most corporations and consortiums. As discussed in Part one, the current corporate food regime that structures production and consumption of food on a global scale “is characterized by the monopoly market power of agri-food corporations” (Holt-Giménez 2011:317). Currently, powerful political and economic organisations and institutions predominantly support research and development for the conventional agro-industrial approach, while research and development for agro-ecology and sustainable approaches has, in most countries, been largely ignored or even ostracized (Altieri and Nicholls 2012:22). Yet, as Silici (2014) emphasises, “ecological change in agriculture cannot be promoted without comparable changes in the social, political, cultural and economic arenas”.

National Government

De Schutter (2010) emphasises the need for national government policies that support agro-ecological practices and sustainable agri-food systems. Currently, however, “in most countries, agri-food policy has been fashioned by a combination of national governments and international bodies (such as the WTO) working in concert with a narrow and self-serving agri-business sector” (Morgan 2015a:1387). According to Morgan (2015b:3) national agri-food policy has been predominantly productivist, driven by agri-business. In the context of Europe and the US “the biggest single influences on the food systems in the EU and the US are the Common Agricultural Policy and the Farm Bill, neither of which mentions food in their titles even though they have a huge impact on what we eat”

(Morgan 2015b:3). Consequently, “food policy has hitherto been the exclusive preserve of a tightly knit corporatist network of nationally-based governments, farmers, processors and manufacturers, with a strong producer bias” (Moragues-Faus and Morgan 2015:1569). Within the UK, currently, subsidies and policy incentives tend to support and promote large-scale ‘sustainable intensification’ and ‘market-led transformation’ (HM Government 2008; HM Government 2010).

According to Via Campesina (2013), agro-ecological success hinges upon access to land, seeds, water, credit, and local markets. Whilst according to the Land Workers Alliance (LWA 2014), UK access to land, lack of agro-ecological training and resources remain challenges for small-scale agro-ecological producers. This is determined partly through the creation of an enabling and supportive political framework. Agro-ecological practices and SFSs could for example be supported through national strategies that reference agro-ecology and sustainable agriculture; supportive macroeconomic and trade frameworks; supportive frameworks in terms of access to land, markets, appropriate infrastructure and other resources; as well as further investment in extension services, rural infrastructure and agricultural research that support agro-ecological practices, sustainable agriculture and local food economies (De Schutter 2014). Policy and planning could further support public purchasing programmes and the reestablishment of producer co-operatives and regional distribution centres such as wholesale markets and food hubs.

Agro-ecological practices and SFSs could be further supported through the integration of agri-food policy across *departments* and *scales* (Jennings et al. 2015:34). According to Jennings et al. (2015:58), “appropriate structures most often do not exist – globally, nationally, regionally or locally – that allow for multidimensional food systems planning and facilitating the realisation of policies that promote the diverse and interlocking public goods.” The national government could further support place-based agro-ecological agri-food systems through enabling appropriate forms of governance, including local and regional forms of governance. According to Jennings et al. (2015:53) “national policies can enable or inhibit appropriate food system governance at regional level”. Currently, “local and municipal authorities may currently emerge as relatively powerless with little opportunity for their ability to foster and facilitate positive change” (Jennings et al. 2015:60).

Local Authorities

The re-localisation and re-placing of policy (and power) is considered critical with regards to the enabling and support of place-based practices. According to Marsden (2012a:140) “whilst we clearly must not lose sight of the macro-global picture, we also need to realise that in order to imagine and plan realistic alternatives it is necessary to adopt a more creative eco-economy paradigm which re ‘places’, and indeed relocates, agriculture and its policies into the heart of regional and local systems of ecological, economic and community development.”

By the turn of the twenty-first century the American Planning Association came to the conclusion that food had become a ‘stranger’ to the planning system (Pothukuchi and Kaufman 2000). Morgan (2015b:3) however suggests that food is “no longer a marginal issue in mainstream political discourse.” More recently there has been a significant growth in the potential for food at municipal and local government level. Indeed, according to Morgan (2015a:1381) “food system planning is now evolving rapidly thanks to new conceptual developments in urban design and the healthy urban planning discourse.” There is growing recognition of the potentially potent and integrating forces of agri-food in terms of its contribution to community health, welfare, economies and its connection with other systems such as housing, transportation, economic development and land use (Pothukuchi and Kaufman 2000:113-124).

Yet challenges remain to with regards to the capacities of local and regional forms of governance around agri-food, notably as a result of the privatisation and financialisation of *space* and *services*. Within the context of the UK, according to Minton (2006), there is significant erosion of local government control over public space leading to diminishing diversity, accountability and democracy. In some local authorities, significant proportions of the public estate are being sold to developers resulting in an increasing proportion of ‘public space’ is privately owned (*ibid*). Private financing initiatives are playing a growing role within the public sector, leading to ‘marketisation’ of local government and the growth of privately managed Business Improvement Districts (BIDs) (Minton 2006).

As well as physical space, public sector services are found to be increasingly out-contracted and marketised. Water, energy, public transport and waste management are operated by companies that place public interest as a ‘secondary concern’ (Girardet 2015). The agri-food system is certainly no exception in this shift towards privatisation and financialisation. As Girardet (2015:110) notes, “deregulation and other neo-liberal

trade policies have left food supplies to our cities in the hands of vast conglomerates and supermarket chains.” Within the UK, the dominant agri-food supply is becoming increasingly privatised and market-led.

Reclaiming the power of the local authority is considered a crucial part of developing more regenerative forms of agriculture and agri-food system. Morgan and Sonnino (2010) suggest that public procurement, planning and the support of public-private partnerships are particularly powerful mechanisms by which local authorities and municipalities may support sustainable agri-food systems. Some local authorities demonstrate the potential of an enabling and supportive policy and planning at local authority level. Brighton and Hove City Council for example has made a city-wide commitment to sustainable food and proactively uses the planning system to support food growing. Through civil society and city government partnership, the local authority has integrated food growing and consuming into development plans, the core strategy and a number of other planning documents so to support the increase the amount of food grown within the city and the amount of land available within the city on which to grow food (Brighton & Hove City Council 2011).

In order for agro-ecological communities of practice and SFSs to scale-out, there is a recognised need for *physical, economic and political space*. The securing of public equity to land capital is recognised as essential in order to support the seasonal, local, organic food economies (URBACT 2015). As well as space for trading and growing, Moragues-Faus and Morgan (2015) suggest ‘spaces of deliberation’ which incorporate local state and civil society are critical in terms of supporting SFSs. Initiatives such as food policy councils, food boards (London), food strategies (Brighton and Hove) and food secretariats (Belo Horizonte) are considered ‘spaces of deliberation’ in that they bring together civil society, private actors and local governments.

An enabling and supportive policy environment for agro-ecological practices and SFSs thus hinges upon participatory and horizontal ways of knowing as well as growing. In the context of agro-ecology, this includes including farmers directly in agricultural research agenda, innovation and dissemination (Holt-Giménez 2011). Growers are considered central to determining the shape of the research (including agenda, method and design) as well as response to the research findings (in terms of adaptations and innovations) (*ibid*). Horizontal and participatory ways of knowing are considered crucial to support agro-

ecology as a place based practice. This could include farmer field schools, farmer-to-farmer learning based upon shared experiences, local research, problem solving, ideas and innovation (Altieri 2009:110), as well as dissemination of knowledge and the support of collaborations between NGOs, universities and farmer organisations, supporting co-construction knowledge networks.

De Schutter is amongst a number of critics invoking transformation of the policy-making environment and processes of decision-making. De Schutter advocates an approach to decision-making and policy-making based upon “social learning rather than an exercise of political authority” (Diop 2001:252 in De Schutter 2010a). According to Pimbert (2011:17), “participatory methods and deliberative processes are important in opening up the entire agro-ecological research cycle to greater citizens’ oversight and democratic control over what knowledge is produced, for whom, how, where, and with what likely effects.”

Whether via civil society movements and organisations, private-public partnerships or forms of co-governance, many critics are hopeful of the possibilities and opportunities for scaling-out SFSs (Friedmann 2007; Blay-Palmer, Sonnino, and Custot 2015; Morgan and Sonnino 2010; Moragues-Faus and Morgan 2015; Morgan 2015a; Morgan 2015b; Girardet 2015; Jennings et al. 2015). According to Buttell (1997:350 in O’Hara and Stagl 2001:550), “social movements are likely to be the primary mechanism for successfully affecting changes in the various political-economic feedback loops of socialisation of external costs.” Others such as Morgan and Sonnino (2010), Blay-Palmer, Sonnino and Custot (2015) suggest that CSOs can help share the burden of reform through engaging politically with local government. Morgan (2015a:1389) reflects that there is increasing scope for CSO engagement in supporting reform of food policy by engaging with the local state. Moragues-Faus and Morgan (2015:1569) suggest that the emergence of urban food governance, comprising of municipal authorities and civil society groups, signals a new pressure for the corporatist and productivist agendas that currently dominate national agricultural policies and agendas. Moragues-Faus and Morgan (2015) further suggests the place of co-governance rather than protest is critical to enable deeper forms of enduring and extending political change.

As this section has explored, agro-ecological practices and SFSs require an enabling and supportive political framework at local, national and international scales. This includes physical, economic and political space communities of practice. The city-region is considered a particularly potent scale from which a supportive policy and planning framework can support the scaling-out of agro-ecological practices and SFSs.

The City and the City-Region

The ‘city’, as the ‘apex’ of the condition of the twenty-first century, according to Swyngedouw (2013), ‘possibilities and emancipatory promises’, as well as the most ‘oppression and uneven development’. Urban agri-food systems could be perceived as paradoxical extreme sites of both oppression and hope. As has been discussed, the city is increasingly becoming a place where the majority of the world live. It is estimated that 75% of food harvested is distributed to towns and cities (Garnett 1996:2). With increasing population and influence, the city is recognised as a key site with regards to the exploration of regenerative agri-food systems. According to Morgan (2015a), feeding the city in a sustainable fashion – that is to say in a manner that is economically efficient, socially just and ecologically sound – is recognised as one of the quintessential challenges of the twenty-first century.

Morgan (2015a) suggests the *collective power* of cities could begin to support more health-promoting practices and metabolisms. However, the city-centric gaze of recent ‘metropolitan’ policy has been critiqued for two key reasons. First, that it undermines the role and power of the national government and multi-level governance systems whilst exaggerating the autonomy of the city (Moragues-Faus and Morgan 2015). Second, that it obscures the presence of the hinterlands upon which the city depends within policy and planning frameworks. As Moragues-Faus and Morgan (2015:1560) note, the “urban planet” narrative “obfuscates the deepening inter-dependence between urban and rural” and also diminishes the emergent work around urban-rural linkages, as well as the concept of the ‘city-region food system’ as an emergent unit of analysis for more sustainable food systems (Forster and Escudero 2014).

The city-region is recognised as a potentially transformative scale from which to begin to approach more regenerative, sustainable agri-food systems. As explored in the introduction, the prevailing way in which many modern cities use resources is recognised

as highly unsustainable (Girardet 2010; 2015). Modern cities tend to have a linear metabolism, with resources flowing through the urban system and waste flowing out. Inputs and outputs are largely disconnected. For a city to be regenerative, it needs to be reconfigured from being an ‘entropy accelerator’ that depletes and downgrades the resources and socio-ecological systems upon which it depends (Girardet 2015). As discussed in the introduction, Girardet (2010; 2015) presents a regenerative model of circular metabolisms whereby renewable energies and materials that enter the city are recycled and renewed whilst waste and pollution are minimised. Regenerative metabolisms are based upon “fairer, *restorative* relationship between cities, the natural world and life” (Girardet 2015:18). Regenerative city-region agri-food metabolisms could include the support of local peri-urban food production for local markets; the use of composted, city-derived bio-waste for farming; and, the support of distribution mechanisms such as CSA and farmers markets (Girardet 2015:169).

As the previous section has explored, the support and scaling-out regenerative, sustainable agri-food systems require supportive, enabling and integrated local, regional, national and international policy and planning frameworks and forms of decision-making. A key question, according to Marsden & Franklin (2013:639), is how “governments and the way we organize economies ...give space and support to public and civic economies.” As Girardet (2015:102) states, there is a need for “creativity and initiative at the local level” but also appropriate national policy frameworks in order to support regenerative city-region systems. The city-region is considered a ‘space of possibility’ for placing some of these frameworks. According to Jennings et al. (2015:58), a “more comprehensive territorial governing system at city-region level would complement a multi-scalar approach to governance.” This would require cross-sectoral considerations whereby economic, social and environmental policies can be integrated, as well as participatory processes.

As discussed in the previous section, the support of place-based agro-ecology depends upon the support of democratic, participatory ways of knowing as well as growing (Jennings et al. 2015:49). Pimbert (2009; 2006), Holt-Giménez et al. (2012) are amongst critics arguing that the scaling-out of regenerative and sustainable agri-food systems requires democratisation and decentralisation of public research, increased funding for agro-ecological participatory research and farmer and citizen-led forms of learning, action and innovation. Beyond place-based spaces of deliberation, Forster and Escudero

(2014:44) suggest “active networks of city regions are needed, connected to rural regions near and far.” This includes the support of knowledge networks “that work together to strengthen the sustainability and resilience of food systems in landscapes both urban and rural” (*ibid*). According to Forster and Escudero, effective city-region governance needs to be citizen based (2014:37), since it is the citizen advocates “who ultimately will be the arbiters of transparent, effective and multi-stakeholder food system governance” (*ibid*). In tandem, Moragues-Faus and Morgan (2015) and Morgan (2015a; 2015b) emphasise, that citizens and civil society organisations (CSOs) need the support of the state in order to make significant change to the practices of everyday life. Morgan (2015:1390) suggests alliances between local state and civil society could ‘inspire and enable’ the development of more sustainable food systems. This could include food policy councils, food boards, CSAs, local food partnerships. Citizens thus become involved in the trajectory of change and transformation.

The city-region is recognised a potent site for more regenerative practices *in place* and beyond. As this section has explored, international, national and local frameworks are critical in supporting and enabling this deepening and scaling-out of regenerative agri-food practices. The provision of physical, economic and political spaces for practice emerges as key.

As Cohen and Ilieva (2015:2) state, “cities are where both physical infrastructure and everyday practices coexist.” Cities and their surroundings are recognised as spaces where everyday practices can be constrained, enabled and normalised as a result of the socio-spatial configurations and political dimensions such as policies and planning. This is critical when considering regenerative agri-food systems since, as Cohen and Ilieva (2015:12-13) note, “everyday practice is driven by and can drive system wide change...Cities and advocates can reshape perceptions of normal practice by illustrating uneven geographies of practice and impacts of unsustainable systems of practice.” Changes in agri-food *practices* can thus change agri-food *systems*. A politics of sustainable agri-food practice enacted through *practices in place* and scaled-out through *communities of practice* is recognised as potentially supportive of regenerative agri-food systems. Cohen and Ilieva (2015) demonstrate how forms of governance, particularly at city and city-region level, through enabling and activating more healthy, ecological and equitable practices, can support radical reconfiguration of current agri-food systems. The

following section turns to consider political ecology as a conceptual framework through which we can attend to practice.

Practices in Place

Freidberg (2009) describes how the built environment and objects of our everyday lives are central to our food habits and practices. In her account of the rise of ‘fresh produce’ Freidberg (2009:48) demonstrates how “refrigeration revolutionised the geography of fresh food.” Refrigeration technologies have not only transformed the distance from which food travels and the nature in which it is harvested and sold, they have further transformed practices, determining how regularly we shop and the kind of produce purchased. According to Freidberg, refrigeration technological devices provided suppliers and retailers power over food as well as “new power over their customers” (Freidberg 2009:29).

Hitchings’ (2007) work on outdoor heating and air conditioning (2009) similarly explores the agency of objects and technologies and their potential impact upon landscapes, bodies and practices. Shove (2003a:9) argues that we need to think about the “big, sometimes global, ordinary, routinised, taken for granted everyday practices” - the mundane and prosaic. Shove is concerned with *how* and *why* practices change. Her work is particularly relevant in the attention it pays to assemblages of technology and their subsequent impact upon environments, bodies and practices. She charts how standardization and escalation of practices through “changing conventions and expectations have far reaching implications for the resources required to sustain and maintain them” (Shove 2003:395-96). Such work is demonstrative of the potential insight gained from attention to everyday practice, as well as the transformative potential of practices. Drawing upon the work of Shove, Hitchings and Freidberg, this thesis responds to Sharp and Robbins (2003) call for a critical geography of the practices of everyday life through a political ecology lens.

Political Ecology

According to Peet, Robbins and Watts (2011), there are several emergent key considerations of a political ecology. First, how landscapes, environments, objects and practices are *produced*. Second, how landscapes, environments, objects and practices are *received* and *normalized/internalized (or not)*. Third, how landscapes, environments,

objects and practices *'do work'* and have agential effect. Finally, how *methodologically* we can begin to understand or unpick these affects and effects.

According to Keil (2004:724), political ecology begins with the notion that our everyday lives are “infused within” and “dependent upon” other natures and lifeworlds beyond our reach. From a political ecological perspective, attention to political, social, economic and ecological relations and practices is key. Political ecology emphasises the need to engage with the impact of the state as well as the ‘microtextures’ of bodies, assemblages and practices in place. Guthman (2011:64) suggests that political ecology encourages us to consider in turn how forms of governance and practice 'do work' at a range of scales from the nano to the body to the global. It could thus be considered a ‘middle-level’ approach (Marsden 2000:21).

Heynen, Kaika, and Swyngedouw suggest urban political ecology offers an integrated and relational approach to help “untangle the interconnected economic, political, social and ecological processes that together form highly uneven urban socio-physical landscapes” (2006:15). With reference to urban agri-food systems, Morgan (2015:1383) suggests “urban political ecology is well equipped to bring out the socio-ecological as well as the political dimensions of the urban food question.” He suggests the “socio-ecological focus can shed new light on the intimate interplay of power, politics and place” (Morgan 2015:1382). Yet Morgan (*ibid*) notes the lack of critical analysis of urban food systems within the field of urban political ecology.

The city-region emerges as a ripe site for the consideration of how regenerative agri-food practices and agri-food systems can be supported within and beyond the city. The lens of political ecology can be a useful tool for attending to the practices that shape the spaces, natures, relations of agri-food systems. However, Swyngedouw and Heynen (2003) problematise the absence of situatings within political ecology. How do such practices play out *in place*? This thesis attempts to respond to calls from urban political-ecologists such as Swyngedouw and Heynen (2003:912) for a more ‘relational interpretation of space’, from the ‘microtextures of the city’ and ‘ordinary environment’ (Low 2005:58) to more meso and macro levels (Marsden 2000:22) within the context of urban agri-food system. To *situate* matter *in place* but not *of place* (Massey 2005).

Urban Political Ecologies in Place

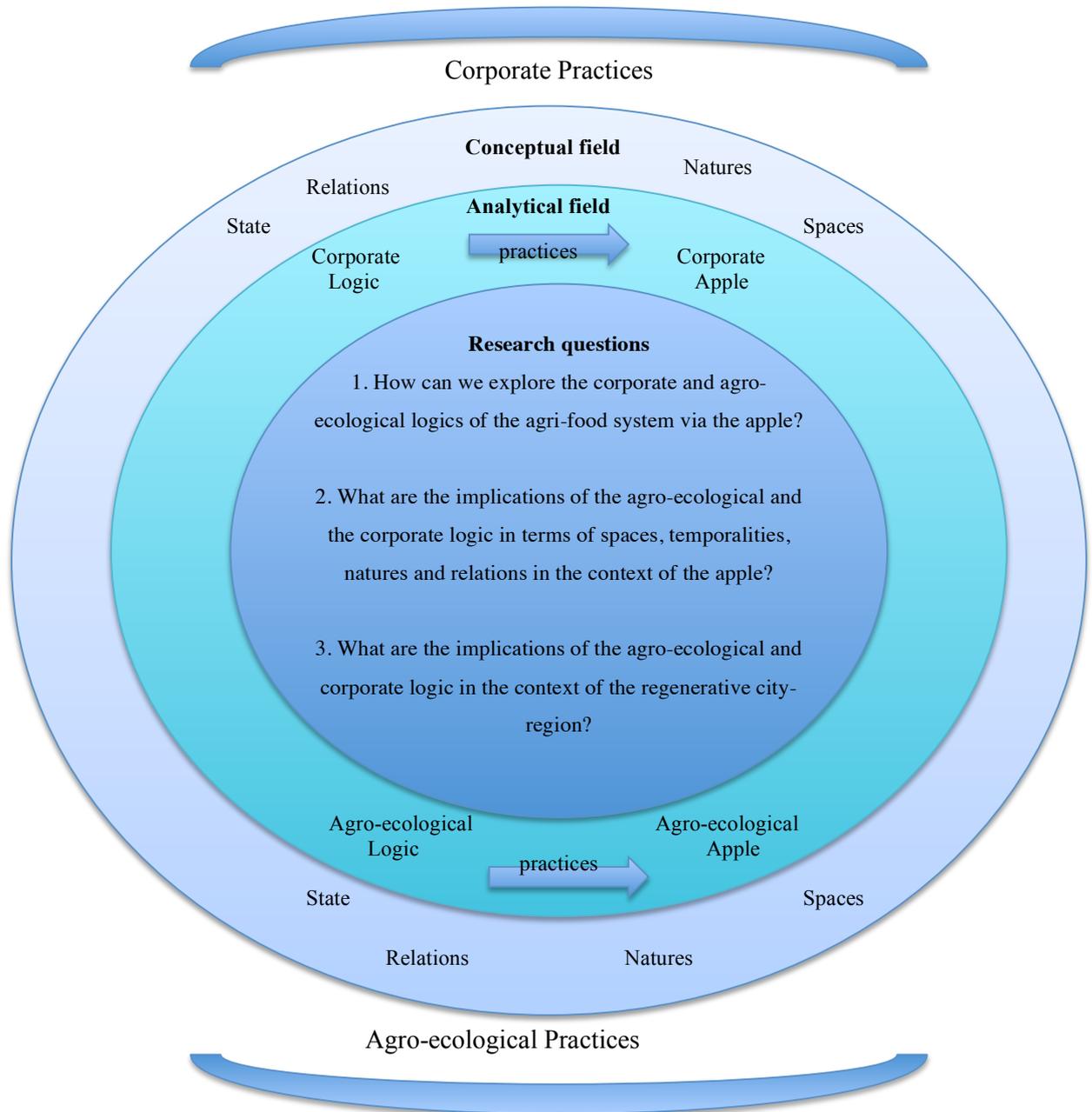
Massey (1994; 2005; 2011), Pile (2005), Amin and Thrift (2002) and a number of other relational geographers call for an understanding of the city in more ‘relational’ terms, whereby a city is considered an intricate web or layering of times, spaces, objects and events (Amin and Thrift 2002:49). Just as there are many different views of the city landscape, it is recognised that within one city, a multiplicity of ‘foodscapes’ (Morgan, Marsden, and Murdoch 2006) and processes of mattering (Roe 2010). From a relational geographical perspective, the city is recognised as a coming together of ‘place-moments’ of many things, relations and temporalities (Massey 2005). Rather than discrete, observable elements, cities are considered as multiple, constantly in-the-making and in-process (Greenhough 2010; Thrift 2004), an assemblage of multiple sites, complex ecologies and cultures “living at various speeds, intensities and trajectories” (Amin and Thrift 2002:28).

Relational geography encourages a ‘*situating*’ of how various practices and processes of mattering of bodies, practices and landscapes unfolding at a range of scales *in place* (Massey 2011). Relational geographies further recognise that non-humans do not just exist within the city “but potentially shape and are shaped by their urban relations” (Hinchliffe and Whatmore 2006:127). From nano-particles to viruses, vegetables to feral animals, humans and machines all are recognised as mutually affecting and affected by their fields of becoming (Hinchliffe and Whatmore 2006:128). Relational geography can thus help in developing a methodological framework that attends to the multiplicities, interrelationalities and continual processes of becoming that are implicitly part of practices in place.

Informed by relational geography, political ecology supports the development of a conceptual framework from which we may attend to *practices in place*, and the implication of these practices in terms of spaces, natures and relations. It is suggested that attending to practices *in place* enables a more relational and situated understanding of the logics of urban agri-food systems and the possibilities (and challenges) of more regenerative ones.

The diagram below demonstrates the conceptual and analytical fields underpinning and informing the research questions and methodological framework:

Figure 1.1. Conceptual framework of the thesis



Political ecology provides a conceptual framework through which the corporate and agro-ecological logic may be explored through attending to corporate and agro-ecological practices around the apple. A methodological framework based upon attending to these

practices, informed by relational geographies, supports a more relational understanding of the spaces, natures, relations of the urban apple, as well as a more relational understanding of the impact of the state on the urban apple. This can support the research wider question concerned with the implications of the corporate and agro-ecological logic in the context of the city-region. The following chapter outlines the methodological framework of the thesis.

Chapter Two: Situated and Relational Practices – A Methodological Framework

“But what is it to eat an apple?... eating an apple is not just a single situation. Instead, it presents ever so many exemplars to explore.”

(Mol 2008:32)

This thesis explores two logics informing the practices around the becoming(s) of the urban apple. These are presented as the corporate and agro-ecological logic. The practices informing the spaces, natures and relations of the urban apple in the London borough of Hackney in three ‘sites’ of practice are considered - the multiple retail site; the wholesale market and the Growing Communities community-led trade mechanism. These ‘sites’, although grounded *in place*, are recognised as not *of place*.

This chapter outlines the methodological approach and framework of the thesis and the approach that enables exploration of the logics driving the practices of the becoming of the apple. Part one presents the relational material, grounded approach informing the methodological approach. Part two outlines the methodological process. Part three turns to Hackney to situate the case and contextualise the practices around the becoming of the urban apple and approach to research in place.

Part One: Relational Materialities

“An apple...maybe it is a case. A case is something to explore, to learn from. It is specific and surprising. Attending to it carefully may make you reconsider what you thought was clear and distinct. It may interfere with your very language. And while a case cannot be generalised, neither it is local. Instead, its specificities are made to travel. When you move a case around, new things start to happen.”

(Mol 2008:32)

Mol (2008) makes a call for multiplicities of cases, situations, narratives of apples; for more contextualised ways of looking, working with, talking about and exploring the apple; and, for more grounded, situated ethnographic work. Whatmore (2002:7) similarly calls for the consideration of 'heterogeneities of socio-natures' and attached narratives that are located *in place*. A number of relational geographers further call for more *corporeal* and *embodied* engagements with forms of matterings, particularly of food (Greenhough and Roe 2011; Roe 2010), and plants and animals becoming food (Whatmore 2002). Whilst Freidberg (2001) encourages attention to the potentially *precarious* matter of these socio-natures.

A relational geography encourages three key points with regards to the development of a methodological framework enabling the exploration of the practices of the becoming of an apple.

First, to attempt to begin to *situate* the practices around the apple. This enables consideration of the negotiations of the practice and the apple *in place*.

Second, to use a *multi-method* and, where possible, *corporeal* approach in order to consider the 'more-than-word' multiple topologies of practice, matter(s) and mattering(s).

Third, to *situate* oneself as researcher and participant implicated within the research assemblage, process and wider world.

When considering an urban apple relationally, it is evident that there are many different, continuously emergent situations to consider. The methodological framework thus attempts to engage with exploration of the multiplicities of processes and practices of

matter. In doing so, the thesis responds to calls from political ecologists such as Swyngedouw and Heynen (2003:912) for a more ‘relational interpretation of space’.

As discussed in Chapter one, there are several emergent key considerations of a political ecology. First, how landscapes, environments, objects and practices are *produced*. Second, how landscapes, environments, objects and practices are *received* and *normalised/internalized (or not)*. Third, how landscapes, environments, objects and practices ‘*do work*’ on and have agential effect. Finally, how *methodologically* we may begin to understand or unpick these affects and effects (Peet, Robbins and Watts 2011). In situating the practice of the becoming(s) of the apple *in place*, this thesis seeks to explore these processes of production, normalization, and agential effect within the context of Hackney, London.

Whilst the methodological framework is informed by relational geographies that encourage focus upon *practices in place*, political ecology emphasises the need to consider the multi-scalar landscape driving these practices. Attention to the influence of international, national and local forms of governance upon these practices is considered critical.

It is thus suggested that the three points outlined above support the relational exploration of the three research questions, reiterated as:

1. How can we explore the corporate and agro-ecological logics of the agri-food system via the practices of the apple?
2. What are the implications of the agro-ecological and the corporate logic in terms of spaces, temporalities, natures and relations in the context of the apple?
3. What are the implications of the agro-ecological and corporate logic in terms of the possibilities of a regenerative city?

Thus follows a situated and relational approach to considering the practices of the becoming of the apple *in place*, using multiple methods.

2.1.1. The Matter(s) of Mattering(s)

From a relational material or material-semiotic standpoint, the socio-natural world is a continuously generated effect “of the webs of relations within which they are located”(Law 2007:2). A relational material approach, drawing upon the notion of ‘agential realism’ (Barad 1998) considers that “there is no way of distinguishing between object and agencies of observation” (Barad 1998:95). With this approach, matter becomes a 'congealing of agency' (*ibid*). Subjects and objects are mutually constituted, emerging through work done upon one another. Places, bodies and matters are recognised as mutually constituted through heterogeneous relations, *active*, *dynamic* and *emergent*; ‘fleshy verbs’ rather than ‘noun chunks’ (Laurier & Philo 1999 in Anderson 2009:123).

From this perspective, *knowing* and *becoming* of subject and object are 'intertwined' and ‘intra-active’ (Barad 2003:812). Reality is actively constituted through our interactive practices (Mol and Elsmann 1996:613). The object of study thus becomes techniques and the worlds they contain and imply (Mol and Elsmann 1996:613).

Just as relational materialism suggests that matter and realities are emergent and intra-active (Barad 2003), so too, it is suggested, are bodies and identities. For Grosz (Grosz 1994:164), identities and worlds are “never fixed or fully comprehensible [*but*] partial and fragmented." Spatio-temporally situated relations with others "constitute the entity with its identity...not identical...through time” (Grosz 1994:11-12) but continual 'becomings'. These dynamic identities are acknowledged as ambivalent, contradictory, often oxymoronic (Anderson 2009); 'partial', 'pregnant' and 'complex' (Haraway 1988:586).

It is suggested that a situated and relational materiality of the apple is based upon three key notions:

First, that *heterogeneous* assemblages, actors and agencies lead to *heterogeneous* becoming(s) of apples.

Second, that these assemblages, networks, entities and agencies and forms of becoming are *co-constituted* by and related to one another.

Third, that the assemblages, actors and agencies that determine the outcome of such becomings are *relationally* and *situationally* determined and *dynamic*.

2.1.2. Positionings and Situating

Described as a “particular empirical translation of post-structuralism” (Law 2007:6), a relational material or material-semiotic is led by grounded empirical case studies that consider “*practices* of relationship and materiality of the world” (Law 2007:2). Such an approach views the research process, the methodological approach and researchers as intra-actively implicated within these emerging heterogeneous relations and forms of mattering, mutually constituted. The process of research thus also needs to be acknowledged as having *agency*. Our knowledges and imaginaries can be ontologically and epistemologically potent (Verran 1998:252)

In following this inherent 'situatedness' and intra-activity, reflecting upon and being reflexive around positionality is considered key. According to McDowell (1992:409) “we must recognise and take account of our own position, as well as that of our research participants, and write this into our research practice rather than continue to hanker after some idealized equality between us.” Furthermore McDowell (1992:413) suggests that as feminist/post-colonial geographers “we also need to address our own position as producers of knowledge.” Such a 'positioning' includes consideration of our gender, race, sexuality, background, age, socio-economic context and how that relates to the 'hierarchies of power' (*ibid*).

Simultaneously acknowledgement of the partiality of such a positional and reflexive awareness is crucial. Identities and knowledges are acknowledged as contextually bound and yet never fully fixed or complete, only ever 'partial', 'pregnant' and 'complex' (Haraway 1988:586). Rose (1997) and others challenge the notion of ever achieving a 'transparent' form of reflexivity. 'Transparent reflexivity', she argues, relies upon notions of 'conscious' agency and 'knowable' forms of power (Rose 1997:311). Rose (1997:309) thus questions whether it is possible to 'lift the veil' of our positionality and agency as researcher and indeed as human, whether it is ever really possible to understand our 'place in the world'.

From a relational standpoint, 'landscapes' of power can never be fully visible, nor stable. Rather, they are recognised as unstable, partial and contextual and, most crucially, continually in the making. Opacities, ambiguities, contradictions, misconceptions and misunderstandings are unavoidable. Nor then can we fully grasp our positionality within these 'landscapes'. The agency of the research process, just as the body and matter, can never be *fully* contextualised, never *precisely* knowable, is continuously *becoming*. However, to consider in greater depth and with greater attention the tensions, differences, contradictions and ambiguities of the research process is recognised as key. This is presented as a more 'connective' geographical approach (*ibid*) – one that is necessarily intra-active (Barad 2003).

Many material relationalists further call for a deeper recognition of the importance of *corporealities* in considering matter and materialisations. To be reflexive not only of our positionalities as researchers but also as *beings and bodies in the world* and the need for *more-than-word* engagement in the world. This requires reflexivity around our non-verbal, visceral and fleshy engagements. As Grosz suggests, “relation of introjections and projections involves a complex feedback relation in which neither the body nor its environment can be assumed to form an organically unified ecosystem...the body and the environment, rather, produce each other and environments in which each produces the other” (Grosz 2010:382). This initiates a more *partial* and *relational* approach to reflexivity (Whatmore 1997; 2002; Greenhough and Roe 2010).

2.1.3. Multiplicities of Practice

For Hinchliffe et al. (2005), partiality is about being aware that what is present will always have the capacity to exceed our ability to describe, analyse and otherwise engage with it. Our understanding of a situation, object, practice or process comprises of our numerous 'fragmented' and 'disordered' forms of comprehension (Hinchliffe 2010:314). Such partialities nevertheless do not render them pointless. Rather, Mol and Law (2004:58-59) suggest “the overall aim of a multi-voiced form of investigative story telling need not necessarily be to come to a conclusion. Its strength might very well be in the way it opens questions up.” This is considered key when considering the “diversity of practice and existence of multiple styles, or systems of farming” (DuPuis 2002:162).

To take into account these provisional, partial, emergent multiplicities, Mol and Law (1994:644) make a plea for “topological multiplicity.” Thus emerges first, a need to conduct *multi-sited* and *multiplicities-within-sites* approach to fieldwork. As Hinchliffe (2010:309) states, there is “more than one reality being made at once.” The site is recognised a 'spectrum' of timescales within place consisting of multiple emerging assemblages and matterings (Thrift 1996:12). Consideration of a polyphony of *voices*, *matters*, *materialities* and *practices* within and across sites is recognised as key (Snow and Trom 2002).

Second, to consider not only the multiplicities of and within sites but also of *things*. “Things, not only take *shape* but take *shapes* “ (Mol 2002). As Hinchliffe (2010:318) states, “one entity can take on many different worlds and orderings. It cannot be reduced to one thing or another. Rather it is contingent according to the situation and context.” Things emerge in more than one practice and relation and indeed, within one network, many different forms of mattering emerges.

Third, these forms of taking shape, ordering or mattering, are recognised as determined by dynamic practices. Practices are shared, learnt, developed and adapted, relearnt and refined, or indeed refuted and revolutionized. ‘Systems of practice’ are “subject to continual, ongoing reproduction” (Shove and Walker 2010:472). As Shove and Walker (2010:471) suggest, “social practices are not merely ‘sites’ of interaction but are, instead, ordering and orchestrating entities in their own right”. Whilst practices are recognised as situated, contextually bound, partial and emergent as well as never fully contextualized, they reach out beyond site and context: they are not *of place* although they are enacted *in place*. In recognition that “images, meanings, technologies and forms of competence travel within and between ‘regimes’”, Shove and Walker (*ibid*) suggest that attending to the circulation of ‘elements’ of practice within regimes could offer opportunities for insight into more sustainable practice and thus patterns shaping the spaces, natures and relations of everyday life.

In the case of the practices of the becoming(s) of the apple, it is recognised that there are logics or rationales informing the practice and the negotiations around the spaces, natures and relations of the apple – whether they are based upon agro-ecological principles, integrated pest management principles, globalized information systems or the need to meet technically determined written standard quality specifications. These are recognised

as intra-active and capable of 'travel' (Shove and Walker 2010:472). As Marsden and Franklin (2013:637) suggest, we need to be mindful to avoid "focusing only on the inevitable and infinitesimal heterogeneity, embeddedness and hybridity of alternative re-localised food movements...rather we wish to argue, what we might be seeing with these expressions are the beginnings of an antidote to neoliberal orthodoxies" (Marsden and Franklin 2013:639). As Goodman, DuPuis and Goodman (2012:32) suggest a politics of practice enable work *across* difference rather than *through* difference. A 'politics of practice' supports plural, heterogeneous spaces, practices and economic forms (Goodman, DuPuis, and Goodman 2012:245) The *practice* emerges as the 'nodal point' (Gibson-Graham and Roelvink 2010). Whilst recognising difference, 'communities of practice' come together through diverse, dynamic yet shared *practice* (Blay-Palmer, Sonnino, and Custot 2015), connected by underlying guiding logics or principles. A practice-based approach perceives practice as the connecting activity, driven by a certain logic or rationale.

In the consideration of the practices around the becoming(s) of the Hackney apple, three differing 'systems of practices' or logics emerged: the multiple retailer, Growing Communities and the wholesale market. These are explored using multiple methods.

2.1.4. Methodological Multiplicities

For Nightingale (2003:79), "mixing methods...can yield rich insights by analysing the discrepancies between the results" - rather than necessarily corroborating or ensuring consistency, as suggested by those advocating triangulation (Yin 2004). Saukko (2003), Mason (2006) amongst many argue that research is a process of *refraction* based upon gaining strength through *multiplicity*. A heterogeneous 'toolkit' is recognised as vital for diverse and creative forms of engagement with emergent multiple worlds, realities, voices, bodies and matters (Charmaz 2008:156), a toolkit that is contextually determined.

Multiple methods, it is suggested by some, are particularly useful for gaining insight into *materialities* (Pink 2009). Scholars such as Bagnoli (2009) state that appreciation and attention to these other non-verbal realms can facilitate insight into alternative perspectives, imaginaries and experiences of 'being-in-the-world'. Within agri-food studies, Stassart and Whatmore's (Stassart and Whatmore 2003:460) call for multi-sensorial forms of engagements with the thing and 'fleshy', 'visceral' practices such as

cooking and production. Roe further (2006; 2010) makes a call for greater embodied and material engagement with 'becomings' of food and advocates the use multi-sensorial methods.

In her work on 'things becoming food', Roe (2006b; 2010) considers the social and material practices implicated within such 'becomings'. Roe (2006b:117) makes the case that more studies of “the embodied material relationship forged between the foodstuff and the human can help us understand the material complexity behind a foodstuff in the consumer interest towards quality” She suggests “many of the issues around food quality lie bound up in the materiality of the foodstuff, whether at a micro level or macro level” (Roe 2006b:108). In her consideration of peeling and preparing a potato, the interviewing, videoing and enactment of the *practice* enables a more corporeal engagement. In another piece of research involving a series of focus groups Roe (2006a). incorporates a form of corporeal engagement with GM or non-GM carrots in order to consider the agency of biophysical properties upon consumption practices Material qualities constructed around food are recognised as *tacit* and often difficult to communicate *discursively*. Drawing upon the work of Roe (2006a; 2006b; 2010), Pink (2009), Stassart and Whatmore (2003) in attending to the practices of the mattering(s) of the apple, where possible, engagement with the harvesting, tasting and talking around the apple, were combined with talking around the practice. The methodological and underlying research framework of this thesis thus sought to seek ‘multiple’ voices and forms of mattering(s) and practices *within* and *across* place. A relational ethical praxis emerged as subsequently key.

2.1.5. Situating Relational Ethics

A relational ethic is about situating our research practice in relation to a whole series of locations and agents (Whatmore 1997). According to Roe (Roe 2006a:476) it entails a 'more emergent ethics' that acknowledges the “complex geography of timings, spacings, activity, habits, choice, likes and dislikes.” An ethics that considers that socio-natural and spatio-temporal relations are reconfigured *through practices* including the research process itself (Whatmore 2002).

Greenhough and Roe (2011) describe relational ethics as beyond just ‘caring at a distance’ whereby ethical committees and procedures give confirmation and confidence of ethical practice, suggesting ethical guidelines can be challenging and disconnected

from the subjective and contextual nature of research. They call for a '*micro-ethics*' of the *day-to-day interactions* and *embodied experiences*, as well as wider debates around ethical consent (*ibid*). A relational ethics is responsive to continually emergent properties, requiring sustained consideration throughout the research process (Whatmore 1997:46). As Rose (1997:317) states, "the risks of research are impossible to know." Mol further notes "unexpected things are bound to happen" (Mol 2008:34). Key is provision of space and time for things to *emerge* (Greenhough and Roe 2011:62), of *sensitivity* and *responsivity to context and situation* (Greenhough and Roe 2011:57) as well as *reflexivity* regarding the effect and affect of our own positioning, our own gestures, voices and corporeality as researchers (*ibid*).

Furthermore, a relational ethic requires reflection upon the *partiality* of these understandings and research: that the world or worlds will always be beyond the realm of our full comprehension and understanding; that knowledges are always limited, partial, modest. It recognizes that it is impossible to gather all voices but to be reflective of *why* some objects cannot be gathered, or some actors cannot be open for discussion. Why some cannot or did not come to the 'table' or were accessible out in the 'field' or behind closed doors. As researchers we need to be further mindful as well as responsive to consideration of how *research* and *outcomes* are determined in part by interactions and positionalities. Researcher and research process itself have *intra-active* agency in the research process, interpretations and dissemination as well as the situation and relation. As Clarke (2015:98) states, "everything in the situation both constitutes and affects most everything else in the situation in some way(s)." A 'situated, contextually bound version of reality' thus emerges (Charmaz 2006).

In taking guidance from this relational approach, I recognise the need to be sensitive to the potential *intra-activity* of the *process of research* and the inevitable *partiality* of the process. Whilst attempting to engage with a relational approach to the emergent situations and processes within which I became implicated, I also need to maintain an awareness and responsibility to follow simultaneously the wider ESRC Research Ethical Framework (ESRC 2008) [see appendix 2.1 for ethical statement].

Having considered the onto-epistemological framework that informed the methodological approach of the research, the following section presents the methodological framework of the thesis.

Part Two: Situating the Research Process

This section considers the relational and grounded methodological approach engaged in seeking to consider the practices of the becoming of the apple according to the three sites outlined above.

2.2.1 Emergent Methods

The research process itself is recognised as “an emergent product of particular times, social conditions and interactional situations (Charmaz 2008:160); a 'mutual co-creation' of all involved in the situation, therefore necessarily contingent and emergent. Grounding of the researcher within the site, situation and research itself is considered crucial in order to relate to the unfolding sites, practices and logics. Charmaz (2008:155) suggests methodology is emergent. She thus recommends beginning with general research interests and concepts and developing methodological tools as insight thickens (Charmaz 2006). As Charmaz (1990:1168) suggests the research process is *emergent* as the researcher pursues ideas and leads as they develop, and continuously questions, re-questions and reconfigures their approach. Fieldwork and theoretical work is recognised as intra-active.

I spent nine months of various literature reviews, documentary analysis as well as making preliminary visits to various potential sites. This initial period was key for developing a basic understanding of the context of the agri-food literatures in the context of economic globalisation and ecological localisation and more specifically the spatial relations of the UK apple. I was encouraged by my supervisory team to think on my feet and get out in to the field early.

2.2.2. Situating Apples

In recognition of the benefit of getting in to the field early, I conducted a preliminary pilot study for two months within Hackney, London, the provisional proposed site for considering a UK urban apple, in recognition of the interesting case of Growing Communities. Alongside visiting a number of the Growing Communities sites, I spent several days at the two fruit and vegetable wholesale markets of London, observed various retailscapes, spoke informally with a number of greengrocers and traders, visited a number of urban orchards and community growing sites and investigated several

harvesting projects. During this early stage I also conducted various documentary analysis and literature reviews to gain a wider critical, socio-cultural and historical context of the issue.

After investigating several potential urban sites and cases within London, it emerged crucial to ground the study, *in place*. After initial broader considerations of a London-wide study, I was encouraged by my supervisory team to focus in on Hackney borough as a case within London, in recognition of the potentially rich emergent multiplicities converging within the east London borough, particularly with the ripe case of Growing Communities. There were several drivers behind this decision:

First, it was felt that situating the study enabled *contextualisation* of an otherwise potentially abstract and placeless commodity such as the apple. Situating within an urban environment was considered key with regards to the question of *urban* sustainable and regenerative agri-food systems. Situating the study *in place* allowed for the exploration of a multiplicity of *groundings* of urban applescape.

Second, whilst recognising the importance of locating the study within an urban environment, it was felt that locating the study in a focussed area such as a borough would support focus and manageability of an otherwise complex and potentially unwieldy topic, particularly within the metropolis of London. Locating the study in an inner city neighbourhood enabled focused insight in to the challenges of the urban apple, as well as the possibilities.

Finally, situating the study in a borough in London was felt to further support the consideration not only of the ‘relational interpretation of space’ and ‘*microtextures of the city*’ (Low 2005:58) but also of the *meso and macro-level* political textures (Marsden 2000) influencing the practices and processes of mattering at local authority, city-wide and national level.

The following section further outlines the reasons for selection of Hackney as a relevant case for exploring the practices of the urban apple.

2.2.3. Situating Hackney

Hackney is considered a particularly interesting place in which to consider the dynamics of an urban apple, particularly in the context of the corporate and the agro-ecological apple. Located in the north-east of Inner London. Hackney is the fifth smallest Inner London borough, covering an area 19 square kilometres. Whilst small in terms of size, it is the third most densely populated borough of London, with an estimated population of 263,150 (ONS 2014). Population is however considered to be significantly higher than official estimates due to the transient nature of many that reside in the borough. If London is considered a ‘global city’, Hackney could be considered a compounded version of the wider capital. Hackney is one of the most ethnically diverse wards in the country (Hackney Council 2013:2). Hackney is also a hub for the creative industry, replacing manufacturing as “the prime industry in Hackney” (Hackney Council 2010:8).

Whilst Hackney is recognised as socio-culturally diverse and dynamic, it is also recognised as a site of significant inequity. According to the 2010 Indices of Deprivation (IOD)⁵, Hackney was England’s second deprived local authority in England (London Borough of Hackney Policy Team 2014:4). All of the wards of Hackney are located within the top 10 per cent most deprived in England (*ibid*). Child poverty rates are amongst the highest in the country (CPAG 2015). Hackney is also recognised as a potentially ‘obesogenic’ borough. Adult obesity levels within Hackney are currently the fifth highest levels in London and childhood obesity are higher than the national average (Hackney Council 2013b:3). Approximately one third of adults within Hackney and the City (following NHS Primary Care Trust boundaries) are considered overweight and an estimated 12% obese⁶ (NHS East London and the City 2012:100).

⁵ The Indices of Deprivation 2010 is a group of 10 indices which measure various aspects of deprivation. The ID combines a number of the indices to give an overall score for relative levels of multiple deprivation in each neighbourhood within England. The Indices of Deprivation are grouped into small geographical areas, ‘lower level Super Output Areas’ (LSOAs). xx

⁶ Obesity is a medical condition caused by overeating and inactivity (NHS 2015c), often compounded by environmental factors (such as lack of access to affordable healthy foods).

Paradoxically, Hackney is recognised as a site with relatively good levels of fresh fruit and vegetable provision (Bowyer et al. 2006). As with London more generally, consumption of fresh fruit and vegetables within Hackney remains relatively high, compared with national averages. An estimated 40% of Hackney adults state that they consume five or more portions of fruit and vegetables daily. This compares with a national average figure of 29% of the same survey (2006-2008 Health Survey for England in NHS East London and the City 2012:103) Further research suggests that more than one-quarter of the adult population of Hackney consume over five portions of fruit and vegetables a day (London Borough of Hackney 2009:16). According to Bowyer et al. (2006:1), fresh fruits and vegetables were found to be “generally widely available, predominantly from local independent outlets” although fresh meat and fish were found to be harder to procure than fresh fruit and vegetables (*ibid*). However, as Bowyer et al. (2006) suggest, *availability* does not always equate with *access*.

As discussed in the introduction, Londoners shop primarily at multiple retail outlets. According to a study commissioned by Hackney Council, two supermarkets (Sainsburys in Kingsland and Tesco in Morning Lane) account for approximately 35% of the study area’s ‘main convenience goods shopping trips’ and together were found to “command around a 50% share of primary trips for convenience goods from their local zones”, as well as drawing sales from a number of other local shopping centres (Tym & Partners 2005:14). Of the households surveyed in the survey, over half used only one store for their main convenience goods and others were found to spend an average 60% of their total goods expenditure at one primary store (*ibid*).

Whilst the multiple retail arena accounts for a large part of Hackney food purchasing, there are several hundreds of independent retailers, many of which specialise in a diverse range of fresh fruits and vegetables. Hackney has a particularly large number of independent ‘green retailers’ selling fresh fruit and vegetables, a wide range of specialist and ethnic shops and over 200 small shops and convenience stores, some of which also sell fresh produce and whole foods. These are particularly focused around Stoke Newington, Stamford Hill, Broadway, Lauriston, Upper Clapton and Dalston. There are also two street markets: Ridley Road and Broadway. Most of these ‘independent’ sites procure their fresh fruits and vegetables from the neighbouring New Spitalfields Wholesale Market in Leyton or other fruit and vegetable wholesale markets including New Covent Garden Market and Western.

In terms of more direct forms of supply, there are two farmers' markets in Hackney including the only weekly organic farmers' market in the UK (Growing Communities 2014b). There are also over 200 produce box schemes in the UK many of which operate within Hackney. Key box scheme providers include Abel and Cole; Eostre; Everybody Organic; FarmAround Organic; FieldFare; FarmDirect; Growing Communities; Riverford and UK5. As a site, Hackney constitutes a multiplicity of retail foodscapes and indeed applescapes.

Hackney, although more populated than many other parts of the city, is approximately about 40% green space and garden (Hackney Council 2015). It has approximately 329ha green space, considered more than any other inner city London borough (*ibid*). There are a number of food producing sites within Hackney, three city farms and gardens and eight allotment sites. There are also a number of community orchards, connected with the London Orchard Project.

As a densely populated, socio-culturally diverse inner-city London borough dominated by multiple retailers it is also recognised as particularly unique agro-ecologically. The borough is the birthplace of Growing Communities, a social enterprise that manages a community-led distribution scheme as well as having initiated the first organic farmers' in London. Growing Communities are also recognised as actively engaged with retrofitting the urban landscape, as well as the surrounding hinterlands via a patchwork-farming network that operates according to agro-ecological principles. Growing Communities are thus recognised as a pertinent case through which the agro-ecological logic may be explored within an urban environment.

Following the decision to select Hackney as a case, I spent three months contacting various organisations, individuals, spaces and events connected to the practices of the Hackney apple. This led to periods of 'mingling, observing and lingering (Cattell et al. 2008), consideration of happenings, actions and processes (Charmaz 2008). I volunteered at several growing sites, including a number of the market gardens at Growing Communities. I was also encouraged to revisit New Spitalfields wholesale market in Leyton. Over time, three potential sites of apple supply connected to Hackney emerged.

In seeking to consider the potential matter(s) and mattering(s) of the apple, it was felt

appropriate to begin with the apples that were not only consumed but also produced within the borough itself: via the orchards and fruit trees of Hackney. Much of this fieldwork formed the initial stage of the research during the autumn period. Initially, contact was made with several groups involved in urban harvesting and urban orchards within Hackney. This included a tree nursery, community orchard and market garden. In preliminary fieldwork, I spent time volunteering at some of these sites and also participated in a number of events including plantings, prunings, training days and harvests. This was combined with volunteering for an urban orchard project on several occasions which included assisting with a community orchard planting and community orchard restoration project. As well as informal conversations with many volunteers and individuals involved, I interviewed two organisers of growing projects, the organiser of an orchard and a volunteer of a harvesting project and conducted a focus group with some harvesters and planters.

As time went on, I became increasingly aware that the apple within these sites were highly marginal cases, with very few apples reaching beyond the growing sites or community orchards. Many of the youngest orchards were not due to come into edible fruition stage for a few years. These sites emerged as primarily sites for education and engagement rather than necessarily sites of production. This led to an urgency on my part to stretch out to wider sites of production that were producing the apples that were potentially consumed within Hackney.

This led to the development of a research methodological framework based upon the exploration of three key 'sites' of provision of apples to Hackney – the multiple retailer, the wholesale market (recognised as the key supplier to independent shops and street markets in Hackney) and the Growing Communities community-led mechanism of trade. What follows is an outline of the three methods used in the fieldwork (documentary analysis, participant-observation and semi-structured interviews), before focusing on each specific case and the methodology applied within the specific context. In following an iterative and relational approach, it is acknowledged that these methodologies were continuously reconfigured and developed through time and according to the context.

2.2.4. Situating Methods

The methods required 'emerged through time', as the need for different perspectives, voices, dimensions unfolded. After the pilot work, it was recognised as important to employ an exploratory and flexible approach in order to appreciate these polyvocalities (Mason 2006:10). In following a relational praxis, there was an emergent need to situate method according to context and the individual. The methodologies thus emerged as necessarily dependent upon the site and context. In each site and each context, some approaches emerged as appropriate, other less so. *Sensitivity* and *responsivity to context* and *situation* was thus key (Greenhough and Roe 2011:57).

2.2.5. Multiple and Situated Methods

Three key methodological approaches emerged as particularly pertinent: documentary analysis; participant-observation-action and semi-structured interviews.

Documentary Analysis

Clarke (2015) advocates the consideration of narrative discourses and historical documents in order to build up a wider sense of the discursive regimes involved in the 'scapes' and arenas under consideration. For deeper insight into the wider historical and socio-political terrain, sporadic periods were spent at various sites of archive and record. During early stages of the research, one week was spent at the Common Ground head office in Shaftesbury, researching various historical texts on orchards, the history of apples and the current context in terms of apple production, ecological apple production and community orchards. Discussions with the founders Sue Clifford and Angela King were very informative.

Upon recommendation of my supervisory team, I was advised to consider the fruit trade literatures. Several weeks were spent at the St. Pancras and Colindale British Library Sites where I spent time examining various fruit trade journals. Trade journals, particularly the Fresh Produce Journal provided insight into the global apple economy from a different perspective. The British Library *Food: from source to salespoint* and *Millennium Memory Bank* sound archives were useful for historical context of food supply, fruit sales, orchards and changing consumption patterns during the twentieth century. The Patty Fisher archives at the London School of Tropical Medicine were also

useful for information regarding fruit growing and orchards during the first half of the twentieth century, notably during WW1 and WW2. Several Hackney archives were also consulted for insight into the socio-historical context of the borough. The documentary analysis offered insight into the socio-historical and economic context of apple production within the UK and supported a broader meso- and macro- level understanding of the context.

Participant-Observation-Action

Drawing upon Emerson, Fretz and Shaw (2007:352), participant-observation is considered a 'technique' that "investigates, experiences and represents the social life and social processes that occur in a setting." Participant-observation (-action) was used in all of the sites to a certain extent, although in various forms.

In the case of the multiple retail arena, interactions tended to be more formalised and located in a head office boardroom or at a desk rather with little opportunity to become emerged in the packing floor or within the orchard (although this did unfold in a few cases). In other arenas, such as the wholesale market and farmers' market, participant observation emerged as a key tool. Observations and, where possible, forms of *corporeal* and *sensorial* engagement as well as verbal exchange supported a deeper insight into some of the key issues, processes and procedures.

Most of the interactions tended to focused around practices and conversations around negotiations of production, quality, variety, supply and concepts connected to present trade and past and projected changes within the site. Field notes were recorded during or after participant-observation, depending upon the nature of the interaction. Rubin and Rubin (2005) suggest researchers often begin with participant-observation, followed by a series of questioning around what has been witnessed. In some cases, it was felt more formalised semi-structured interviews would be useful as a follow-up, either accompanying participant-observation or subsequently, depending upon time constraints and the situation. This was particularly helpful in the case of the wholesalers and producers, where there was more time to process and subsequently interview.

Ethical reflexivity was recognised as an important issue, particularly in the context of participant-observation. In an environment such as a public wholesale market, an orchard or a community growing site, it can be difficult to gauge who will be entering the site.

This makes it hard to gain 'formal' written consent from all those involved in the site. It emerged that I could not ask all involved for permission to be 'observed', since many observations were indirect, particularly within sites that emerged as highly transitory and rich in relations. Furthermore, those involved in the site may not wish to be directly involved in the research but are still present and involved within. In following the ESRC ethical guidelines⁷, I sought to be open regarding my 'positionality' as a researcher, seeking transparency and an open nature where it was felt necessary and appropriate.

Semi-Structured Interviews

Whilst participant-observation and informal discussions were crucial in some sites, interviews were recognised as more appropriate in other contexts whilst less so in other contexts, particularly with representatives of more formal or larger organisations. For those interviews conducted, semi-structured interviews were used.

Semi-structured interview allow for a kind of 'guided conversation', which initiates the exchange of certain ideas and kinds of information (Gubrium and Holstein 2001). A guideline and general outline of key concepts and in most cases, outline of key questions were used, determined according to the site and context, whilst it was recognised that they do not need to be necessarily strictly adhered to. The themes and questions act as a stimulus for discussion and directed respondents toward certain topics to discuss but do not to prevent talking around any other points.

⁷ Informed Consent “entails giving as much information as possible about the research so that prospective participants can make an informed decision on their possible involvement. Typically, this information should be provided in written form and signed off by the research subjects. Where consent is not to be secured a full statement justifying this should be provided...The primary objective is to conduct research openly and without deception... In the case of participatory social science research, consent to participate is seen as an ongoing and open-ended process. Consent here is not simply resolved through the formal signing of a consent document at the start of research. Instead it is continually open to revision and questioning. Highly formalised or bureaucratic ways of securing consent should be avoided in favour of fostering relationships in which ongoing ethical regard for participants is to be sustained, even after the study itself has been completed.” (ESRC 2008:24)

In following the ESRC Research Ethics Framework, I endeavoured to discuss the ethical praxis of the research, confidentiality, anonymity and privacy of the interview. In most cases, interviews were pre-planned and information provided explaining the project in advance. If it was more spontaneous, I verbalised the project and ethical statement and gave them time to consider whether they wanted to participate. Most interviews were recorded. In some cases, participants preferred not to be recorded. In this case, their request was respected and field notes made instead. Following completion, all recorded interviews were transcribed and coded or field notes collated in the cases where a dictaphone was not used. I endeavored to transcribe the interview as soon to the interview as possible in order to maximize reflection and accuracy. Rubin and Rubin (2005) recommend reading and coding the interview transcript before the next interview is conducted in order to develop themes and categories, follow up, expand. Data collection, analysis and conceptualisation were recognised as iterative and mutually constitutive.

However, as with all verbal interactions, the interview process is also recognised as a “speech act”, just as any social encounter a meaning-making process (Holstein and Gubrium 1997:114). “We all draw on myriad selves and experiences in the course of social interaction” (Barbour 2007:113). It is thus key to be responsive and relational to the context and the positionality both of the interviewer and interviewee. It is recognised that “all talk through which people generate meaning is contextual and the contexts will inevitably somewhat colour the meaning” (Dahlgren, 1988:292 in Kitzinger 1994:117). What is key is remaining loyal to the narrative (Haraway 1991). Whilst acknowledging the situated and partiality of our interpretation, we can try to make connections, to develop deeper insights the deeper and more intricately interweave by returning to the narrative. Analysis is thus recognised as a key part of deepening insight.

Situated Iteration

I decided not to use an analytical computer package such as CAQDAS, Atlas.ti or Nvivo, although I did receive initial training on these packages and did begin to use Nvivo. I felt that I wanted to remain as close as possible to the 'raw' data; to be held accountable for omissions, gaps, silences. I also found sorting through, grouping, coding and thematically clustering field notes and transcriptions an active and analytical process in itself. These active approaches encouraged reflecting upon and thinking through the context, situatedness and memories of the interview, moments described in the field notes or focus

groups. Patterns that were perhaps unexpected, relations within the texts and accounts, emerged through reconsidering the data, the context of the account and the memory of the interaction as the wider research itself unfolded.

A multiple range of methods of analysis of data were applied including thematic coding, categorising, and mapping (Charmaz 2006; Clarke 2015). These analytical tools helped encourage thinking beyond the data *in situ* – to reflect upon wider relations, processes and connections, as well as contrasts and tensions, aiding conceptualisations. This was considered particularly crucial when thinking through the practices and the relations and influences across and within sites.

Charmaz (2006:162) there are a number of key steps to analysis:

- i. examination of initial data set, focusing upon micro and segmented analysis of data;
- ii. the development of themes and codes, aided with the help of diagramming, memoing, clustering and mapping;
- iii. the exploration of these in further data collection;
- iv. the development of analytic codes and gradually more abstract categories and concepts;
- v. consideration of connections to form grounded theorisation.

However, Charmaz (2006) emphasizes the need to stay ‘close’ to the *data* “rather than to what they may have previously assumed or wished was the case” (Gubrium and Holstein 2001). Mason (2006) states, the analysis of data is an ‘*active*’ process. It does not recognise a necessary ‘end’ to data collection and commencement of analysis. Rather it is an *iterative process* (Spiggle 1996). The research process itself thus jumps across data collection, analysis and theorising (Charmaz 2011). It can lead to returns to sites to check back hunches or clarify issues or relations (Charmaz 2006). To explore emergent ideas or account for omissions, attend to shadows.

In my case, this iterative approach was key in terms of addressing some sites that had been overlooked or neglected. It also involved the revisiting of a number of sites, for example revisiting the wholesale market for a number of further interviews, following up a number of interviews, revisiting some of the sites of Growing Communities as well as being connected to other individuals to interview. As Charmaz (2011) suggests, analysis is always and ever ‘nascent’. Connections, categories and relations are recognized as

infinite in possibility and research and concepts “can always be refined and modified” (Charmaz 1990:1171). There were many informative conversations and it is with gratitude I thank those participants who offered their time to talk. So too were there some conversations that never did unfold, due to a number of factors. As McCarthy (2005:120) states: “situated knowledges are, by their nature, unfinished. But that is the character of all things human and alive.”

Having outlined the three key research methods applied, this chapter turns to Hackney to further outline the specificities of the site and site-based methods.

Part Three: Situating the Sites

The key emergent convergent sites of apple access within Hackney are outlined below. In some cases the practices of the sites were relatively consistent with ex situ 'systems of practice' (notably, the case of the multiple retail arena). In other cases, practices emerged as more place-based and producer-led (in the case of the producers supplying the farmers' market) or context dependent (in the case of the wholesale markets) leading to potentially diverse practices and indeed apples.

A *multi-sited* approach was engaged in terms of considering the practices of the becoming of the apple. In attending to practice, approaches to production, harvest, variety, quality and spatio-temporalities of the apple were particularly key. Attention was directed towards the practices of *production, distribution and consumption* connected to each site that informed the practice or were informed by the practice. Consideration of the guiding logic emerged as key.

The point of approach differed necessarily according to the site. For example, producers, harvesters and consumers were found to negotiate qualities in the case of the farmers' market. Thus an attempt was made to consider each of these sites. In the case of the multiple retailer, there was a far more complex series of quality control systems of practice from the orchard to the supplier to the distribution centre and finally to the supermarket. Where possible, I sought to intersect the 'points' where negotiations around the mattering(s) of the apple were enacted. Many networks and topologies emerged as highly complex, often with many more potential 'points' than others. In following Gad and Jensen (2009), for the methodology, the point at which the network was 'cut' or intersected was crucial. In the case of the wholesale market, qualities were found to be often pre-determined. Practices were based upon responding to the qualities rather than necessarily shaping them or 'doing work' upon them. In many cases, the logic guiding wholesale trade was pre-determined by an outside source (which in some cases was indeed the multiple retailer).

As far as possible, key representatives at emergent 'points of negotiation' of the three sites considered: the multiple retail sphere; the wholesale market; and the Growing Communities and community-led distribution mechanism. The multi-sited nature of these 'points of negotiation' necessitated a *relational ethical praxis* and *multi-method* approach.

A sustained series of *semi-structured interviews*, *participant observation*, *documentary analysis* and where possible *sensorial engagement* with those enacting and negotiating the practice of the becoming of the apple was attempted. In many cases, selection was participant led and much ‘snowballing’ occurred. Where possible, sites were visited. In some cases, access was difficult or impossible to negotiate, particularly within the multiple retail site. The matrix below outlines the fieldwork conducted in each of the three ‘sites’:

Figure 2.1. Fieldwork Matrix

Site	Method
i. Producers and suppliers sourcing the Growing Communities box-scheme and farmers’ market	Two producers interviewed at orchard site.
iii. Wholesalers at the New Spitalfields Market	25 wholesalers were informally interviewed at New Spitalfields Market as well as the business development manager. A representative from New Covent Garden Manager was also interviewed.
iv. The supermarket retail arena	4 producers were interviewed supplying a number of multiple retailers (3 on site, one via telephone); 3 suppliers were interviewed on site supplying a number of multiple retailers; 1 quality produce officer on site was interviewed.

Key considerations at the three 'sites' included:

- i. attending to the practices of the becoming of the apple;
- ii. attending to the underlying logic or guiding principles;
- iii. attending to the interconnections of practice.

Figure 2.2. Key themes

1. How are practices enacted?
 - i. What are the spaces of practice in terms of production, distribution and trade?
 - the orchard design, practices and principles;
 - the distribution design, practices and principles;
 - the trading format design and associated practices.
 - ii. What are the temporal dimensions of the practice?
 - approaches to climate and seasonality;
 - approaches to storage.
 - iii. What are the natures of the practice?
 - the approaches to varieties and qualities;
 - the approaches to pest and disease management.
 - iv. What are the relations determining the practice?
 - how are the practices determined? How are they guided?
 - what apparatus and socio-technical devices are used (or not)?
2. What are the guiding logics? How are they determined?
3. Furthermore, how does the state relate to these practices?

In attending to these key guiding questions, the wider question was to consider the implications of these practices in terms of the spaces, temporalities, natures and relations of the apple.

2.3.1. 'Direct' Supply

I contacted the two producers that supplied apples to the Growing Communities farmers' market and box-scheme. Visits were made to both of the orchards. An outline of interview questions was followed as a guide but in the case of the site visits, time allowed for a more open approach to questioning and conversation both with the producers and other workers in the orchard. Both producers gave a tour of the orchard, explaining production methods, varietal range, supply routes and demonstrated their approach to harvesting and quality. At both orchards, I also assisted with one to two days of harvest. This corporeal approach was realised as a key component of fieldwork offering insight into the producers' practice and associated issues of varieties and qualities.

Follow-up discussions were conducted within the farmers' market, alongside a number of follow-up phone calls. The farmers' market was recognised as a further key site of the producers' practice. Interactions between consumers and producers were observed as well as talking through their processes of sales, approach to quality and varietal negotiations within the site and the approach to 'self-grading' of one of the producers.

As a result of the corporeal nature of this fieldwork, extensive field notes were made rather than recordings. However, in both cases, I checked back notes and interpretations of the procedures with the producers following the visit and sent copies of the findings to the producers to corroborate.

Since the producers are supplying the Growing Communities box scheme and farmers' market, it was also felt necessary to speak to a representative of the organization. Two phone call interviews were conducted with a representative of Growing Communities. Although recordings were not made of the interview, copies of the findings were sent back to Kerry to corroborate. There were a number of follow-up discussions to check back on certain issues.

Alongside the interviews with the producers and representatives from Growing Communities, a period of time volunteering in the Growing Communities market garden further informed understanding of the co-production mechanism of the community-led scheme.

2.3.3. The Wholesale Market

In Hackney there are a range of small-scale independent shops and street markets as well as some greengrocers. Many source fresh produce from the two wholesale markets of London. In order to further unpack the multiple possible apples entering London, I sought to further engage with the wholesale markets since these were in many respects felt to be one of the key sites of negotiation around the matter of the apple in this 'arena'.

New Spitalfields market (NSM) and New Covent Garden Market (NCGM) constitute the two key fresh produce wholesale markets of London. A number of visits to both markets were conducted during the pilot study and, subsequently, a sustained period was spent at NSM.

A semi-structured interview was conducted with a representative of each of the markets and recorded. These discussions were crucial for an introduction in to the fundamental operations of the wholesale market. This led in each case to a tour of the site and introduction to a number of wholesalers and importers. However, drawing upon Agar (1996), it was necessary to be reflexive of positionality of the participants and their potential interests. Within the wider wholesale market, preliminary observations and informal chats were key for gaining insight in to the arena. Initial contact was attempted with representatives of each of the wholesale market traders supplying apples and this resulted in a number of informal discussions with those available to talk, seeking to build up an understanding of the arena.

One week of morning fieldwork was spent at NCGM in the early stages of the research. It emerged that the wholesalers tended to be providing for a different clientele to that of New Spitalfields – predominantly restaurants and hotels and trade to the south and western regions of London. An interesting dynamic emerged in terms of discourse directed around the 'difference' of the markets. NCGM was thus useful as a case for comparison and contrast with NSM. I attempted informal conversations around apple quality, varietal range and spatio-temporalities of supply with all NCGM wholesalers selling apples in the preliminary stages.

This multi-sited approach enriched my understanding of broader wholesale trade, dynamics of apple trade and the history of the wholesale market within London. NSM however formed the focus of the wholesale research. I felt it was important to prioritise

the wholesale market supplying the majority of ‘independent’ shops within Hackney, so later focused fieldwork within NSM.

A total of three weeks of morning fieldwork were spent at NSM (two weeks in the initial stages of the research and one week at a later stage as a follow up). Following a number of days spent informally chatting and observing, I attempted to speak with all of the wholesalers trading apples within NSM. Approximately 25 conversations in total were held with wholesalers and two with suppliers. An outline of topics to cover was used [see appendix 2.2]. Initially, I sought to record the interviews. However, a number of wholesalers stated that they preferred not to. Furthermore, many of the traders were very busy and interviews were conducted alongside trade (although in a number of cases, wholesalers agreed to participate in a longer interview after trading hours or during, whilst a colleague covered their duties). During these situations, extensive notes were instead taken and where possible I took down their accounts *in situ* in written form. The project, anonymity and ethical position were discussed at the beginning of conversations.

There was a varied response and willingness to talk. Some wholesalers were too busy or did not want to talk. Others were jovial and keen to share their experience of wholesale trade and reflections of changes in the market and apple trade specifically. Others were less keen to talk at the beginning, often requesting that I returned at a later date, but such wholesalers often emerged to be those who offered the most time and energy when I did return. Several unplanned conversations also emerged indirectly – in the wholesale café over a cup of tea or whilst walking along the wholesale aisles. Discussions around operations, sales and negotiations around quality, variety and spatio-temporalities of apples unfolded.

At a later period in the research, I returned to ask more specific questions to twelve wholesalers. These latter conversations sought further information around issues that had emerged as particularly key, particularly seasonality, local supply, further discussions around quality and more general reflection on the fresh fruit and vegetable trade. This followed a period that I had spent researching a range of trade journals and was more strategic in its approach. Discussions were based around a semi-structured conversation guide with some key questions. However, discussions remained open to the direction and interest of the wholesaler, allowing for the space for consideration of topics that might not arise within a more structured conversation.

Timing emerged as crucial for the wholesale trade. Both markets operate under moonlight and tend to close at around 9am-10am, with the peak of their trade at midnight. It was established that 6-9.30am were the most appropriate times to communicate with wholesalers, since trade tended to quiet down by these points. As a highly masculine space, it was at times, necessary to be aware of my own positionality as a young woman. Particularly during the dusk hours, it was important to feel confident that people knew my whereabouts and that I felt safe. I decided that it was more appropriate to conduct research in the morning rather than during the twilight hours, particularly responding to the location within which the market was situated.

2.3.3. The Multiple Retailers

In considering the influence multiple retailers have upon the apple in London, it was considered important to consider the practices of the multiple retailer. However, access was at times, difficult or impossible to negotiate. Some multiples expressed a desire to communicate only via email or telephone contact. Others were seemingly impenetrable. Several suppliers and producers were open and agreed to an interview, which was felt to be the most appropriate methodological approach within this arena. Where possible, I sought to follow and talk through issues of quality, variety and spatio-temporalities of apple supply.

Producers

Site visits were made to three producers supplying multiple retailers. One of the interviews was recorded, notes were taken at the other sites. At one of the orchards I was invited to participate in the harvest. In the other cases, I was taken on a walk around the orchard and storage facilities. One of the largest commercial orchards in the UK supplying a number of retailers was not open to a visit but did offer a telephone interview which was recorded and transcribed.

Suppliers

Site visits were made to the distribution centres of three suppliers who agreed to be interviewed. One worked exclusively with one multiple retailer, the other two worked with several multiple retailers. Two of the interviews were recorded and transcribed the

other was not at request and notes were taken.

Quality Produce Officers

A site visit was made to a distribution centre of one of the multiple retailers where a one quality produce officers were interviewed and a store visit was made. The interview was recorded and transcribed. An informal chat was also conducted with a colleagues of the officer.

Interviews tended to be more concise and structured than the other sites, responding to the environment entered and attitude of participants. Interviews were often located in an office rather than on site and within an allotted time period. Following a relational ethical standpoint, the need to be responsive and reflexive according to the situation was key. In some cases, recording was not permitted. Anonymity and confidentiality were discussed. Several of the interviewees also gave a tour of the site. A number of key questions and topics were covered within most interviews, within a flexible and semi-structured form focusing on the negotiations of production, distribution, quality, variety and spatio-temporality of the apple.

In situ visits emerged as of particular importance, enabling talking around the apple and the orchard and the tools utilized in the practices. These materialities were key to the deciphering of how practices were enacted and quality, variety and spatio-temporality negotiated. For example, demonstrations of the penetrometer and refractometer, engaging with the harvest, walking around the orchard and cold storage sites. Serendipity in some cases was also integral – it was the ‘being there’ that might open up issues or topics that might otherwise remain silenced in a desk-based interview or phone interview. Engaging with the grading process, opening up quality control manuals, demonstrations of the quality control tests performed for example. Witnessing the grading and sorting and the apparatus involved. The value of these site visits to orchards, distribution centres and supply centres was particularly illuminating in terms of considering the multiple retailer practices of the of the apple and gaining further insight into the logics underpinning them.

As evidenced, the interviews are nowhere near exhaustive or in any way symmetrical. In the cases that access was granted, particularly in more than one site, visits and conversations offered insight in to some of the processes determining the relational materiality of the apple that arrives at many of the Hackney multiples. Some multiples were difficult to contact although others were responsive. A ‘snowball’ effect emerged in

some cases whereby one interview led to several others. The data is considered not representative but ‘illustrative’ of possibilities (Yin 2004).

Since access was limited within the multiple retail domain, secondary data provided further insight. Documentary analysis of relevant literatures published by the companies including retail websites, CSR reports and various other publications was key. In order to get a wider sense of the industry, a review of the last decade of fruit apple trade and trends was conducted at the British Library collections in St.Pancras and Colindale over a period of a few weeks, particularly focusing upon the 'Fresh Produce Journal', 'EuroFruit' and a range of other fresh fruit and vegetable trade journals. These emerged as key sources of information for considering the wider shifting terrains of notions around 'quality' and varietal ranges within the fruit trade world. This was also supplemented with visits to a range of multiple stores throughout the year and consideration of the architecture of the varieties and spatio-temporalities of apples available.

Where possible I sought information regarding forms of negotiation and expectations via suppliers, traders and other information sources. It is necessary to be modest in recognising and accepting that not all gaps will be filled. These gaps, stumbling 'blocks' or hurdles whilst frustrating, can be illuminating. This led to consideration of what emerged in the research process, in seeking a “grounded understanding of the object of analysis ...and its embedding context” (Snow and Trom 2002:154). What follows is an outline of the approach as it emerged within and beyond each ‘site’.

2.3.5. Asymmetry and the ‘problem’ with relations

This research could be critiqued for focussing upon certain cases in more depth than others. In seeking a more *relational, polyvocal* and *grounded* approach research became unavoidably *asymmetrical*. Many networks emerged as close to impenetrable, hard to access, or conversely, easy to access. The research unfolded as necessarily asymmetrical since it was unavoidably dependent upon the potential to access multiple scales and types of topologies with varying networks of power and ‘relations’ embroiled.

In attempting to practice a relational ethics it could be suggested therefore that many potential relations and interviews were not rendered possible. I could not access all voices. Following an ethical praxis that necessarily aims to respect those participating and those who do not wish to. Furthermore, some points were simply inaccessible, ‘off limits’. These failed ‘interceptions’ me to redirect my forces in some cases for example, with considering the multiple arena, reaching to trade journals or with regards to the wholesalers, speaking to those who were willing. To consider some producers but not others because they weren’t available or did not wish to talk. To connect with some growing projects but find it difficult to connect with others.

Crucial therefore is reflexivity around potential reasons as to *why* some people or organisations may not wish to talk. In some cases this was *personal*: access was limited due to time constraints, external factors, personal reasons of the interviewee. In other cases, issues of access were *more than personal*. They were recognised as perhaps indicative of the wider relations and networks within which the participants were embroiled. In following Charmaz and Clarke, key is acknowledging these asymmetries, partialities and situationally bound encounters.

Any ‘point’ is recognised only as a fragment, momentary, partial and minute a small component of a far more complex and entangled web of multiple worlds and forms of mattering, particularly when considering something as dynamic and ubiquitous as the apple and the spaces, natures and relations with which it is related. Yet, it is suggested that these fragments contribute to an interweaving patchwork of fragments that may become richer through multiplicity. However, some points necessarily could not be ‘cut’ or accessed. Furthermore, crucial is recognition that the absence, bias or limitation of knowledge or experience can inevitably shape interactions and interpretation. As a relative ‘outsider’ to Hackney and particularly the working trading environments and

lifeworlds considered, it is recognised as impossible to gain full insight to the issues so steeped within place. Tacit and socio-technical knowledges take time to develop.

A relational praxis requires an acceptance that partialities, absences and gaps are part of the 'lived reality' and reflective of the context and lifeworlds of the individual and wider situation. To be reflexive those willing to talk and potentially holding a vested interest and attentive to 'deviant' cases (Agar 1996). What emerged through fieldwork was the importance of those *encounters* that did emerge, the interrelation (as well as reflection upon those potential relations that did not emerge). A relational ethic encourages sensitivity to the situation as well as the acceptance of partiality and performativity embroiled within any exchange or relation.

The farmers' market, the supermarket, the box-scheme, the community orchard, although necessarily multiple in their contextually determined and situated realities, are recognised as terms which can be *openings, starting points, provisional notions*. As discussed in Chapter one, a term can be, as Goodman and DuPuis and others reflect, often ambiguous, ambivalent (Goodman and DuPuis 2002; Goodman 2004; Freidberg 2009). The 'direct', 'multiple', 'harvesting' and 'independent' arena are recognised as potentially empty notions since they could account for so much. However, rather than attempting to account for the outcomes of such binaries, I sought rather to present *cases of possibilities*, multiplicities of place-moments or 'jagged case histories' within convergence sites which were initiated by these very notions. I did not take the term as a given, nor did I consider the arena as static, bound or singular. Rather it was recognised as a 'landing point' amongst otherwise potentially ungrounded and a-situational space. Just as Mol (2002) locates in the hospital and Roe (2010) on the farm, I sought an initial entry in to these complex and multiple worlds of relational foodscapes via *sites of consumption* – considered manifestations of emergent and convergent practices.

Conclusion: Situated Knowledges

As Tierney (2000:543) notes, “a text is always created not simply by the speaker of the narrative and individual who owns the tape-recorder but by multiple editorial decision makers who oversee the story’s production.” Ethically, therefore an attempt to maintain the presence of the participants throughout the writing and analysis is key, to maintain a drive to “describe the experiences of others in the most 'faithful' way possible” (Munhall 2001:540).

Inevitably, however, there are silent spaces and shadows which cannot be fully illuminated or will remain overlooked. Charmaz (2006) encourages researchers to attend to the margins: to boundaries, barriers, difference and divisions, exclusions and discriminations both within the field and within the data. It emerged key to consider apples that cannot enter the city, those apples not consumed or sold, or, those who cannot or do not access or consume apples as well as what was perhaps left unsaid or sidelined within fieldwork. A view is recognised as influenced by time, place, interactions, and experience (Charmaz 2008; 2006; Clarke 2005). Reflexivity around the assumptions that underpin the research, the positionality and situation are vital yet simultaneously acknowledged as always partial, emergent and potentially ambiguous.

Chapter Three: The Global Commodity Apple

This chapter considers the contemporary global commodity apple. Part one examines the growing global demand for a continuous supply of a fresh fruit, including apples. This is found to be met by an increasingly global apple economy. It then considers the trend towards the intensification of production, contraction of varietal range and privatisation of variety of the global apple that is sustaining this appetite.

Part two examines the intensification of production, consolidation of supply and contraction of varietal range of apples grown and consumed in the context of the UK. The production and trade of an increasing proportion of apples is found to be managed by a small group of powerful multiple retailers, directed according to a corporate logic. The privatisation of varieties grown and sold, via the club brand emerge as a particularly key phenomenon shaping the landscape of the UK apple economy in the twenty-first century. These corporate-led practices are recognised as heightened by a national political framework that is market-led and consumer oriented.

Part One: Global Apples

There is a growing global appetite for fresh fruit. Increasing the production and consumption of fresh fruit and vegetables emerges as a key political agenda across the globe. The sales of fresh fruit and vegetables is further recognised as a potentially profitable enterprise, particularly amongst corporate retailers (Marsden et al. 2010).

3.1.1. Consuming Global Fruits

Five-a-day: a global strategy?

A high intake of fruit, vegetables and whole-grains is suggested to promote health, lowering the risk of cardiovascular disease, certain cancers and type-2 diabetes. The World Health Organisation (WHO) for example recommends consumption of at least 400g of fruit and vegetables a day (excluding potatoes and other starchy tubers). Following the 2006 WHO European Ministerial Conference on obesity, the ‘*Counteracting Obesity*’ European Charter was adopted by the EU and its member states (WHO 2007). This charter aims to increase fruit and vegetable consumption of the EU population via promotions, activities and the improvement of supplies of fruit and vegetables.

The EU Food Information Council (EUFIC 2012) for example actively encourages member state support of consistent provision of fruit and vegetables *throughout* the year in order for an increasing proportion of citizens to meet the recommended target daily. According to a study cited by EUFIC:

“...a variety of attractively displayed fruit and vegetables all year round positively affect fruit and vegetable consumption...on the other hand, lack of or limited supply of fruit and vegetables has been reported to be [an] obstacle to consumption of such foods” (EUFIC 2012).

For most EU nations at present, ‘five-a-day’ is considered a realistic and attainable target upon which to base policy (although some other nations have a more ambitious target, including Denmark’s recommended ‘6 a day’, Hungary’s ‘3x3’ and the doubly ambitious

French target for '10 par jour'). Currently it is estimated that fewer than 50% of EU citizens are reaching WHO recommended levels (EUFIC 2012). If the prevailing political drive of the WHO, the EU and national governments is successful, there is set to be a profound increase in demand for fruit and vegetables, as more people seek to meet their 'five a day' or more.

With increasing awareness of the health benefits of fresh fruit and vegetables, global appetite for fruit has certainly been stimulated across the world. This appetite is being met by an increasingly globalised fruit economy. The apple, one of the top fruit crops produced and consumed in the world, is amongst an increasingly diverse offering of globally traded fruit crops. Within Europe and North America, there is accelerating consumer demand for fresh fruit, sustained increasingly via imports. Between 1998-2010 there has been an overall +24.1% increase of key fruit imports within Europe and North America (Belrose 2011:24), with particular growth in demand for exotic, soft and 'super' fruits⁸. The consumption of bananas within Europe and America for example, has increased by over 30% (between 1998-2010) and other tropical fruits by almost 160% during the same period (*ibid*). Meanwhile, demand for temperate crops such as apples and pears is stable or in decline. In the same period within Europe and North America, there was an increase of apple, pear and quince imports of less than 4% (in terms of volume) (*ibid*). Within the Middle East, China and South East Asia, there has also been a pronounced acceleration in the production and consumption of an expanding range of fruits (Belrose 2011).

Urbanising Fruits

Demand for fresh fruit and vegetables is considered particularly prominent amongst urbanising populations with an increasing disposable income and desire for healthy living. China for example is recognised as an expanding fruit consumer and producer at present, partly as a result of the intensive processes of urbanisation underway (Belrose 2011). The demand for a continuous supply of a diverse range of fresh fruit are predicted to heighten further if processes of urbanisation continue to intensify and retail supply further consolidates across the globe. Indeed, the rise of industrial agri-food systems and the disconnection from local and regional agri-food economies is considered fuelled by

⁸ Any of several fruits considered to be particularly nutritious or otherwise beneficial to health, especially by being high in antioxidants and rich in vitamins (OED 2015).

current processes of urbanisation.

Within majority modern urban environments at present, a significant proportion of fruit is sourced via the global fruit economy and sold via the multiple retail sector. Within dense urban areas across the globe, smaller convenience stores owned by multiple retailers with global supply chains are rising in numbers and consolidating in form. In these smaller multiple retail outlets there is a drive to reduce the number of 'stock keeping units' of food categories and focus on the provision of 'key' categories and varieties that form a consistent and consolidated year-round supply. The processes of urbanization and the demands of a consolidating, globalising retail sector thus have significant spatial and socio-ecological implications in terms of the wider agri-food systems upon which they rely, of which fruit is found to form an increasingly significant part.

Healthy Produce, Healthy Profits

The rise of the healthy eating agenda within the public domain is accompanied with a growing interest in the fresh fruit and vegetables (FFV) market amongst retailers, particularly multiples. FFV are recognised as an important category and site for the accumulation of profit and development of brand. Indeed, FFV is considered one of the most lucrative categories for multiple retailers (Marsden et al. 2010). According to Garcia and Poole (2002 in Marsden et al. 2010:158) the FFV category offers one of the most profitable margins per square metre of shelf space, "rivalled only by wine and chilled food".

The FFV market is further recognized by multiples as a key site first for *innovation*, particularly around horticultural research and development; and second for *promotion* and *brand differentiation* between stores (Marsden et al. 2010). Burch and Goss (1999) suggest that the FFV category is a key determinant for multiple retailers in terms of customer loyalty and choice of shopping venue. Often located at the front of the store within the supermarket, it is recognized as an attractive and healthy way to entice customers into the store. Recognition of the profit and promotion to be gained from the FFV category, combined with the drive for brand differentiation within and between multiple retailers, has led to a pronounced increase in investment in research, development and branding within the multiple FFV sector. Indeed, FFV emerges as a key component of the competitive strategy of most multiple retailers.

Privatising Production, Privatising Regulation

The fresh fruits and vegetables endorsed by the public healthy eating agenda and consumed by citizens across the globe are found to be increasingly determined by a consolidating group of corporations in the form of multiple retailers and retail consortiums, particularly within the urban environment. As discussed in Chapter one, the spaces, temporalities, natures and relations of fresh fruit and vegetables, including the apple, are found to be increasingly managed and directed by a small number of globally powerful multiple retailers and retail consortiums.

These globally powerful corporations constitute a form of neo-liberal governance based upon the logic of the distancing, disconnection and outflanking of foodstuffs from place-based practices and the subsequent commodification and privatisation of socio-natures and practices. According to Tennent and Lockie (2011), the rise of private standards signify a new 'regulatory regime of private governance of food'. These private forms of globally managed regulation are resulting in the disconnect between public health and agricultural policy, increasingly placing the 'co-ordination' and 'control' of agri-food systems in the hands of the private regulators, increasingly in the form of multiple retailers and retail consortia.

The following section considers the impact upon the production of apples in the context of global apple economy and the rise of the multiple retail sector.

3.1.2. Producing Global Fruits

As the previous section suggests, global fresh fruit supplies have increased significantly over the last few decades and demand for fresh fruit is set to further grow. Total global fruit production rose by approximately +28.5% between 1997-1999 to 2007-2009 (Belrose Inc. 2011). Over the last decade, there has been an increase in the production of a widening range fruit crops, including ‘exotic’ fruits, soft fruits and most recently, ‘super’ fruits. Whilst there is a growing range of fruit crops available, global fruit trade remains dominated by a few key crops. In 2009, the ‘big four’ fruit crops accounted for over half of world fruit production (bananas 16.4%; apples 12.3%; grapes 11.5%; oranges, 11.4%) (Belrose 2011:22).

Apples remain one of the most cultivated tree fruits in the world and the second most internationally traded fruit, following bananas (Lynch 2010). Global apple *exports* have increased by almost 20% between 2004-2008 (*ibid*). The production of apples is found to be concentrated amongst a handful of nations. The top ten fresh apple exporting countries accounted for over 70% of the total fresh apple exports in the world in 2008, an increase from 58% in 2005 (*ibid*). China is currently a key emerging apple producing and exporting nation, as well as a key consuming nation, accounting for almost half of global production in 2009 (43.5%) (*ibid*). The US, Turkey, Iran and Poland also export significant volumes of apples whilst the Middle East, Russia and India are emerging as potential future growth zones of the global fresh apple export and import industry (Belrose 2011).

According to Lynch (2010:36) “many of the world’s largest fresh apple producers are also the world’s largest traders and consumers.” The EU is recognised “one of the world’s largest apple exporters, importers, producers and consumers” (Lynch 2010:44). 20 out of 27 of the EU countries have ‘sizable apple industries’ (*ibid*). However, whilst fruit consumption is found to be dramatically increasing within the EU, apple consumption and production emerge as relatively stable in terms of volumes of production and levels of consumption. Within the EU-15, production area fell by -25.8% between 2000-2009 and production volume by -9.8% between 1997-1999 to 2007-2009 (Belrose 2011:14). Within the 11 major apple producing countries of the EU (Austria, Belgium, Denmark, France, Germany, Greece, Italy, Netherlands, Spain, Sweden and the UK), there has in fact been a -10.5% decline in consumption of fresh apples between 1991-2010 (*ibid*). The

dynamics of apple production for global economies are shifting.

The following section considers the production of the global commodity apple in further depth, focusing upon the intensification of production, contraction of apple varieties and the privatisation of apple varieties, via the rise of the apple club brand.

Intensifying Production: Maximising Yields

As the table below indicates, the total global *area* of orchards harvested has declined by - 5.2% between 2000-2002 and 2007-2009, most notably in Europe and Oceania (UN FAO in Belrose 2011:14).

Figure 3.1.: World Area Harvested of Apples by Region (2000-02 and 2007-09) '000ha

Region	2000-02 (thousand hectares)	2007-09 (thousand hectares)	07-09 v 00-02 (percent change)
Africa	124.2	172.9	+ 39.2
Asia	3,077.0	3,112.7	+ 1.2
Europe	1,511.0	1,209.4	- 20.0
N America	250.0	216.3	- 13.5
S America	138.1	141.4	+ 2.4
Oceania	35.1	29.9	- 14.8
WORLD	5,148.7	4,882.6	- 5.2
<i>Memos</i>			
<i>China</i>	<i>2,086.9</i>	<i>1,992.8</i>	<i>- 4.5</i>
<i>EU-15</i>	<i>340.1</i>	<i>252.4</i>	<i>- 25.8</i>
<i>Eastern Europe</i>	<i>850.2</i>	<i>634.0</i>	<i>- 25.4</i>
<i>S Hemisphere</i>	<i>173.4</i>	<i>175.2</i>	<i>+ 1.0</i>

Source: (UN FAO in Belrose 2011:14).

Whilst area has declined, estimated volume of global apple production has increased by +20.5% (1997-1999 to 2007-2009) (UN FAO in Belrose 2011:14). This is reflective of the rise in apple production in some countries and increased efficiency of production per hectare in many locations (Belrose 2011). As indicated in the table above, volume change in apple production emerges as highly diverse according to global region. In China for example, apple production volumes increased by +54.6%, and Africa by +37.3% between 1995-2009, whilst volumes declined by an estimated -0.2% in EU-15 countries during the same period (*ibid*).

Yields can vary highly between regions and provinces as a result of local conditions as well as site-specific practices. A diverse range of average yields exist globally from the

Netherlands (51.3 mtph) and New Zealand (51.3 mtph), to Turkey (18.9 mtph) and China (16.4 mtph) (Belrose 2011:16). Overall however, there has been a marked trajectory of intensification of production and increase in average yields. Between 1997-1999 and 2007-2009, global average yields per hectare increased by +31 % (from 9.5 to 13.7 metric tons per hectare (mtph)) (Belrose 2011:16). Average yields are projected to further rise as intensive forms of production are being applied to an increasing proportion of orchards. Many thousands of acres of old orchards have been and are being replaced with younger trees of modern cultivars on smaller rootstocks, cultivated within intensive production systems.

According to Marsden (1999), the aims of commercial apple growing are (i) high tonnage per hectare and (ii) good quality. These aims shape the structure and practices of the 'modern' intensive orchard. Intensive orchards tend to be planted in large blocks of two or three key varieties along with pollinating trees, enabling efficient orchard management, particularly during harvest. Trees tend to be planted at a higher density so to maximise yields. Marsden (1999:5) describes a modern intensive orchard as tending to have 2,200 trees per hectare planted with a distance of 1.2 metres between each tree and 3.3 metres between each row. The 'spindles' or 'bushes' grown on dwarfing rootstocks encourage early flowering and restrict fruit production to easy harvesting height they are also understood to offer "excellent light interceptions" and facilitate easier mechanised forms of management pests and disease control (Biddlecombe 2008). After 14-15 years, the trees tend to be replaced.

Integrating Pest Management

Fruit trees are considered one of the most demanding of crops in terms of pesticides used per hectare, exceeded only by vineyards (Pretty 2005). One-quarter of global pesticide products sold are estimated to be applied to fruit and vegetables (UK Crop Protection Association, 2001 in Pretty 2005:3). Intensively managed orchards tend to be managed with an insecticide, fungicide and fertiliser spray regime, a mown alley and herbicide sprayed strip beneath the trees. 10-18 applications of crop protection chemicals is currently common for most apple producing regions (MacHardy, Gadoury, and Gessler 2001). However, with growing awareness of the potentially damaging effects of pesticides to ecological and human health there is a growing global demand for more ecologically sound, healthier forms of fruit production. This includes organic, biodynamic

and what some describe as ‘integrated’ forms of management and production.

Integrated Pest Management (IPM) has been adopted by commercial growers as a form of transition from agro-chemically intensive forms of production to more ecological approaches. According to Marsden (1999), IPM aims to minimize pest damage and hazards to people, animals, plants and environments. Prokopy (2003:299) suggests IPM comprises of the “coordinated use of multiple tactics for optimizing the control of all classes of pests (insects, pathogens, weeds, vertebrates) in an ecologically and economically sound manner.” IPM tends to avoid the use of broad-spectrum pesticides and aims toward only targeted use of pesticides when required necessary. Ultimately, an IPM system works towards elimination of organophosphates.

Whilst the specificities of IPM remain broad ranging, there are a number of central aims that align most IPM approaches. First, the reduction of pest populations, Second, the support of predators and other beneficials (Prokopy 2003:300). Prokopy (2003:307) suggests that ideally, IPM would involve no pesticides that might harm beneficial relationships amongst orchard organisms. As MacHardy (2000:801) suggests, “the greater the shift from traditional, chemically based tactics to biologically/culturally based tactics, coupled with strategies that integrate pest management practices, the more advanced the IPM program.” However, more commonly, IPM incorporates the planting of cultivars with major gene resistance to scab, increased sanitation and other cultural and biological based practices to reduce susceptibility to pest and disease (Prokopy 2003:805). MacHardy (2000:805) suggests that for most commercial apple producers “there is still often a reliance on a single measure (usually a pesticide) to control a pest rather than an integration of control tactics, and most apple pests continue to be managed by chemically based practices.”

Whilst IPM is recognized as means of reducing pesticides applied and pesticide residues within local agri-food economies, there are currently a number of limitations to such forms of production within the global apple economy. For example, traditional apple cultivars which may be more resistant to localised pest and disease (Balint et al. 2013) may be difficult to trade globally if volumes do not meet the demands of large distributions. Apple quality requirements for export can be further difficult to meet with IPM and organic practices (Prokopy 2003). Meanwhile, fumigant and pesticide use are actively promoted through quarantine restrictions (Suckling, Walker, and Wearing 1999).

IPM thus emerges as currently more manageable within localised economies rather than globalised ones (Prokopy 2003; Suckling, Walker, and Wearing 1999). Indeed, Prokopy (2003) questions the applicability of IPM within global trade.

Commodifying Varieties, Contracting Diversity

Alongside intensification of production, the global apple economy is found to be contracting in terms of apple varieties sold. A few key varieties dominate the global apple economy. In 2007, fifteen varieties accounted for 90% of total global production (Lynch 2010:13), including the Red Delicious, Golden Delicious, Gala, Fuji, Braeburn and Pink Lady®.

Within many apple producing countries, particularly those that are principally export-driven apple economies, there tend to be a few key varieties that dominate the productive landscapes. The Fuji variety for example accounts for over 60% of apple production within China (Lynch 2010:39); in Italy, over half of apple production at the turn of 2010 was either Golden Delicious or Red Delicious (Lynch 2010:45); in France, over half of apple production is estimated to be Granny Smith, Red or Golden Delicious; whilst in Turkey an estimated 85% of production is Red or Golden Delicious (*ibid*). Globally traded apple varieties have been categorized into four groups by Belrose (2011) as outlined in the table below:

Fig. 3.2.: Key Apple Categories

Category
Traditional Majors: Red Delicious; Golden Delicious and Granny Smith.
New Majors: Gala/Royal Gala; Fuji; Braeburn; JonaGold/Jonagold Red.
Regional or Local Varieties: Heirloom or heritage varieties.
New varieties: Pink Lady® and other club brands such as Jazz™, Cameo™ and Honeycrisp™.

Adapted from Belrose (2011:63-71).

According to Belrose (2011:68), approximately 44% of global fresh apple production in 2010 was accounted for by the ‘major’ (traditional and new) varieties. Market share of the ‘new major’ varieties is estimated to have doubled between 1997-2010, whilst market share of ‘traditional majors’ declined by -20% during the same period (Belrose 2011:65).

Over the last half a century, there has been a trend towards the production and sales of a large volume of a small number of key ‘commodity’ varieties of apples for trade. According to Belrose (2011), the most recent key ‘commodity’ varieties of the last few decades include:

- 1970s – Golden Delicious and Granny Smith
- 1980s – Gala
- 1990s – Braeburn
- 2000s – Pink Lady®
- 2010s – Jazz™ , Kanzi® and Cameo®

As outlined above, Golden Delicious and Granny Smiths were popular apple varieties throughout the 1970s. By the 1980s and 1990s, there was significant investment in the production and promotion of the bicoloured Gala and Braeburn varieties as the ‘traditional majors’ began to saturate markets. More recently, Gala and Braeburn have gained the reputation amongst some suppliers and multiple retailers as ‘saturated’ commodity crops lacking market ‘distinction’ (O’Keeffe 2007).

Over the last decade, there has been a dramatic expansion in the number and acreage of club brand varieties including the Pink Lady® and, more recently, other brands including Jazz™ , Kanzi® and Cameo®. The planting of ‘new’ club varieties is particularly found to be increasing in the apple producing nations including the EU-11, North America, New Zealand and Australia, where they are perceived as potentially more profitable varieties than other non-branded ‘commodity’ varieties. By the late 2000s and early 2010s, many commercial apple growers in these nations moved away from the ‘traditional majors’ and ‘new majors’ to the ‘new’ ‘club’ brand varieties.

In the context of the EU, as the table below demonstrates, there has been a dramatic reduction in production of Cox and Fuji alongside a major increase in production of Cripps Pink (+238%) (the variety sold as Pink Lady®, if greater than 40% blush is present) (Knowles 2010:74).

Fig 3.3.: Apple Production by variety In Europe (*000 tonnes)

Variety	2006	2007	2008	2009	2010 (f)	% change 2006/2010
Braeburn	279	318	297	338	291	+4%
Cox Orange	117	108	103	65	58	-50%
Cripps Pink	66	73	70	162	157	+238%
Elstar	431	487	469	487	369	-14%
Fuji	133	183	206	246	254	-52%
Gala	1,015	1,024	1,019	1,079	1,002	-1%
Golden Delicious	2,339	2,450	2,508	2,630	2,427	+4%
Granny Smith	308	305	310	340	316	-3%
Idared	622	282	801	797	597	-4%
Jonagold	632	652	803	735	515	-19%
Red Delicious	631	600	743	724	663	+5%

Source: Prognosfruit, in Knowles, 2010.

The rise of the club brand is, in part, recognised as a retailer and grower response to growing global competition and declining margins of profit in terms of fruit production, particularly within more established apple growing territories such as the EU-11, the US, New Zealand and Australia, where apple markets are considered stagnating. According to one New Zealand supplier, Ian Palmer of PipFruit, New Zealand:

“New Zealand needs to move towards more controlled or club-type varieties, so that we can control the point of entry into the market...Jazz™ is a controlled type that has proven successful. The problem with Braeburn and Gala is that the market has moved towards commodity value and because New Zealand is a high-cost producer on the other side of the world, we have suffered” (in O’Keeffe 2007:40-41).

Club brands are considered by many within the apple industry as the most profitable type of apple to grow. Indeed, the number of patent apple varieties is steadily increasing (Brown and Maloney 2009). The rise of the club brand is recognised as largely driven by the corporate logic.

Privatising Apples, Brand Cultures

Club brand varieties tend to be selected as particularly uniform, long-lasting and high yielding varieties, considered key traits for globally traded apples. Written standard specifications managed and enforced by the Growers' club further place stringent requirements upon the fruit in order for it to qualify as a 'club' fruit. A club brand fruit carries a trademark that entails a global level of consistency, outlined and maintained by the Grower's club⁹. In order to maintain the brand, Growers' Clubs tend to enforce tight restrictions for example on grading.

According to one fruiterer, club varieties offer the potential for the Growers' Club to "regulate everything" (Ryan 2010:18). Marketing coordinator of the Cameo® club brand, Barlow for example (also CEO of English Apples and Pears (EAP¹⁰)) states:

"We made a decision that no Class II [Cameo®] product would be marketed. We don't want the brand to be undermined by sub-standard product. Getting consistency is vitally important." (in Bedington 2004:22)

The ability to privately enforce regulations around standards as well as volumes of production of the club brand fruit reduces the risk of market saturation for the Growers' Club.

Whilst the club apple is popular amongst retailers for the specific qualities enforced via the Growers' club, club brands are also popular in that they are available throughout the year. The location and distribution of planting regimes are strategically planned according to 52-week programmes of supply, leading to a permanent global 'season' and thus consistent supply. This is considered particularly important when considering the concept of a brand. As Barlow states:

⁹ Growers' clubs are defined as "exclusive groupings that control the propagation and distribution of plant material, production and marketing of certain varieties of fruit in order to maintain quality standards and prevent expansion in production beyond market capacity" (Brodie 2007:43). Growers' clubs are funded by royalties on the sales of trees of the branded variety, a levy on fruits produced and sold and a membership fee placed upon growers.

¹⁰ English Apple and Pears (EAP) is a company which represents 80% of the 400 apple and pear growers within the UK (Clover 2001). The company "acts as a trade association, to promote and safeguard the interests of its members, all of whom are English growers, and to promote English grown apples and pears" (EAP 2012). Membership is restricted to apple and pear growers and shareholding determined by hectareage of apples and pears.

“...it’s hard to market a brand when it disappears for half the year.”

(in Bedington 2004:21-22)

The club apple thus offers highly regulated, consistent supply regardless of the time of year.

Whilst club brands are recognised as stable in terms of standards enforced and consistent in terms of supply throughout the year, part of the growing interest and investment in the selection and development of the club brand is the potential versatility of the brand. As Seabrook (2011) suggests “instead of standing mostly for places and people, the new apples...stand for images, sounds, and ideas.” Maxwell of World Wide Fruit (a key supplier to UK multiples) states:

“Brands are important because you’ve got people to recognise your products... I don’t see brands like Pepsi cutting back on advertising.” (in Bedington 2004:20)

The brand offers Growers’ Clubs flexibility around the fruit sold under the brand. As the Pink Lady® club suggests in one of their newsletters:

“One of the strengths of the Pink Lady® brand is that it is based on a trademark, not simply the Cripps Pink variety. This allows the fruit of other improved selections of the Cripps Pink variety to be brought under the trade mark and, when it meets the quality criteria, to be sold as Pink Lady® apples”

(International Pink Lady ® Alliance 2007:7).

Whilst the Pink Lady® is bred and cultivated as a durable variety, the brand emerges as highly malleable - standards enforced by the written specification and the brand remain at the discretion of the ‘club’. Both brand and apple are rendered mobile by the governance of the Grower’s Club.

The club apple signals (i) a privatised form of production, distribution, supply and reproduction regulated via the Grower’s club; (ii) the development of brand ecologies. As is further explored in Chapter four, a growing number of Growers’ clubs, including Jazz™, Kanzi® and Cameo® have followed the original apple club model of the Pink Lady® within the context of the UK.

Privatising Reproduction, Breeding Brands

Apple breeding as well as production is becoming an increasingly *ex situ* global agribusiness. This is not only diminishing and disembedding localised forms of agrobiodiversity and indigenous breeding practices, it is further privatising them. The global apple economy is indicative of not only the *contraction* of varietal range but the further *privatisation* of varietal range, most explicitly via the rise of the club brand.

According to the International Union for the Protection of New Varieties of Plants (UPOV), the creation of systems of ‘plant breeder’s rights’ “promote innovation and to enable breeders to recoup their research investment” (UPOV 1991). The system provides “patent-like protection to breeders with limited monopoly rights over the production, marketing and sale of their varieties for a period of up to 20 years” (Shand 1993). More recently, UPOV has extended the protection of plant breeders rights for vines and trees for 25 years whilst it is 20 years for other crops (UPOV 2014). It has further extended the number of acts for which authorisation of the plant breeder is required, including the sale and marketing of propagating material or saved seed of the variety as well as the sale and marketing of ‘production or reproduction’ (De Schutter 2009:7). These rights inhibit growers from propagating their own plant material, making them more dependent upon the purchase of plants from the plant breeding companies.

De Schutter (2009:16) suggests “the strengthened protection of intellectual property rights on plant varieties and seeds at the global level may accelerate the ‘verticalisation’ of the food production chain, particularly when patents are granted, as agricultural producers would become dependent on the prices set by companies for the seeds [or trees] on which they have patents and would be denied the traditional right to sell and exchange seeds [or trees] among themselves, as well as to save part of their crops in order to retain seeds for the next planting season.”

The rise of the patented apple emerges as a key emergent phenomenon within the global apple economy, transforming not only the bio-physicality of the apple but also the rights of producers, the practices of production and indeed the distribution of power within the agri-food system.

3.1.3. Part One: Conclusion

As Part one has explored, the contemporary global apple economy emerges as one based upon intensification of production, contraction of varietal range and the privatisation of varieties and breeding and production regimes. The club brand and Growers' Club emerge as explicit expressions of the privatisation of the spaces, natures and relations of the global apple economy.

Part two examines the intensification of production, the contraction and privatisation of the varietal range of apples and the consolidation of apple trade in the context of the UK. The spaces, natures and relations of apples traded within the UK are found to be increasingly controlled and determined by multiple retailers guided by a corporate logic.

Part Two: the Global Commodity Apple in the UK

Amidst growing demand for fresh fruits throughout the year, UK apple production and supply has dramatically consolidated over the last few decades. There has been a profound decline in orchard acreage and number of apple producers, alongside the consolidation and intensification of remaining domestic production. Whilst the majority of apples consumed within the UK are imported, there has been significant investment in the domestic production of commodity apples, most notably in the form of the club brand variety. Part two considers the shifting practices of production and consumption of apples in the UK, focusing upon the consolidation of production, contraction of varietal range and the rise of the UK cultivated club brand.

3.2.1. Consuming Global Apples in the UK

Over the last few decades, there has been a growing appetite for fresh fruit within the UK. Between 1973-2003, the consumption of fresh fruit increased by 55% and is continuing to rise at a rate of over 4% annually (LDA 2006). In contrast, rates of consumption of fresh vegetables has changed little since 1975 (*ibid*). The consumption of fruit is recognised as particularly prevalent within urban areas attributed to the “trend towards convenience” (LDA 2006:40) as well as the wider healthy eating agenda.

Five-a-day: a national strategy

As advocated by the WHO, the EU (WHO 2007) and various international health organisations, the UK government recommends the consumption of 5-a-day. According to the NHS ‘Live Well’ campaign:

“ ‘5 a-day’ is based on advice from the WHO which recommends eating a minimum of 400g of fruit and vegetables a day to lower the risk of serious health problems, such as heart disease, stroke, type 2 diabetes and obesity.”

(NHS 2011)

A number of government schemes promote and support fresh fruit and vegetable consumption, including the ‘Change for Life’ public information scheme, encouraging

healthy eating (Change4Life 2014); the Healthy Start programme (NHS 2015a), providing low-income families with vouchers for fresh fruit and vegetables; and, the Convenience Store Project (Change4Life 2015), supporting convenience stores to improve provision of fresh fruit and vegetable consumption in deprived neighbourhoods.

Although the consumption of fresh fruit and vegetables is actively promoted by the government, currently, as with the EU in general, average UK fruit and vegetable consumption currently remains below the recommended 5-a-day. In the UK it is estimated that adults aged 19-64 consume an average 4.0 portions of fruit and vegetables per day, with only 30% of adults meeting 5-a-day requirements (DEFRA 2014:49-50). It is estimated that the average portion of fruit and vegetables consumed is reduced to 3.0 if taking in to account an estimated 22% edible fruit and vegetables domestically wasted (*ibid*). If national policies around increasing consumption of fresh fruit and vegetables are to be realised within the UK, current demand for fresh fruit and vegetables is set to increase significantly.

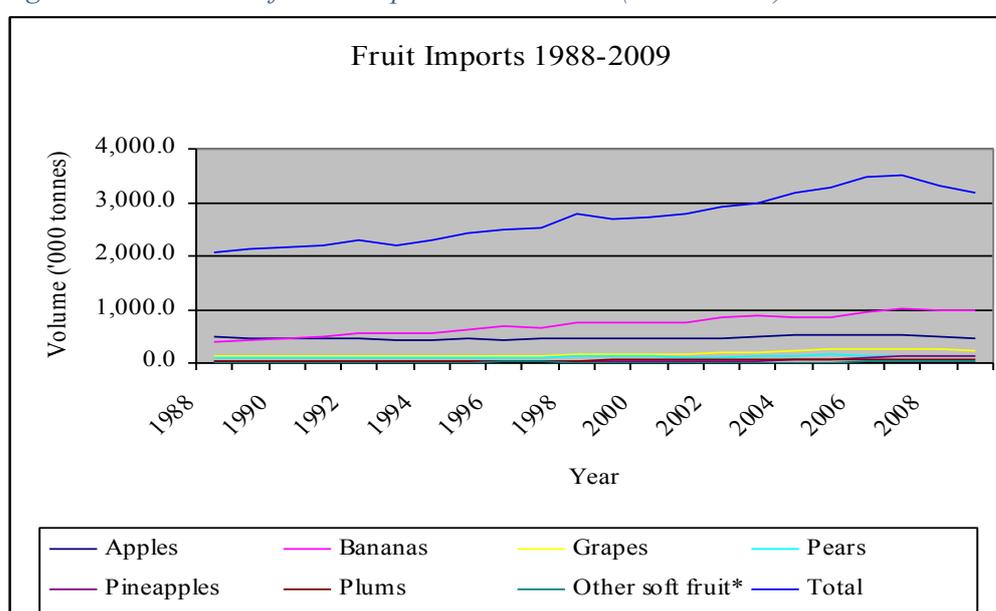
Globalising Supply: a national strategy

The Cabinet Office (HM Government 2008) strategy for food in the twenty-first century 'Food Matters' outlines a commitment to make further progress with the 5-a-day campaign. Whilst the UK government actively promote the consumption of fresh fruit and vegetables, there is less active national government support for the domestic production of fresh produce, particularly in terms of the production of fresh fruits. The vision for meeting food security and 5-a-day targets is predominantly based upon the support of (i) open and competitive markets; (ii) import-driven markets; (iii) corporate-led innovation and governance and (iv) sustainable intensification of production (HM Government 2008). According to DEFRA (2008:122), global forms of supply from a number of suppliers "enables [grocery retailers] to keep shelves stocked and offer competitive prices. With this flexibility to switch suppliers, retailers can also ensure continuous supply in the event of a disruption to part of the food supply or distribution chain, either in the UK or abroad." The growing appetite for fruit within the UK is thus projected to become increasingly import dependent.

Consuming Global Fruits: a national strategy

In 2011, fruit and vegetable trade constituted the most pronounced trade deficit of all food groups (DEFRA 2010a). Overall, fruit imports increased by +34% between 1988-2009 (with a more recent decline of -10% 2007-2009) (DEFRA 2011a) (as shown in the graph below). Part of this dramatic increase in fruit imports is due to the rising consumption of what are considered 'exotic' fruits (such as bananas, pineapples and mangoes). Between 1988-2009, for example, banana imports increased by +60% and pineapples by +85%. Apple imports in contrast fell by -9% (*ibid*).

Figure 3.4.: Volume of Fruit Imports 1988-2010 ('000 tonnes)*



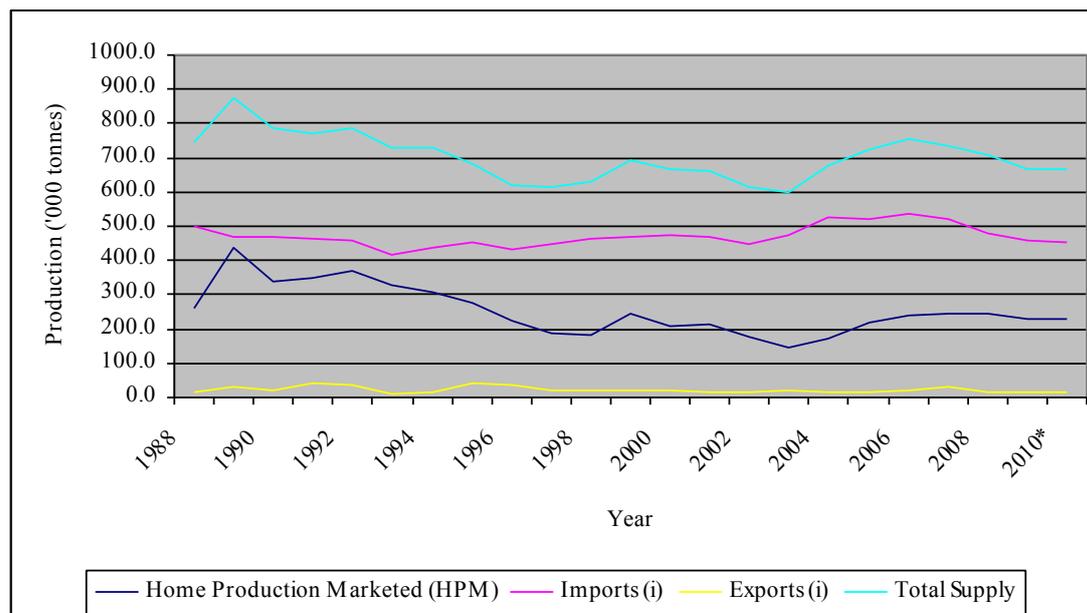
*excluding strawberries.

Source: Basic Horticultural Statistics (DEFRA 2011a)

Whilst there is a growing consumer demand for fresh fruit within the UK, there is an overall decline in area of productive domestic land dedicated to the production of fruit. The UK Home Production Market (HPM) of fruit and vegetables, including apples, has declined significantly over the last few decades. Between 1998-2008, UK fruit and vegetable production declined by -23% whilst imports of fruit and vegetables increased by +51% (DEFRA 2011a). In 1988, 78.8% of the UK fresh vegetable supply was domestically produced and 17.7% fresh fruit domestically produced (DEFRA 2011). By 2012 domestic production accounted for 56.1% total supply of vegetables and 10.1% total supply of fruit (DEFRA 2014a:13).

Although there has been a significant increase in imports of a diverse range of fruits, the apple remains a ‘favourite fruit’ of the UK nation (Wilson 2007:5). In contrast with the dramatic increase in imports of exotic fruits however, apple supply remains relatively stable. In fact, there has been an overall -11% (-123,500t) decline in total supply of fresh apples within the UK between 1988-2009, as indicated in figure 3.5. below:

Figure 3.5.: Apple Supply to the UK 1988-2010* ('000 tonnes)



*Provisional figure

Source: Basic Horticultural Statistics (DEFRA 2011a).

Whilst the apple remains one of the few of the major fruits traded in the UK that can be cultivated domestically, the UK consumed apple is, for many consumers, a highly *global* fruit. It is estimated that one-third of eating apples consumed within the UK are produced domestically (DEFRA 2014a:9). Of total UK fresh apple supply, the HPM share fell from 43% (1988-1989) to 34.3% (2008-2009) (DEFRA 2011a). The UK thus remains heavily dependent upon imports to meet demands for one of the nation’s favourite fruits.

However as the more recent period on the graph above indicates, there has been a slight increase in volume of domestically grown apples since 2004. As the following section explores, the majority of those apples that are produced and traded within the UK are found to be increasingly located within intensifying, consolidating and privatising regimes of production, steered by a corporate logic.

Intensifying Production: a national strategy

Whilst global supplies dominate the provision of food, the UK still produces a significant proportion of food for domestic consumption. The current national approach to “a more environmentally sustainable food chain” (HM Government 2008:ix) is based upon an approach to agriculture described as ‘sustainable intensification’. This is defined as “the process of increasing agricultural yields without adverse environmental impact and without the cultivation of more land” (House of Lords 2011:9). With a sustainable intensification approach, “inputs (fossil fuels, fertilisers, water and pesticides) into agricultural systems will need to be reduced per unit area of land, while outputs are increased and impacts are reduced on the ecological processes on which agriculture depends, particularly on soils, climate, water bodies and biodiversity” (House of Lords 2011:12). In the ‘Future of Food and Farming Foresight Report’ published by the Government Office for Science (Government Office for Science 2011), the argument for sustainable intensification is based upon the claim that (i) there is relatively little new land for agriculture; (ii) more food needs to be produced; and (iii) food production must become sustainable (Government Office for Science 2011:73).

In following the sustainable intensification paradigm, resilience of mainstream agriculture is achieved via ecological modernisation in the form of IPM, better soil conservation, better water management, integrated resource management (Goodman, DuPuis, and Goodman 2012:109). Goodman, DuPuis and Goodman (2012:117) describe this approach as a form of ‘eco-technological’ approach or ‘double green revolution’.

Currently, a small number of businesses for example account for a large volume of agricultural production. According to one DEFRA source cited in the House of Lords Innovation in Agriculture Report, it is estimated that within the UK “20% of registered farm holdings account for about 80% of the output/value added, and that more than half of output/value added is provided by under 10% of farms” (House of Lords 2011:12). In light of the sustainable intensification agenda, national UK agricultural policy emerges as further supportive of large-scale intensive production. There has been subsequent focus upon the support of larger farms for knowledge transfer and research and development since they are considered capable “of delivering the biggest economic and environmental performance gains and of embedding new techniques and practices” (Jim Paice MP in House of Lords 2011:39). National government policy is recognised as reinforcing consolidation of large-scale, intensive forms of production within UK agri-culture.

Privatising Production, Privatising Regulation: a national strategy

Government approaches to the agri-food system emerge as retailer-led and consumer-oriented. Whilst there is recognition of the potentially constraining effects of supermarkets upon food producers and manufacturers “fully locked in” to supplying the four big supermarkets (HM Government 2008:28), the stance of the government is the correction of market failures where they arise. According to the ‘Food Matters’ report, “there are relatively few areas where the national government has a direct regulatory role” (HM Government 2008:4). Rather, “the role set out for the UK government should be to engage business and stakeholders and to catalyse systemic change” (Darnton et al. 2009:13). With regards to the agri-food industry, it is suggested in the ‘Food 2030’ paper that “the government will favour regulatory voluntary industry-led and owned measures wherever possible, but we recognize that regulation may be required in some instances” (HM Government 2010:8).

In recognition of the dominance of supermarkets over the prevailing food supply, according to the DEFRA synthesis of the ‘Food Matters’ report “it is imperative to incorporate supermarkets in any strategies to bring about change in food behaviours among individuals” (Darnton et al. 2009:10). ‘Market transformation’ approaches are advocated in order to engage with supermarkets and other supply chain bodies and work towards a more sustainable food system (*ibid*). This constitutes a form of ‘corporate-led’ strategy whereby governance has been largely transferred to the private sphere (Busch and Bain 2004).

Alongside retail-led transformation, the government encourages consumers to “use their influence and spending power to support those who produce sustainable and healthy food” (HM Government 2010:69). This ‘influence’ and ‘spending power’ remains predominantly enacted within the multiple retail sector. Currently, local farmers’ market and regional food supplies “offer an opportunity to escape the familiar retail experience offered by the large supermarkets” (HM Government 2008:64). Such spaces are predominantly considered exceptions to the norm within the national policy framework, rather than constituting necessarily constituting alternatives to ‘large supermarkets’.

According to the Food Ethics Council (2011:83) “economic policy has been ‘depoliticised’ with certain orthodoxies prevailing irrespective of which party holds power: trade and financial liberalization, liberal competition policy, and privatization.”

Yet, as Jackson states, “governments are constantly intervening in consumer behaviour, whether they like it or not, through the signals that their policies send out” (Jackson 2009:13). One policy signal is the Groceries Code Adjudicator Bill (GCA). The GCA code governs the relationship between supermarkets and suppliers and aims to “proactively enforce the Grocery Supply Code of Practice and curb abuses of power” (Seely 2015:1). Rather than rebalancing power imbalances however, this policy signals aims to “curb abuses” of the current incumbents.

The rise of supermarket control over supply and the support of private regulation amongst corporate actors is found to have deep and resounding ramifications upon the spatial relations and biophysical natures of the apple in the UK, as is explored in the following section.

Consolidating Apple Consumption

Four retailers control over 75% of the UK market share of groceries (Wood 2011:38-39). Tesco has almost double the grocery market share of its closest competitor in the UK, controlling approximately one-third of the UK grocery market (Competition Commission, 2007 in Ker 2007:14). An estimated £1 out of every £8 spent in the high street in the UK is spent at Tesco’s (Wood 2011:38).

The multiple retail market dominates fresh fruit and vegetable sales within the UK, with an estimated 89.1% volume of fresh fruit and vegetable retail expenditure share between 2008-2009 (TNS 2009 in FPJ 2009). This compares with greengrocers (2.7%), market stalls (1.8%), independent stores (0.7%) and co-operatives (2.0%) (*ibid*). In terms of sales of top-fruit, an estimated 73.3% of top-fruit sales within the UK are accounted for by the top four multiple retailers in 2010: Tesco (29.0%), Sainsburys (16.3%), Asda (14.1%) and Morrisons (13.9%) (Kantar Worldpanel 2010 in FPJ 2011b:13).

Urbanising Fruit Consumption

Over the last few decades, there has been an expansion of the multiple retailers’ portfolio of ‘one-stop shops’ on the UK high street, following the move away from out-of-town shopping and the resurgence of high street shopping (Simms 2007). The growth in Tesco Metros, Sainsbury’s Locals and various other smaller format stores are found to be further consolidating multiple retail domination of the fresh produce market share,

particularly within urban areas. These multiple retailers are accumulating further tracts of urban space as a result of mergers and acquisitions. Tesco, for example, have recently acquired hundreds of stores through its purchase of TNS Stores (One-Stop and Nite and Day) and Administore (Europa, Harts and Cullens) (Michaels 2002:7). Particularly within the more compact 'one-stop' stores, there is a move towards more packaged, processed and pre-prepared goods. These 'convenience' stores are furthermore recognised as focused sites of brand dominance, whereby only key categories are sold, often at varying prices. In the case of apples, these tend to be the main commodity varieties, a few 'club brands' and a range of key 'own brand' lines. The consolidation of the retail environment within urban areas is thus found to promote the contraction of varietal range and, it is suggested, the rise of club brand and own brand fruits.

A staple, basic or indeed 'favourite' fruit for many UK citizens, the apple is recognised amongst multiple retailers as a key item within the FFV category. The approach taken toward the sourcing and supply of apples, varietal range, approach to quality control and branding is recognised as an important site for brand management and development amongst multiple retailers. The multiple retailer thus emerges as having significant share and influence regarding the spaces, temporalities, natures and relations of the apple consumed within the UK.

The following section considers commodity apple production within the UK. The commodity apple cultivated within the UK is found to be contracting in terms of varietal range and further privatizing via the rise of the apple club and own brand. A landscape of shrinking orchard area; intensification of production; and consolidation of supply led by the multiple retail sector emerges.

3.2.2. Producing Commodity Apples in the UK

Although a diminishing number of apples consumed in the UK are grown domestically, apples remain the most important top-fruit grown commercially within the UK, both in terms of area of production and volumes and values of crops sold (Pennell 2006:1). As this section explores, orchard area, production approach and varietal range have shifted profoundly over the last century.

Consolidating Orchards

In a survey conducted by John Basham in 1899, there were an estimated 95,000ha of orchards within England and Wales (in Porter 2010). These were mainly traditional orchards of standard trees. There has been an estimated -63% decline across England between 1950-2008 (Robertson and Wedge 2008) and a -94% reduction of area of orchards in Wales between 1958-1992 (TACP1994 in Robertson and Wedge 2008:111).

As indicated in the table below, total eating apple orchard area of England and Wales declined by a further -78% between 1970 to 2007, from 31,856ha to 6,887ha, whilst total volume of eating apples produced in England and Wales is estimated to have reduced by -63% between 1972 to 2006. This is particularly pronounced in terms of the hectareage of the varieties Worcester Pearmain (-96%), Cox (-81%), Discovery (-78%) and Egremont Russet (-66%). The only varieties to increase in hectareage by +25% are the newer varieties including Gala, Spartan, Jonagold and Fiesta.

Table 3.6.: Hectares of Eating Apple Orchards, England and Wales.

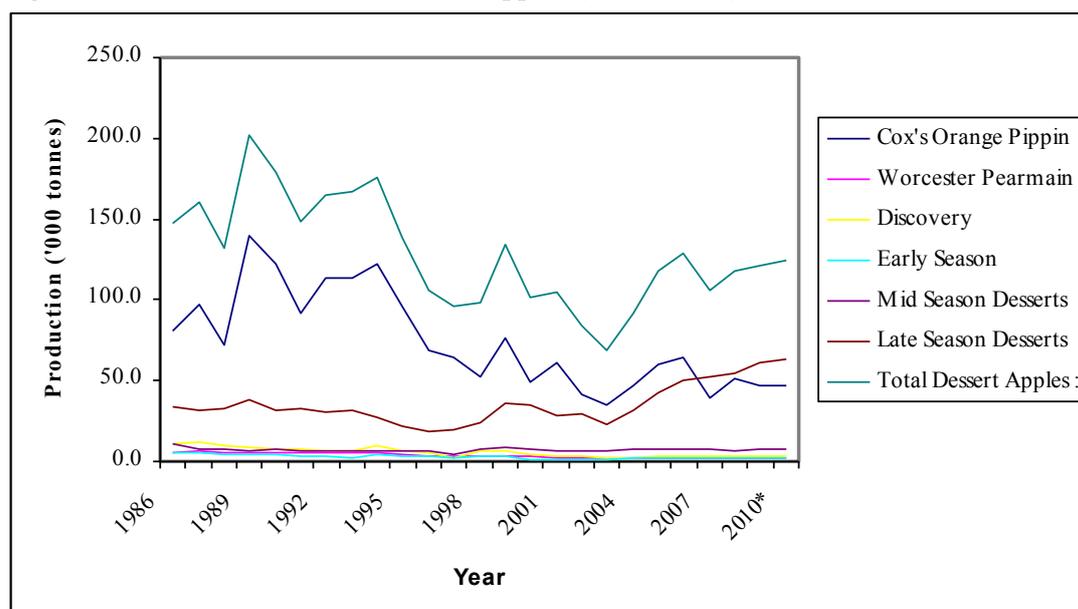
Hectares of eating apple orchards	1970	1977	1987	1997	2007	% change
Cox	11,164	10,564	5,421	5,028	2,128	-81%
Bramleys	7,778	7,009	5,844	3,376	2,168	-72%
Worcester Pearmain	3,110	1,939	633	294	124	-96%
Egremont Russet	673	517	319	298	227	-66%
Discovery	n/a	856	1,062	603	189	-78%
Other traditional varieties e.g. Katy, Laxton Superb etc	9,131	7,226	6,245	1,016	970	-89%
Four newer varieties e.g. Gala, Spartan, Jonagold, Fiesta	-	-	816	1,281	1,081	+25%
Total Apple Hectareage	31,856	28,111	20,340	11,896	6,887	-78%
Total apple production (tonnes)	345,200 *	269,000	267,000	143,000	129,300 **	-63%

*1972 statistic **2006 statistic

Source: Annual orchard and crop statistics, MAFF, 1970-1998 (Hoskins 1999:13) and Orchard Survey 2009 (DEFRA 2009).

Whilst there has been a significant decline in orchard area within the UK, there is a more nuanced view in terms of *volume* of production. Although volumes can flux dramatically according to climatic factors, as the figure below indicates, overall there has been an overall decline in volume of production of dessert apples in the UK between the early 1990s to 2004. The recent period of growth in volumes of production is attributed principally to intensive plantation of late season dessert apples.

Figure 3.7.: Home Production Dessert Apples ('000 tonnes), 1986-2010



2010* Predicted crop

Source: Basic Horticultural Statistics (DEFRA 2011a)

Intensifying Production: a market-led strategy

As discussed in the previous section, the national agricultural strategy for domestic production currently promotes 'sustainable intensification' (HM Government 2008; House of Lords 2011). Over the last decade, there has been a commercial move towards more intensive forms of planting in the orchards that remain, with a greater number of smaller and more productive trees per hectare. The intensification of production in many of those orchards that remain or have more recently been planted partly explains the recent increase in terms of volume of apples produced. According to the 2006 agricultural census (DEFRA 2006), 84% of commercial orchards surveyed are considered 'intensive'.

As discussed in Part one, the aims of commercial apple production are high tonnage per hectare and good quality (Marsden 1999). In England and Wales on average, dessert apples receive on average 18 fungicides, 5 insecticides, 3 growth regulators, 2 herbicides and 2 urea sprays (Garthwaite et al. 2012:6). Whilst many producers are beginning to integrate IPM, a small proportion of crops remain untreated with pesticides within the UK. An estimated 7.6 % of dessert apples remain untreated (Garthwaite et al. 2012:6).

Furthermore, over half of dessert apples cultivated within the UK went in to store (Garthwaite et al. 2008:47), the majority of which are treated with active substances as dips and drenches which modify the atmosphere of the store. In 2008 for example, 89%

dessert apples were treated with 1-methylcyclopropene (Garthwaite et al. 2008:63). Garthwaite et al. (2008) suggest that the amount of fruit growing into cold store has risen in part as a result of the increase in production of late season dessert varieties, such as Gala and Braeburn. “These are normally harvested in October and are particularly suitable for long term storage in refrigerated and controlled atmosphere stores” (Garthwaite et al. 2008:1).

In recognition of the human and ecological implications of the use of pesticides and the potential health benefits of lowering agri-chemical inputs, an increasing number of commercial growers and multiple retailers are using more integrated forms of pest management informed by organic growing practices. IPM as an approach is supported by the UK national government, as demonstrated for example by the DEFRA-led Zero Residue program (East Malling 2007) and UK DEFRA Apple Best Practice Guide¹¹ (Pennell 2006:12). Whilst producers are encouraged to adopt IPM techniques, a small proportion of crops remain untreated with pesticides within the UK.

There is general apprehension regarding organic top fruit production amongst many conventional growers, suppliers and industry bodies within the UK. Many of the varieties grown commercially within the UK are not thought to be suitable for organic production (Firth and Lennartsson 1999). Furthermore, few varieties grown within organic systems have been specifically planted for organic production (Firth 2005). This can hinder decisions to convert to organics amongst commercial fruit growers, since in many cases it may require the replanting of the orchard with more suitable varieties that can grow under organic modes of production, an expensive and long-term investment for many commercial growers. There is also a prevailing sense amongst some industrial bodies and retailers that organic production offers less consistent yields, qualities and potential ‘saleability’. There is further little economic or political state support for conversion of

¹¹ According to the ‘Zero Residue’ report, IPM involves “non-neurotoxic pesticides, cultural control and pest and disease warning systems, but during apple fruit development pest and disease management will be based on the use of cultural and biocontrol methods only” (East Malling 2007:5). The UK DEFRA Apple Best Practice Guide (Pennell 2006) recommends biocontrol, chlorpyrifos, Bt, Granulosis virus, sulphur sprays and conventional pesticides at specific, targeted times [see appendix 3.1. for further details].

top-fruit to organic systems or investment in research around organic top-fruit production. Rather, innovations in top-fruit cultivation emerge as predominantly privately directed.

Consolidating Supply: a corporate strategy

Along with diminishing area of orchards and volumes of production, the number of commercial apple growers has significantly declined. The approximate 400 commercial growers of apples and pears that operate within the UK cover an estimated 10,000ha (Wilson 2007). The orchards that remain have become larger and integrated in terms of supply. There has been a general trend towards merging of existing orchards, leading to a smaller number of growers with larger, consolidated orchards. Commercial orchards in the UK range in size from very small area to the largest that cover over 3,500 hectares

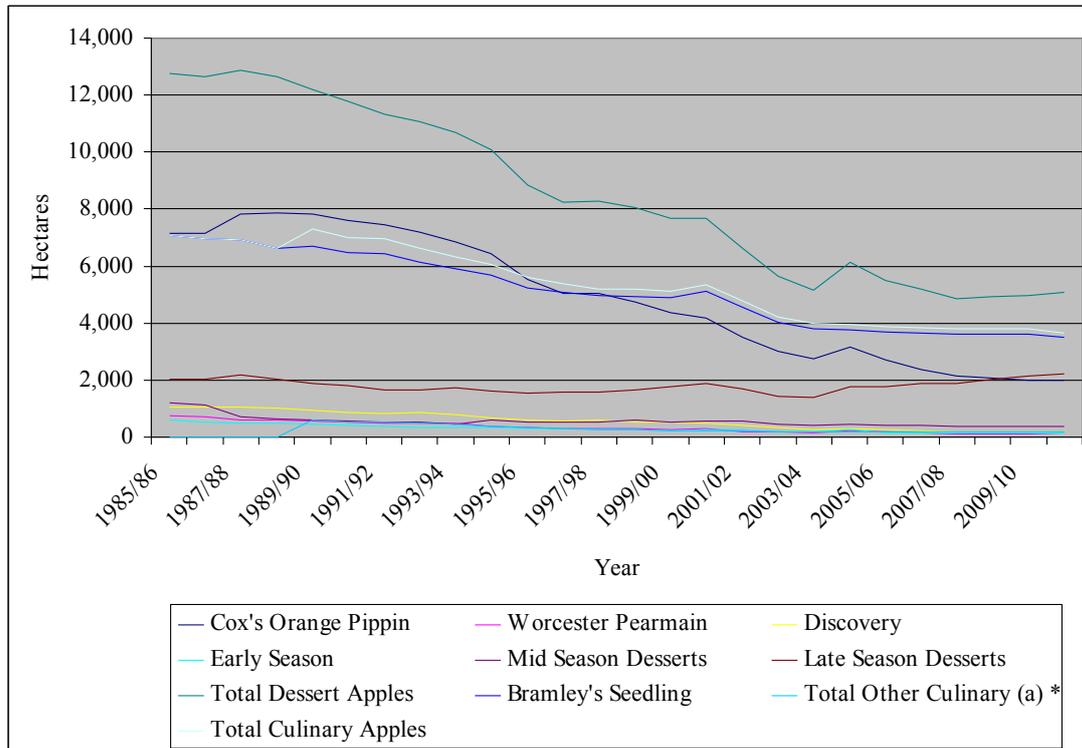
Fruit supply has become increasingly vertically integrated, with fewer, larger intensive orchards supplying a few large suppliers and multiple retailers. The number of grower co-operatives has reduced significantly, replaced by large producers and suppliers operating across wider geographical areas. A few key suppliers work supply a large proportion of the multiple retailers in the UK, as well as a large proportion of the wholesale market. One supplier sourcing a multiple retailer, for example, works with 25 UK growers and 40 overseas producers and suppliers. An increasing number of commercial orchards operate on-site packing houses, particularly those operating on a larger scale. This can include the packing and grading of fruits cultivated on site alongside the packing and grading of other grown fruits, locally purchased fruits and imported fruits outside of the apples season.

As is the case for the majority of fruit and vegetable produced in the UK, apple production within the UK is increasingly concentrated amongst a small number of large intensive commercial growers producing a large volume of a narrow range of apple varieties, predominantly and often exclusively for a small number of multiple retailers and suppliers. This is leading to a heightening corporate agenda shaping and informing the practices of the majority of commercial orchards within the UK that remain.

Consolidating Varieties: a corporate strategy

Varietal range of apple production within the UK is further consolidating, both in terms of volume and area. The graph below outlines overall decline in area of dessert apples between 1988-2010* further detailing the varietal shifts:

Figure 3.8.: Area of dessert apples, England and Wales, 1988-2010* (Ha)



2010* Predicted crop

Basic Horticultural Statistics Source: (DEFRA 2011a).

As further detailed in the table below, between 1985-2009 Cox area under production fell by -71% and volume by -48% whilst Discovery area dropped by -83% and volume by -75%. There have also been significant declines in area of Worcester Pearmain, Early season apples and other traditional varieties under production. Late season varieties, such as Gala, Spartan, Jonagold and Fiesta have conversely increased +43% in volume production although only a +0.5% increase in area - indicative of the intensive forms of planting of these late season crops.

Figure 3.9.: Variety Change in terms of volume of production and area between 1985-1986 and 2008-2009

Variety	% volume area	% area change
Cox Orange Pippin	-48%	-71%
Worcester Pearmain	-72%	-84%
Discovery	-75%	-83%
Early Season	-75%	-76%
Mid season dessert	-40%	-70%
Late season dessert	+43%	+0.5%
Total dessert apple production	-24%	-61%
Total Fruit	15%	36%

Source: Basic Horticultural Statistics Source: (DEFRA 2011a).

The figures above are indicative of the consolidation of varietal range and the shift to Late season varieties. In a study by Hoskins the ten most popular apples accounted for 72% of the area of apple orchards in 1970 whilst in 1999, 92% of the UK's area of eating apple orchards were accounted for by ten varieties (Hoskins 1999). By 2009 the Cox (and clones) variety accounted for 37% of the total dessert apple area of England and Wales, followed by Gala (18%), Braeburn (6%), Egremont Russet (6%) Jonagold (5%) (DEFRA 2010b).

The consolidation of varietal range pervades the consuming arena in the UK. In 2007, six apple varieties account for 74% of total apple sales within the UK retail domain in 2007 (GAIN, 2007:5). Gala, Royal Gala and Braeburn accounted for 43% of the UK apple market retail share, followed by Golden Delicious (12%) and Cox (9%) (Fresh Produce Journal/TNS Worldpanel Year to August 12, 2007 in Wilson 2007:5).

Commodity Varieties: a corporate strategy

Within the UK, there is enthusiasm amongst the larger suppliers and retailers for the expansion of certain 'commodity' and club brand crops. According to one supplier interviewed in a trade journal for example,:

“I want as much Braeburn and Gala as I can get my hands on...it is easier to sell, stores better and I would expect volume to pick up significantly in the next few years” (in Leighton 2004:23).

According to Pennell (2006:1) the trend in varieties grown in the UK reflects the growing drive of suppliers and multiple retailers to extend seasonal supply, increase pest and disease resistant varieties and avoid frost. There is also a focus of some suppliers and retailers on consolidating varietal range so that the varieties offered remain consistent throughout the year, regardless of where they are grown. Multiple retailers tend to prioritise the sales of a small range of commodity apples, particularly for smaller convenience stores.

Subsequently there has been a widespread planting of key ‘commodity’ varieties, particularly those that are later fruiting, such as Gala and Braeburn. In the UK, the planting of Gala (and clones) increased by +32% between 2002-2009, Jonagold by +57% over the same period whilst Braeburn planted area has remained relatively consistent at 306ha in 2003 and 304ha in 2009 (DEFRA 2010b). In contrast, area of Discovery apples fell by -52.2% between 2002-2009; Cox (and clones) by -40% and Worcester Pearmain by -68% (*ibid*). Meanwhile, total volume of early season apples and hectares has declined, indicative of the intensification of production of the remaining commercial orchards. The varietal range of apples cultivated within the UK emerges as contracting and consolidating, with a shift towards intensive production of Late season commodity and club brand apples.

Branding Varieties, Diversifying Brands: a corporate strategy

Alongside the growth of current key ‘commodity’ varieties, such as Gala and Braeburn, UK commercial apple economy is shifting towards the planting of new ‘branded’ types of ‘club’ apples. Within the UK, sales of Pink Lady® increased dramatically during the 2000s. By 2007-2008 for example, Pink Lady® sales in the UK accounted for 9% of the total apple market share (FVM 2009:22).

Whilst the Pink Lady® is considered a profitable club apple that is available twelve months of the year, it cannot be cultivated in the UK. However, there are a number of other club apples that can be cultivated in the UK. Over the last decade, there has been a

profound rise in the planting of branded apples Jazz™, Kanzi®, Cameo® and Rubens® - an estimated +260 hectare increase between 2007-2009 (DEFRA, 2009:3). As indicated in the table below, between 2007-2009, area for Cameo increased +36ha; Jazz +83ha and Kanzi +144ha. In 2007 alone, over 80ha of Jazz apples were planted within England, considered one of the biggest single plantings of one apple variety for many years (Shapley 2006).

Figure 3.10.: England and Wales Orchard Hectarage, 2002-2009.

	2002	2003	2004	2007	2009	hectares % change 2009 / 2007
Total apple area	15,110	14,346	13,612	13,364	13,594	1.7
Discovery	339	264	301	189	177	-6.3
Worcester Pearmain	196	147	213	124	133	7.3
Cox (and clones)	3,015	2,738	3,144	2,128	1,798	-15.5
Egremont Russet	268	264	308	277	293	5.6
Braeburn	..	306	194	271	304	12.1
Gala (and clones)	663	674	669	740	878	18.5
Jonagold (and clones)	201	227	231	204	316	54.6
Cameo (a)	..	..	..	..	36	..
Jazz (a)	..	..	..	..	83	..
Kanzi (a)	..	..	..	..	144	..
Other dessert varieties, of which:	945	729	957	877	724	-17.4
Spartan (b)	195	142	164	137	..	..
Fiesta/Red Pippin (c)	109	..	..	..	..	..
Katy (d)	..	..	..	..	133	..
Bramleys Seedling	2,567	2,266	2,266	2,168	1,955	-9.8
Other culinary apples	178	180	139	115	131	14.5
Cider apples, of which	6,738	6,551	5,190	6,271	6,624	5.6
Bush cider apples	4,304	4,909	3,605	4,590	..	..
Traditional cider apples	2,434	1,642	1,585	1,681	..	..

(a) New category in 2009

(b) Spartan have been included with 'other dessert apples' from 2009

(c) Fiesta/Red Pippin have been included in 'other dessert apples' from 2003

(d) Katy was included in 'other dessert apples' until 2009

Source: DEFRA Orchard Survey (2009:3).

The recent investment in these three new club brand varieties is demonstrative of the growing demand amongst UK multiple retailers and major suppliers for club brands, recognised as the most profitable to grow and trade.

Within the UK, fresh fruit and vegetables that are 'local', 'seasonal' and 'British' are considered a key expression of multiple retailers' level of innovation and brand development within the FFV category. The rise of the UK grown club brands are recognised as particularly advantageous for UK multiple retailers since they can be both local and global, capable of cultivation within the UK as part of a globally reaching cultivation programme, thus fulfilling current market demand for 'British' fruit whilst

also fulfilling corporate demand for a variety that is available consistently 52 weeks a year. They also tend to be mid to late fruiting varieties, thus extending the potential supply of UK harvested supply.

As with the Pink Lady®, the Jazz™ Growers' Club manage production and quality control thus regulating a premium standard requirement, preventing market saturation through managing volumes of production and maximising profit through development of the brand. The Jazz™ apple and other British grown club brands thus offer retailers a form of temporary localisation that fits within a wider context of global, a-seasonal supply. As a club brand it can be sold at a premium whilst further streamlining this global supplies available throughout the year outside of British availability.

Whilst dessert apple orchard area in England and Wales decreased overall by -10% between 2002-2009, from 15,110ha to 13,594 ha (DEFRA, 2010), the apple production that remains in the UK emerges as increasingly commodity and club brand directed. The increase in planting of the commodity and particularly the club brand apple is resulting in further privatisation of apple production and apple trade within the UK.

3.2.3. Part Two: Conclusion

As Part two has explored, over the last few decades years, a number of profound shifts have been taking place within the UK. First, the *decrease of orchard area and fruit growers* within the UK accompanied with an accompanying growth in the import of apples and other fruits. Second, the *intensification of production* of those orchards that remain, in terms of density of trees planted and the selection and breeding or particularly productive varieties. Third, the *consolidation and vertical integration* of remaining production and supply, with multiple retailers gaining increasing control of the remaining supply. Fourth, the *privatization of standards*. Finally, the *rise of the club brand*. These shifts are enabling increased control of the production, supply, quality and indeed profit of apples amongst a small number of powerful corporations.

Chapter Three: Conclusion

This chapter has explored the global trend towards the intensification and consolidation of production of apples. Within the global apple economy, varietal range is found to be contracting, with an increasing concentration of ‘commodity’ varieties. ‘Club’ brands are found to be increasing in global hectareage and volume of production, particularly within more established apple producing regions. These ‘club’ brands are resulting in the privatisation of spaces, temporalities, natures and relations of the global apple economy.

Within the UK, whilst there has been a general increase in fruit consumption, this is found to be increasingly reliant upon fruit imports, including apples. The commercial orchards that remain are found to be predominantly consolidating and intensively managed. Although orchard acreage has fallen significantly over the last century, there has been a recent increase in the planting of commodity and particularly club brand varieties within large-scale, intensively managed commercial orchards. This is resulting in the further privatisation of the spaces, temporalities, natures and relations of the apple and apple trade within the UK. The rise of the club brand apple that can be grown within the UK offers insight into a form of localisation steered by corporate logic via Growers’ Clubs and multiple retailers.

The following chapter further explores the corporate logic through considering the practices of the multiple retailer and the implications of this logic upon the spaces, natures and relations of the apple within the context of the UK.

Chapter Four: The Corporate Apple

As the multiple retail sector globalises, consolidates and concentrates in power, it is found to be gaining increasing control of the producing, distributing and consuming landscapes of the apple. Within the UK there is currently a growing interest in the localisation of apple production amongst multiple retailers - most explicitly demonstrated via the diversifying ecologies of club brands and 'own-brands'.

This chapter considers the logic guiding the supply of the multiple retail apple in the context of the UK. Part one explores the management of the multiple retail apple from orchard to store, drawing upon a number of interviews with a number of producers, three suppliers and a quality control inspector. Part two then considers three archetypes of the multiple apple: two commodity varieties, the Gala and Braeburn; the club brand apple the Pink Lady®; and the multiple retail 'own brand' apple.

The corporate logic of the multiple retailer is found to have wide-ranging impact upon the spaces, natures and relations of the apple within and beyond the UK. Drawing upon fieldwork at New Spitalfields Wholesale market, Part three explores how the practices of the multiple retailer are influencing the spaces, temporalities, natures and relations of the wholesale apple and the wholesale market.

Part One: Producing Corporate Apples

Part one explores the corporate apple from orchard to store within the context of the UK multiple retail arena, drawing upon interviews with five producers, three suppliers and two quality control inspectors connected to the multiple retail supply of apples. It considers the retail-led approach to the management of production, harvesting, quality control and trade of apples, recognised as increasingly guided by a corporate logic.

4.1.1. Managing Production

Retail-led Production

For multiple retailers, in the context of the UK, management of the apple increasingly begins at the orchard. As a producer of one of the largest commercial orchards explains:

*“I think that one of the lessons of the market place over the last sort couple of decades has been that you have to think carefully about your planting and growing because you must try to achieve **the best quality and quantity** that you can in the orchards...that the product in the orchard needs to be **top, top quality**. **Therefore your choice of trees, the rootstock, site**. All the various things that can determine the quality of the product need to be pretty good. Plus the usual things that come from practices within any farming community will help also determine the ultimate quality of the product... That’s why I’m saying that **the choice of crops...of sites, plus the varieties**...will determine the qualities which are absolutely paramount because we are a **quality driven market**.”*

Producer One

The drive for efficiency, profitability and quality determine many of the growing practices from the rootstock type and varieties planted to the forms of pest and disease management implemented. As Supplier one, a supplier to a number of multiple retailer explains:

*“One of the reasons that apples like Braeburn, Gala, Bramley and Cox are so popular and grown so widely are that **the trees grow in a similar way and are very similar to prune**. And particularly the modern ones that are coming through... **it’s economically much easier to make a profit out of them** because it costs far less to grow them. Where as a lot of these old varieties are not on a particularly dwarfing root stock and they grow into behemoths... .”*

Supplier 2

Although the producer is recognised as responsible for maintaining quality control of produce sent to the supplier or distribution centre, the *logic* of the practices of production, harvest, quality control, storage and distribution are increasingly determined and managed by the multiple retailer and a small number of suppliers. According to Supplier two, a supplier of several multiple retailers:

*“What we run here is a **comprehensive sales and marketing and quality service...and agronomy**. So we **get involved in the production of the fruit** in three ways. We have our technical director who is an agronomist...**So he will walk all of the orchards we sell fruit for and give them advice on the right pest and disease control. He also runs trials on storage and gives a lot of correct storage advice according to climate and season. And then we do the marketing. So we get 3 estimates from the growers each year. And that is what we base our marketing program to our clients on...we will go to them with an estimated volume and a proposed sales plan.**”*

Supplier 2

Many multiples are investing significant sums into the research and development of cultivars, modes of production, approaches to pest and disease management, and harvesting and storage techniques. This is leading to an approach to apple production that is increasingly *off-site* and, in some cases, determined and managed by the multiple retailer as part of a global corporate regime.

According to another producer supplying a multiple interviewed, his growing success is the result of a highly strategic and scientific approach, funded in part by the multiple retailer he supplies. Producer two uses a meteorological monitoring system connected to the headquarters of the system in Rotterdam. This system monitors a range of variables including humidity, temperatures, air pressure and leaf moisture. Following analysis in

Rotterdam, advice on drip feed targeted irrigation, spraying and pest population and management is sent back to the grower. In conversation, Producer two suggests approximately 80% of his time is spent on the computer, checking the orchard monitoring weather systems and working with the application of various pest and disease management applications. In this case, production is managed *ex situ* via a global information network.



Intensive orchard, Producer Two

Retail-led Harvests

The temporalities of harvesting are increasingly planned and managed by external suppliers, distributors or the multiples themselves, often according to globalised distribution. As Producer one explains:

*“I mean it is quite, if you like, intricately planned in that products like Discovery have a much shorter shelf life and therefore cannot be stored for longer periods and therefore are moved out earlier in the season... there will be **a programme of supply** that will run through from August right through to April but it will be determined each year depending on the conditions that prevail...at the time.”*

Producer 1

Harvest programmes tend to be determined by multiple retailers and suppliers so to be most efficient in terms of filling and closing cold stores - certain varieties require different temperatures and timings. Packing and distribution is then managed by the

multiple retailer or via the supplier, according to the needs of the multiple. As Supplier two, a supplier to several multiple retailers, outlines:

“We take the orders here. They pack according to orders. So in the evening before the days packing, the order is sent out to the packhouses.”

Supplier 2

As Producer two explains, in trading with one multiple retailer exclusively, they respond to a specified order:

“...it’s a 7 day a week ordering process. We will get orders on a daily basis from [supermarket] ...So we have to prepare those 7 days a week.”

Producer 2

Another grower reflects upon the increasingly compressed windows of harvest, for example, from six weeks to two.

Retail-led Standards

As well as compressing temporal demands on harvests, there are demands of a more material nature that determine harvest timings. As discussed in Chapter three, one of the aims of the multiple retail logic is to increasingly harmonise and standardise supply. A growing range of technological devices including meteorological monitoring systems, penetrometers, refractometers and ‘intelligent’ graders assist normative determining of whether the quantitatively defined variety-specific written specifications are being met. As Producer one explains, they have a number of tools to determine sugar and pressure levels:

*“...we test starch... levels to make sure sugar levels have risen to a certain level. **We have what we call penetrometers that give us the texture and refractometers...that tell us sweetness...so all of those are used to determine when to pick the fruit and what the fruit is like when it is marketed ... it is using science to establish the best timings on all of these products... they are all tested and they are all looking for that certain parameter...which give you **quality which are written down, you have to reach certain*****

*levels which you have to reach on all those criteria to make sure that you can sell your product in the **best condition for the best flavour.***

Producer 1

The aim of these written standard specifications and forms of normative quality control is to meet and maintain optimum and consistent chemical levels and associated taste qualities for each variety. These written standard specifications and technological devices are found to play a significant role in determining the timing and yield of the harvest. According to Producer two:

“They give us a specification of the fruit they accept. And one condition is that the fruit is measured by a penetrometer at 6 mg. so if we pick it too late...the fruit starts to decline once the fruit ripens. So if we do this too late the chances are it will be rejected.”

Producer 2

Variety-specific written specification of standards determined by the multiple retailer and normative analysis of produce via a range of technological devices are recognised as supporting multiples in obtaining consistent, stable supply. As a result of the written standard specifications demanded by most of the multiples and the penalties enforced if they are not met, several producers interviewed describe tightening forms of grade-outs. According to Producer two:

*“Well, in fact I can honestly tell you, which is quite rare, we pick and grade our fruit here, even though we’re actually quite a small fruit farm here, **we don’t get rejections, basically, probably because we overgrade a bit.**”*

Producer 2

The quality standards demanded encourage some producers to turn to other potential venues for out-graded fruit. As Producer three reflects:

*“So one of the reasons we started to make juice was all of these **imperfections**...They [the multiple] didn’t want anything like that. We used to send it off to someone else.”*

Producer 3

The normative standards demanded and penalties for non-compliance enforced by multiple retailers and associated suppliers are found to influence harvesting and grading practices. Growers are aware of the penalties involved if their product does not meet the quality requirements demanded by the multiple and are found to ‘overgrade’ in order to avoid potential rejection. As Supplier two explains:

*“...if we catch it here then it goes back and there’s no fine, no penalty. They just get charged for the transportation and they get a chance to repackage it or decide whether they are going to downgrade it and send it to the wholesale market or what they need to do with it. And if they get stopped by the retailer, **sometimes there will be a loss, there is a revenue involved.** But more often than not, it gets sent back and it gets repacked. **If it makes it to the stores and is rejected, it gets disposed of and we charge for that.**”*

Supplier 2

As Supplier two suggests above, the penalties that result from rejected produce can lead to greater costs than avoiding rejection through redirecting or even disposing of the produce. These penalties are recognised as driving higher levels of ‘grade-outs’ practiced by producers supplying multiples, as well as those quantities of apples redirected to wholesale markets and for processing. Production practices and approaches to harvest and quality control emerge as retail-led, based upon the expectation that producers will adhere to certain quantitatively determined standards and practices, with penalties if they do not.

Managing Quality

Suppliers and distribution centres tend to be key sites for re-assessing and maintaining standards. There is an incentive to prevent produce that does not meet expectations moving further along the supply route. As produce moves closer to store, the penalties imposed are greater. As Supplier two explains:

*“**We manage quality...We’ve got a fantastic quality record as a company.** We check everything here before it goes out, so we catch any issues with packaging or labelling which means the customer doesn’t have any problems. In the end they all get criticised or penalised by the customers for not having a full shelf. **So we guarantee that what we send to them will get to the shelf.**”*

Supplier 2

Many suppliers rely upon their reputation for maintaining good qualities and therefore demand high levels of quality from the growers supplying them. As Supplier one, who works principally with one multiple retailer, explains:

“We’ve dispensed with people who didn’t come up to the mark... But you can do that in a very ugly way or you can do it in a very cohesive way.”

Supplier 1

For producers supplying multiple retailers and associated suppliers, compliance to harvest and packing regimes and the variety-specific written specifications of standards is considered critical in order to maintain trade relations and avoid penalties. As Producer two explains:

“We’ve been doing supermarkets for many, many years now. You either do what they ask or you don’t...if you’re constantly in conflict then it’s a miserable life. You have to either just accept it or...There’s no shortage of apples in the world so they can get it from elsewhere if we dig our heels in. particularly now they like these commodity apples like Gala and Braeburn which they’ll stock 12 months of the year. They’ll get them from England or somewhere in our season and they’ll get them from South America and New Zealand in the off-season so they have them 12 months of the year.”

Producer 2

Globalisation of supply and harmonisation of standards enables the multiple retailer and consortium groups to enforce specific and stringent quantitatively determined quality demands upon growers. The challenges of meeting these expectations, however, can be a struggle, particularly for those producers lacking technological and infrastructural support. Supplier two for example describes the particular difficulties encountered by those growers lacking appropriate infrastructures:

“You’ll find a lot of the old school guys are being squeezed. And their quality standards aren’t quite high enough because they’re not making enough money to invest in cold stores. You know, it’s a vicious spiral downwards.”

Supplier 2

Producers capable of consistently meeting the normative specification standards determined and enforced by the multiple retailers tend to have the infrastructure and technological devices that support the strategic and normative approaches to production, harvesting and storage demanded by the multiple retailers and associated suppliers. In contrast, small-scale producers and the ‘old guys’ tend to lack the appropriate infrastructure and technologies that facilitate accuracy and consistency in meeting these written specifications. The corporate logic thus emerges as supportive of those growers capable of meeting normatively determined written specifications as well as big-set distributions. As Producer two suggests in the above excerpt, exclusive contracts as well as specified standards further facilitate expectations of compliance as well as heightening forms of pressure placed upon the grower.



Cold store, Producer two

Alongside demands for volume, these normatively determined demands are leading to the increasing *consolidation* of those producers providing apples to multiple retailers. Producers and suppliers are becoming smaller in number whilst larger in scale, dependent upon infrastructure and technical equipment that enable them to consistently meet the big-set distributions and normatively determined standard specifications demanded by multiple retailers.

Displacing Practice

As well as an increasing normatively determined approach to production and standard expectations, multiple retailers demonstrate a complex array of forms of risk management in the context of apple supply. It emerges that for the multiple retailer this is particularly relevant in more proximate sites of production.

As living and growing organisms, the quality and volume of fresh produce is highly determined by localised weather systems, extreme meteorological events and more pervasive long-term climatic change, whilst supplies can also be heavily affected by various socio-political events. The management of these potential instabilities of supply unfold via a number of forms of monitoring, research and development and scaling-up of supply.

As outlined in the case of the Rotterdam monitoring system, multiples are investing in technologies aimed to predict weather events that may harm the crop and in some cases protect the crop (such as hailstorm cages). The scaling-up of supply routes further enables suppliers to avoid potential ruptures and vulnerabilities in terms of supply and impact of weather fluctuation or socio-political instabilities. The production of key varieties in a geographically wide area avoids the risk of failed supply as a result of localised risk of crop damage. As Supplier one reflects:

*“We probably, touch wood, have less quality issues on a full load of South African Royal Gala packed to go to a [multiple retailer] depot direct than we would anything that is packed in Colchester or Maidstone or wherever. And that’s because **the sheer scale of costs concentrates the mind to make sure that it is 110%** whereas somewhere down the road might think “oh its only going up a road, it’ll be alright, and if it’s not alright, it’s not a disaster. **But you can’t work like that anymore. I mean everything has to be 100% all of the time.** I mean, there’s room for negotiation I would say on the side on price...but **things like quality become non-negotiable because it has to make the journey and nobody will argue that if you pack any item of produce it is effectively going in to senescence and its never going to be 110% better than when it came off the tree or out of the ground. So it’s got to be good.**”*

Supplier 1

With more global supply pathways, some suppliers suggest that this can also mean that it is easier to redirect sourcing if certain supplies or producers are challenged or not capable of meeting demands. In contrast, referring to the UK market, the same Supplier continues to explain:

“Ironically the hardest thing we do is English procurement. The hardest to procure and keep people happy etc. bringing Braeburn from the other side of the world... English growers are notoriously difficult people to deal with.”

Supplier 1

As Supplier one explains, quality expectations become a matter of scale, reinforced by distance. The globalisation of supply along with the globally harmonised written standard specifications are recognised as supportive of maintaining retail-led demands. With a global supply base, regional meteorological events or socio-political disruptions do not carry as much traction and risk can be avoided or side-stepped. In contrast, with proximity, disruptions can be harder to side-step or avoid. As Supplier one suggests, more proximate trading can lead to less scope for adherence and greater expectations of negotiation around quality. Supplier one suggests this results in difficulties in maintaining specific standards and supplies from more proximate locations whilst encouraging the distancing of supply. Making localised exceptions are unlikely in more global, ‘distanced’ forms of procurement. As Supplier one states, *“distance concentrates the mind.”* Distance from the orchard and producer supports the multiple in maintaining specific written standard specifications and volumes of supply. With global supply routes, multiples have the ability to externalise localised fluctuations or vulnerabilities. In contrast, a poor apple season within the UK context is harder to manage. As Supplier one states, there is more scope (and expectation) for exceptions to written standard specifications in the case of UK supply:

“Say there was a widespread hailstorm, then that 12% mark might be more flexible, but if there was a focus on one producer, then...they have a specification. And if they can obtain that specification either through their existing supply base or if necessary going outside their supply base, then maybe that isn’t wrong. I think where things have changed and they recognise it, is to have continuity of supply and security of supply probably in that hailstorm situation now they probably are looking and saying we do need to support

this person. He's committed to us for the last twenty years we need ... and we actually do, they do need producers ultimately."

Supplier 1

Whilst producers can be vulnerable to unexpected meteorological fluctuations, early frosts and potential pests and disease, for the most part, multiple retailers strive to attain as stable and consistent forms of production and supply as possible. Negative externalities tend to fall upon the producers. Producer two for example reflects upon their experience of hailstorm damage and retailer response:

*"We had this hailstorm. And um... most of the Coxes were destroyed more or less in about 5 minutes. **We had to withdraw. We went through and tried to pick off as much fruit as best we could just to keep our shop going. But we didn't give hardly any to the retailer last year...the rest we just stripped. And it went away for juice immediately.**"*

Producer 2

Global regimes of supply enable multiple retailers to externalise risk and minimise losses. For many producers, there is little support through these instabilities. However, according to Supplier one, some retailers are beginning to question the principles of minimising risk and practices associated, at least within the context of UK production.

The development of 'own-brand' ranges is recognised as a means of absorbing a wider range of qualities for example via class II 'basic' and 'economy' ranges. In contrast, the rise of the club brand emerges as a mechanism enabling the localisation of production that maintains stringent expectations of adherence to written standard expectations within the UK. Both forms of own-brand and club brand support the multiple retailer in gaining increasing control of the spaces, natures and relations of the apple within the UK. The club brand is particularly significant as a means of localisation of the British apple without compromising the written standard specifications demanded.

Defending the Brand

The apples that meet the written specifications and other requirements of the suppliers and multiples are directed to the multiple retail distribution centre. This is considered the final stage prior to the apple entering the multiple retail store.



Morning at the distribution centre of one multiple retailer. Photo credit: QPO 1



Afternoon at the distribution centre of one multiple retailer. Photo credit: QPO 1

There is the expectation amongst multiple retailers that certain standards reaching distribution centres should be maintained. Within the distribution centres, standards are monitored by inspectors employed directly by the multiple retailer. For produce that reaches the distribution centres that does not meet these standards, it is rejected without payment. According to the Quality Produce Officer (QPO) for one multiple retailer, Neville, his job is ‘business and brand protection’. He explains:

“I don’t make any profit for the business - this isn’t a profit-making role. What it is a brand and business protection...I’m here to police the quality of the product and make sure what comes in is fit for eating and consumption. So in a sense I am making money but its just not directly. Because you know, if you didn’t have inspectors, I feel you would see possibly poor quality on the shelves which not directly, but can have an impact on sales, because if customers see that, its human nature to think I’ll go and shop somewhere else,”

Neville, QPO 1

As Neville explains, his role is to be:

“the last line of defence.”

Neville, QPO 1

Upon leaving the multiple retail distribution centre, Neville explains that the next potential point of contact is in the hands of the consumer. He therefore views his role as “...the last point of rejection”, preventing any produce that does not meet the quality expectations of the multiple to reach store shelves. From the perspective of the multiple retailer, Neville explains, if the produce is in the hands of the customer and it does not meet the written standard specifications, there is a risk of loss of quality reputation of the brand, complaint or, in the worst-case scenario for the retailer, potential loss of a loyal customer. According to Neville:

“Consumers buy with their eyes...100% perfection is desired by the customers....whatever you pick up should be as close to perfection as possible”.

Neville, QPO 1

As a result, he states that his responsibility is to maintain a vigilant approach to upholding standards, stating “...*nothing can get through* [the site].” Neville explains that his job hinges upon maintaining a close eye upon any produce that does not meet the specific requirements of the multiple.

Quality control within the distribution centre emerges as strategic. As Supplier one explains:

*“They have inspectors per distribution site...they roam around and they ... they’re not silly people. They know the seasons...The first variety Discovery only has about a two and a half to a three week window. So they’ll be thinking whether they’re still good enough in two and a half weeks time – are they still good enough or are they out... **It’s targeted and they’re more knowledgeable.** And if they catch you out, then they’ll charge you for loss of turnover.”*

Supplier 1

Neville explains that as inspectors they cannot check 100% of the produce coming, which involves over tens of thousands of palettes daily. As a result, there are a number of strategic procedures in place for defending the brand, set by the specific multiple.

First, the head office perform *daily spot checks* on taste and quality of goods sold in local stores. The fruits are graded on a scale and results fed back to quality inspector representatives in the various distribution centres, leading to the flagging of potential queries on certain lines. Second, the inspectors receive daily notifications of any ‘*high priority goods*’ which may have either received a high number of complaints, are best sellers or have not met the specs of head office. Third, the inspectors monitor *local and global weather systems* and *socio-political situations*. Any events or issues are forwarded amongst a network of inspectors of the specific multiple distribution centres across the UK. Fourth, inspectors are encouraged to do regular *benchmarking* of fresh produce at local ‘buddy stores’ of the multiple as well as at competitor stores. When products are placed on a ‘warning’, other distribution centres are informed and quality control inspectors tend to pay special attention to these lines.

As a result of these various forms of information exchange provided by head office across the UK, Neville explains, 90% of the time they ‘know’ what they are looking for before

hand. Neville's colleague Bob, another quality control inspector, estimates that within their distribution centre, approximately 60% of produce is accepted, 20-30% placed on warning and 10% rejected. But he adds that this is highly determined by season, weather and transportation time.

Minimising and externalising the potential volatility of the apple emerges as a key element of the corporate logic. Having considered the multiple retailer approach to management of *production* and *supply* of apples, the following section considers multiple approaches to managing *consumption*.

4.1.2. Managing Consumption

By the time the apple reaches the multiple retailer outlet, there is the expectation that it meets the written standard specifications determined by the multiple retailer. This section further considers the strategies used by multiples to manage the consumption of the corporate apple within the retail environment.

Managing Matter

States of 'ripeness' and the polyphenols released by ripening fruit are considered risky terrain for the multiple. First, riper fruit tends to be less durable and more prone to bruising and or damage. Second, ripening fruit releases polyphenols which can accelerate the ripening of surrounding fruit. Third, varying degrees of ripeness can also lead to a less stable and consistent taste. Stringent monitoring from the orchard onwards and forms of variety-specific written standard specification means that ripe fruit tends to be prevented from entering the retail floor or, sold at heavily discounted prices before reaching 'unmanageable' stages, whereby it is then destroyed.

As a result of the precarious nature of ripening fruit, there is a preference amongst multiple retailers for less ripe fruit and for firmer varieties that are more durable within the multiple. Softer apple varieties are more prone to bruising and are often associated with faster levels of senescence if they are bruised and thus tend to be avoided in the big-set distributions managed by multiple retailers, or sourced only during certain points of the calendar year. As Neville explains:

“In terms of storage time, apple skin thickness is very important. But damage can also vary the life of the fruit.”

Neville, QPO 1

Discovery, for example, celebrated as the first apple of the British season, is demonstrative of an exception and can be found in the larger ‘flagship’ stores for a short window. As a popular, early season variety, it is recognised as a key for brand development. However, in general, thicker-skinned, harder apples tend to be favoured in the smaller format stores, such as the Braeburn, Gala and Pink Lady®. As explored in Chapter three, varieties which offer consistency of appearance and taste and minimise risk of bruising and senescence tend to be favoured by most multiple FFV suppliers.

Packaging is also recognised as an effective form of ripening and aroma management since fewer scents are released within packaged goods. Bags, trays and other forms of packaging can delay ripening and reduce bruising and damage to the fruit. ‘Premium’ range apples for example tend to be sold in tightly wrapped polystyrene boxes, shielded from bruising or knocks, whilst other apples tend to be bagged or carefully packed loosely in layered boxes.

Managing Engagement

Packaging further provides the multiple retailer greater control of the shopping experience and degree of engagement with the produce. First, packaging enables increased control over volumes and qualities sold. Second, packaging minimises the potential for bruising through tactile engagement with the produce. Third, with increasing packaging and bagging, there is less potential for buyers to select individual apples and engage tacitly with the fruit. Engagement with the matter of the apple is replaced with forms of discernment determined by packaging, labelling and branding, enabled and heightened through minimising opportunities for sensorial engagement. Through packaging, labelling and branding the consumer is distanced from possibilities of engaging with the materiality of the fruit.

Whilst 52-week supplies of global commodity apples render the spatio-temporalities of the apple invisible, timeless and placeless, packaging renders the bio-physical properties of the apple invisible, or at least a minimal component informing consumer decision-

making. Packaging and branding attain a more stabilised form of consistency and brand identity beyond the apple. This forms a key component of the retail risk minimisation strategy and brand ‘defense strategy’, rendering the shopping experience increasingly stabilised and uniform, regardless of the time of the year or outlet visited. Indeed, packaging, labelling and branding are recognised as sites of profit as well as forms of risk management.

Branding Engagement

Consumer decision-making within multiple retail is found to be increasingly determined by forms of branding within the supermarket. According to one key multiple apple buyer interviewed in Trade Journal ‘EuroFruit’:

*“What we’ve seen certainly in our business over the last few years is that our customers have moved from loose into pre-pack.. **I think we’ve changed people’s buying habits**, in that a pre-pack apple in a bag is a lot easier to promote than it is as loose” (Croxon, Tesco apple buyer in Eurofruit 2011:31)*

Branding, labelling and packaging enables segmentation of the market via the development of ‘own-brand’ ranges such as ‘premium’ or ‘finest’ as well as ‘basics’, ‘everyday’ and ‘economy’ ranges. As Supplier one states:

*“It’s a little bit bigger but **it’s the packaging**. And it looks good, you know... **it’s very much appealing to a consumer that wants something they believe to be strictly different...** Ultimately what we’re doing, if you look at our impact, we shouldn’t be doing. What we should be doing is all buying free-flowing produce. And you could argue that we shouldn’t put it into a bag, we should put it into something reusable. But we’re putting these four apples on a tray. Thankfully we’re using pulped paper rather than polystyrene. But then overwrapping it with plastic. **We’re putting a fancy label on top of that. You’re probably looking at over 10 pence of packaging.**”*

Supplier 1

The FFV domain of the multiples is recognised a key site for ‘innovation’ and brand development. The continual reconfiguration and adaptation of core categories and varietal lines forms an important component of multiple retailer brand reputation and profit.

Brands are recognised as facilitating such possibilities of reconfiguration and adaptation of categories and varietal lines aided through labelling and packaging. As discussed in Chapter three, multiple retailers are increasingly seeking an increasing share of sales of FFV via the development of ‘own-brand’ ranges (Marsden et al. 2010).

Having considered various forms of management of the production and trade practices of the multiple retail apple, Part two considers the management of varietal range of the multiple retail apple. The varieties available in the multiple retail environment emerge as heavily determined by standard quality expectations and the increasing agenda amongst multiple retailers for brand differentiation and the development of ‘brand ecologies’ via the club and ‘own-brand’ apple.

Part Two: Managing Varietal Range – From Varieties to Brands

Part two presents three archetypes¹² of the multiple apple. Archetypes one and two, the Gala and the Braeburn are recognised as two exemplars of ‘commodity’ varieties. Archetype three, the Pink Lady® apple, is then considered an exemplar of a ‘global’ club brand apple variety. Archetype four, the Jazz™ apple is recognised as a club brand which can be cultivated within the UK. Finally, archetypes five and six are presented as the multiple retail ‘own-brand’ apple. The shift from ‘commodity’ to club and ‘own-brand’ apple is indicative of the corporate logic that seeks to privatise not only the practices of apple production, distribution and trade but also the socio-natures of the apple.

4.2.1. Archetypes One and Two: the Commodity Apples

As discussed in Chapter three, there has been a tendency to produce and stock a few key ‘commodities’ amongst multiples. This section considers two archetypal global ‘commodity’ apples: the Gala and the Braeburn [see appendix 4.1. and 4.2. for further varietal notes]. Gala and Braeburn varieties are currently recognised as key successful ‘commodity apples’ by multiple retailers for a number of reasons. First, they are grown globally on a wide-scale and are therefore widely available throughout the year. Second, they are recognised as relatively uniform in terms of tree growth and suitable for intensive orchard cultivation. Third, they are also considered somewhat more disease-resistant and higher yielding than other varieties such as Cox and grow well in a wide range of regions and terrains, including the UK (Orange Pippin 2015b). Fourth, as varieties, they are suggested to generally offer lower grade-outs and generally good skin finish. Fifth, Gala and Braeburn (Orange Pippin 2015a) both have a relatively firm flesh, can travel well and are considered ‘durable’. They also have ‘storability’ with a relatively long shelf life and capacity to store well in cold store (*ibid*). Finally, in the context of the UK, as later fruiting varieties and good keepers, they support the extension of the British apple season.

The Gala and Braeburn are recognised as relatively consistent varieties in terms of production, aesthetics, durability and storability. Producer one reflects:

¹² Defined as “a very typical example of a certain person or thing” (OED 2015).

*“The UK has been dominated in the past by a variety called Cox. Which is a nice variety but it tends to be **slightly prone to all sorts of problems in growing**. It’s more prone than current varieties of Gala and Braeburn which are **more consistently grown**. So that has made it more tough for the UK grower. But we have moved away from the more dominant of that although it is in the mix.”*

Producer 1

Gala and Braeburn are popular apples amongst multiple retailer-led production regimes that demand uniform and stable categories throughout the year. However, as discussed in the previous chapter, they are considered amongst some industry figures to be reaching a point within European markets, including the UK, where they are considered ‘saturated’ commodities. This is fuelling the recent interest amongst multiple retailers in other varieties considered capable of attaining a ‘premium’ and avoiding market saturation.

4.2.3. Archetype Three: Pink Lady®

Archetype three is presented as the Pink Lady® apple [see appendix 4.3. for further varietal notes]. As with the Gala and Braeburn, the Pink Lady® is renowned amongst many retailers for year-round supply, whilst also recognised as consistent in terms of aesthetics, durability and storability. Indeed, the Pink Lady® apple recognized as a highly global fruit. The Pink Lady® also carries an extra dimension as a club brand apple.

Originating in Australia in 1973, the Pink Lady® is considered the ‘original’ club apple (Orange Pippin 2015d). For retailers, the Pink Lady® carries brand profile and potential profitability as a ‘premium’ brand. Only licensed growers may sell the apple and it is marketed via a centralised company, the Pink Lady® Growers’ Club. As discussed in Chapter three, the Pink Lady® apple has grown dramatically over the last ten years.

As a club brand, the Pink Lady® represents a pinnacle of privatised form of quality control, exercised by the Pink Lady® Growers’ club. The Pink Lady®, derived from the variety Cripps Pink, cannot be sold as a Pink Lady® without the consent of the club. The Pink Lady® achieves its trademark by the extent of the pink ‘blush’ - it is only deemed a Pink Lady® if the ‘coloration’ or ‘blush’ is greater than 40% (Orange Pippin 2015d). In order to be sold, the Pink Lady® further needs to be a certain size and firmness with set

levels of sugar and colour (Morgan, Richards, and Dowle 2002:252). If apples do not meet the criteria set by the club, they are ‘downgraded’ to the open variety Cripps Pink. Rigorous regulation Growers’ club aims to ensure consistency amongst the apples sold as Pink Lady®.

The Pink Lady® is promoted as a ‘premium product’. The Growers’ Club for example encourage a high grade out of lower quality apples to avoid market saturation. Sales of class II Pink Lady® for example are not permitted. According to the International Pink Lady® Association:

*“Pack-outs of Pink Lady® apples from orchards of the selected varieties will be higher than from similar orchards of Cripps Pink. This makes new plantings more attractive and if left unmanaged could lead to substantial global plantings. As with so many cases in the past, **the best way to destroy the premiums associated with a particular variety of fruit is to over produce it.**”*

(International Pink Lady ® Alliance 2007:7)

Volumes of production are thus further limited in order to avoid potential problems of oversupply. The Pink Lady® Growers’ club have been highly resistant to any reduction in prices since it was believed that this would reduce the perception of the Pink Lady® as a ‘premium product’. Sales of the non-branded variety, Cripps Pink, are further perceived by the Growers club as a potential ‘threat’ to the successful maintenance of the brand identity and retailers are encouraged to avoid selling Cripps alongside Pink Lady® apples (*ibid*). The Growers’ Club emerges as a regulator of both production and trading of the Pink Lady® apple.

The Pink Lady® has been described as a ‘global’ club apple, offering retailers 52-weeks consistent supply. The spatio-temporalities of the Pink Lady® emerge as strategically planned and privately regulated according to the logic of the Growers’ Club. The location of orchards is partly determined by the brand need for consistent supply throughout the year. The Growers’ Club thus recruits producers in appropriate locations in order to fit within the global supply regime. With a global growing regime, the Growers’ Club aims for as smooth a transition as is possible between countries, hemispheres and seasons. Through strategic planning of production site locations and management of production,

the Pink Lady® Growers' clubs aims to avoid potential 'ruptures' in supply (which could for example be caused by localised or regional meteorological or socio-political events). Ideal harvest points are planned in advance, leading to highly streamlined supplies. For example, the transition between production in New Zealand and the Loire valley has been specifically designed by the Growers' Club for 'seamless' transition between Southern and Northern hemispheres (International Pink Lady™ Alliance 2007). However, even for these highly rationalised supply networks however, there can be moments of rupture. In the autumn of 2002, for example, poor weather in France and unexpected breakdown in fruit in Western Australia led to a gap between supplies (FPJ 2002b). As the Pink Lady® production regime becomes increasingly global in extent however, these ruptures or fissure points are minimised.

As well as managing the production, distribution, consumption and forms of quality control of the Pink Lady® apple, management of the Pink Lady® 'brand' identity emerges as a key means of retaining 'premium prices'. According to the Pink Lady Grower club, the Pink Lady® is about "*so much more than an apple*" (Crabos 2007:5). As a brand, the Pink Lady® has global currency. Key to this form of global currency is the promotion of the brand. 60% of the royalties gathered by the Pink Lady® brand are spent on promotion (Eurofruit 2009:23). A Pink Lady® representative speaking in 2002 explains: "*for us, the goal is to keep building awareness...because awareness leads to trial*" (FPJ 2002c:5). The brand 'identity' attached to the label is considered a key component of the sales approach of the club, along with the 'premium' standards expected of the Pink Lady® apple. The Pink Lady® carries three brands: the flowing heart symbol, the figurative mark found on most branding and labelling and the word itself, which is copyrighted, as shown below.

Figure 4.1. Pink Lady Brand



(International Pink Lady® Alliance 2007)

Whilst the physical and material form of the Pink Lady® as an apple remains relatively stable at a global scale, constituting a highly regulated biophysical form determined by privately regulated written standard specifications, it has a potentially malleable brand ‘identity’, also determined by the Growers’ club. Promotion of the apple as a brand rather than variety or territorially defined fruit enables potential for a global market – with a brand campaigns can be targeted according to specific audiences. As a brand, the Pink Lady® is capable of local adaption whilst maintaining global currency. As a club brand, the Pink Lady® represents a pinnacle of privatised form of quality control, exercised by the Pink Lady® Growers’ club as a result of adherence to globally harmonised standard specifications.

The Pink Lady® emerges as an archetype of a corporate logic that aims to privatise the spaces, natures and relations of production and product. Both materiality and the brand of the Pink Lady® emerge as determined by the Pink Lady® Growers’ Club. One limitation within the UK market however is that the Pink Lady® cannot be grown in the UK. In recognition of the potential profit of such global brands, alongside growing retail and consumer interest in the re-localisation of fresh produce, including apples, a number of apple club brands that can be cultivated within the UK have emerged over the last decade. This includes the Jazz™ apple, presented as archetype four.

4.2.4. Archetype Four: Jazz™

Sourcing British, seasonal produce is recognised as a source of brand development within the FFV category by the multiple retailer. A club brand that can be grown in Britain thus emerges as a key product for the UK multiple both for profit and brand development. As a global club brand with a global regime of production, the Jazz™ apple is available throughout the year. However, unlike the Pink Lady®, the Jazz™ apple can also be cultivated in the UK [see appendix 4.4. for further varietal notes]. The Jazz™ apple thus offers multiple retailers the opportunity to sell a British cultivated ‘club’ brand apple.

As a cross between the commodity apples Gala and Braeburn, the Jazz™ apple is a trademark apple of the cultivar SciFresh. Jazz™ apples are considered reliable cultivars to grow within the UK. As Producer one explains:

*“...what we call the ‘club apples’ which are owned by certain groups Jazz™ being the prime example of that. To make up the mix...they are for all purposes **better products.**”*

Producer 1

Jazz™ apples are recognised as particularly suitable for cultivation within intensive productive systems. According to Supplier two:

*“...Cameo, Rubens, Jazz™ and Kanzi, they **grow very happily in an intensive orchard in a headstart management system. And it is economically much easier to make a profit out of them because it costs far less to grow them...**”*

Supplier 2

Indeed, Jazz™ apples are considered a profitable choice of apple to grow commercially at present. According to Gary Harrison of WWF (Poulter 2013) states “from a grower’s point of view, the returns per hectare exceed pretty much any other apple.” As a late-season apple within the UK, the cultivation of Jazz™ apples further supports extension of the British apple season.

As a cross between two other ‘commodity’ varieties, the Jazz™ apple is considered a durable cultivar suitable for global distribution (Orange Pippin 2015c). The Jazz™ apple is also considered a stable cultivar in terms of taste. Gary Harrison, of World Wide Fruit claims “Jazz™ offers the consumer a:

“...consistently excellent eating experience, shelf life of over four weeks and an ability to purchase all year round if they wish to do so.” (in Poulter 2013)

As a club brand, Jazz™ apple has set written specifications enforcing standardised quality regardless of where it has been grown or time of year. According to marketing director of Worldwide Fruit, the UK license holder for the Jazz™ apple:

“For 52 weeks a year it tastes the same. Week on week, you always get the same flavour. Not every apple is like that.” (Maxwell 2015)

This is considered particularly key for branded apples. As Maxwell explains:

*“...we don’t want something that for 10 weeks it is great 10 weeks bad and 32 weeks ok. It has to be **good all the time** and Jazz™ has good flavour and is consistently great. Its real strength is that it doesn’t disappoint. That’s why we talk about it like a brand, it’s like a Mars bar, it tastes the same every time”*

(in Bedington 2005:22)

Whilst providing opportunities for cultivation within the UK, as with the Pink Lady®, the Jazz™ remains an apple with global reach. The Jazz™ Growers’ club manages consistent supply throughout the year by “allotting production, packing and marketing rights across a spectrum of countries to ensure twelve-month supplies with the minimum of overlap between producing areas” (Belrose 2011:71). The club has a cycle of global production based upon six months production in the Southern Hemisphere and six months Northern Hemisphere (with plans to extend the Northern Hemisphere cycle with the extension of plantings in Italy, France and the UK) (Maxwell 2015). This global regime of production is supported by “selected master orchardists in twelve countries across the globe” (Jazz™ Apples UK 2011).

As a club brand, the Jazz™ apple is thus recognised as a cultivar that offers established apple growing nations such as the UK the opportunity to strengthen domestic apple markets whilst maintaining sales outside of the domestic apple season, as a result of the global regime of production of the club brand. As discussed in Chapter three, the Jazz™ brand has been embraced by large commercial apple growers within the UK as a potentially profitable apple to cultivate and sell. Indeed, in 2007, over 80ha of Jazz™ apples were planted within England, one of the biggest single plantings of one apple variety in recent history in the country (Shapley 2006).

As with the Pink Lady®, the development of brand loyalty is considered a crucial element of the success of the club apple. According to Maxwell (2015):

“a lot of the work is focused on getting people to try Jazz™ ...we find that a lot of people try it when it’s on promotion and then they stick with it.”

As with the Pink Lady®, social media, consumer events, and price promotions are recognised as critical components of brand development and custom of the club brand.

Jazz™ apples for example are estimated to currently sell at a 30% premium compared to other commodity varieties such as Gala and Braeburn in major UK supermarkets (Plant and Food Research 2013:11). Promoters of the Jazz™ apple brand are keen to maintain brand equity. As Maxwell states:

*“they did a great job with the Pink Lady®. They started with a product that was better than other apples and they made it into something a bit special...but **one of the big things we must do is keep control, so we do not end up losing our brand equity.** They are in danger of doing that.”*

(in Gapper 2004)

Club brands such as the Jazz apple are currently recognised as potentially profitable categories for multiple retailers. According to Maxwell, the Jazz™ apple will remain profitable if ‘premium’ qualities are maintained and production regimes controlled. The private control of regimes of production, standard specifications, forms of distribution as well as brand promotion and development are considered means of maintaining brand equity, considered the signifier of success (and source of profit) of club brands. The logic of the club apple in the case of the Pink Lady® and Jazz™ apple hinges upon retaining private control of the spatio-temporalities of production, the bio-physicalities of the apple and the socio-cultural identity of the brand.

4.2.5. Archetypes Five & Six: the ‘Own-Brands’

As discussed in Chapter three, the FFV category is considered a key site for innovation and brand development amongst multiple retailers. Alongside the rise of the club brand apples that can be grown in the UK, there has been a recent move towards the development of ‘own-brand’ apple ranges, particularly of British supplies. The ‘own-brand’ enables the development not only of the *multiple retailer* brand identity (i.e. Tesco, Sainsbury, Asda and Morrisons) but also of *internal ‘own-brand’ ranges* determined and managed by the multiple retailer.

‘Own-brands’ span from low-cost ‘economy’, ‘basic’, ‘market value’ ranges to more expensive ‘premium’, ‘taste the difference’, ‘finest’, ‘simply the best’ ranges, as well as

various other types of specialist ranges such as ‘kids’ fun packs’ and ‘best of British’. A relational ecology of ‘own-brands’ unfolds within the multiple retail domain, whereby relationships *between* ‘own brands’ and *ranges* reinforce difference and ‘own-brand’ hierarchies. These expanding ‘own-brand’ apple ranges amongst multiple retailers are recognised as sites for the accumulation of capital as well as innovation and brand development. As Supplier one reflects:

*“And we create. Retailers are very good at **creating brands**. To keep you up with the Jones’. For example we do **Pink Lady apples that are the most expensive premium product we do. And that is done in three formats**. But the most. Mrs. Jones’ pack is four over a tray. So its £2.19 a tray or 50p an apple. You can buy six smaller ones for £1.89.”*
Supplier 1

‘Own-brand’ ranges emerge as potentially malleable, enabling multiple retailers to sculpt notions of ‘quality’, constructed and communicated via packaging, labelling and promotions. Rather than determined by normative, variety-specific standards, ‘own-brand’ ecologies facilitate a narrative of ‘quality’ that isn’t necessarily determined by matter. ‘Premium’, ‘kids’ or ‘basic’ ranges for example may be sourced from the same orchard, differentiated only according to size or according to branding, packaging and labelling.

The differentiation of ‘own-brand’ ranges facilitates greater potential for flexibility around volumes, standards and varieties of supply, recognised as particularly relevant in the procurement of British apples. The final two archetypes are presented as two ‘own-brand’ archetypes of the multiple retailer: the ‘British’ brand and the ‘class II’ brand. These forms of ‘own-brand’ are recognised as reinforcing hierarchies of ‘brand’ ecologies within and between multiple retailers, whilst further reinforcing asymmetries within the wider apple economy.

Branding British

The approach taken towards the sourcing of apples, particularly during the UK apple season, is considered a potential window for brand innovation, development and diversification amongst multiple retailers. Multiple retailers are found to use the apple as a means of promoting their approach to the supply of seasonal, 'British' fresh produce supply. As Supplier two reflects:

*"The **brand of 'Britain'** is incredibly strong. And the supermarkets use it for commercial and political gains...aspects of it, we can be incredibly competitive on."*

Supplier 2

There is significant competition over volumes of UK apple supply, varietal range and length of UK apple season amongst multiples, fuelled by industry English Apple and Pear League tables (Fisher 2014). The two largest multiple retailers, Tesco and Sainsbury's for example, emerge as particularly keen to demonstrate their ability to supply the largest volume and widest diversity of 'British' apples in an attempt to develop brand reputation. During the top-fruit season of 2010-2011, Tesco and Sainsbury's were described as 'head-to-head' in terms of volume of English apples sold. Tesco for example were said to sell 31,408t between 2010-2011 (a 35.4% increase on 2009-2010 volumes) whilst Sainsbury's sold 31,325t (a 7.8% decline on 2009-2010) (Ford 2011). The margin of 83t is indicative of the close runnings of the competition.

The timings of the UK apple season are recognised as particularly key. As well as competition over volume of sales, there is also a race to get the first British apple in to store. The Discovery apple is traditionally considered the fruit to launch the apple season and recognised a further point of development amongst multiple retailers (Fortescue 2007). More recently there has been multiple retailer interest and investment in the production and supply of later fruiting British varieties in order to extend supplies. A senior buying manager of Tesco's for example states that they view the British apple season as a 'marathon' rather than 'sprint' and in 2008 made the claim that they aim to increase the volumes of English apples sold by "focusing on newer late-season varieties such as Cameo® and Kanzi®" (The Grocer 2008).

Many multiple retailers also emerge as keen to promote extension of varietal range of apples. Sainsbury's claim to sell over 50 varieties sold during the British apple season,

including a range of traditional, heritage and more modern varieties (Barker 2010). Whilst Tesco claim to sell over 20 varieties of British-grown apple varieties during UK apple season. In 2010, they launched four ‘new’ British apple varieties (Evelina, Sonya, Opal, Pirouette) as well as ‘exclusive’ apples such as the Surprise apple, launched in 2014 (Cloake 2014), exclusive to Tesco.

Several of the key multiples have also funded the planting of various types of heritage, regional or experimental orchards, including the Sainsbury’s Organic Concept orchard (Barker 2010) and Tesco’s Home Farm heritage orchard (Pullman 2015). However, these strategies towards diversification of varieties are viewed by some industry figures as ‘publicity tools’ rather than steps indicative of a wider shift in terms of large-scale supply. According to Supplier two:

*“...a lot of reasons why the old varieties aren’t popular any more is because they’re pants! They don’t look nice, a lot of them don’t taste particularly nice, they’re quite hard to grow, quite a lot of them get every disease known and most apples have had a bite before you get to them! **You can’t pack them because they bruise and you can’t store them because they go mouldy.** So that’s why they’re old varieties and they’re not available any more. ...in a few years time, when its no longer...[.]...to call an apple ‘heritage’, you’re going to have a lot of orchards that are incredibly difficult to prune...growing in to behemoths... **it’s something that you do because it is something that the customers are looking for at present.** But it is not a commercial decision at a large scale production **it is something that you do probably at a loss because it helps you with your order.**”*

Supplier 2

Whilst diversification of varieties is recognised as a key means of garnering publicity, the extent to which it translates in terms of volumes of supply remains questionable. For example, the first Tesco Discovery apples of the season are sent to only a handful of stores (Fortescue 2007). Whilst ‘new’ modern varieties such as Surprise are also found in a small proportion of stores. The scales of supply and big-set distributions demanded by multiple retailers tend to favour larger commercial orchards that offer large volumes of a few commodity varieties. As Producer two reflects:

*“Once bitten twice shy really. Well the problem is with apples, it’s a long term investment. You can’t just get in and out of apples. So if one supermarket supplier says “we’ll take all of the Ashmead’s Kernel that you can grow” and you say “Great.” You plant them. You’re not even going to get a crop of them until he’s gone on to his next job. So you’ve got to be sure...there is an interest in heritage varieties from supermarkets but every now and then it **always is and it’s always just a fad..It’s harder for them to manage it because they’ve got the big set distributions.**”*

Producer 2

Multiple retailers in the UK are found to be particularly focusing investment in the research and development and planting of more ‘modern’ varieties and club brands. Jazz™, Rubens® and Kanzi® are recognised as key ‘British’ apple varieties for multiple retailers (Collen 2011). As discussed in Chapter three, the major recent plantings within the UK currently are focussed around the new late season club brands including Jazz™, Rubens® and Kanzi® as well as other ‘new’ cultivars such as Evelina, Sonya, Opal, Pirouette. These ‘modern’ varieties tend to be selected as those that are more productive in intensive production systems, disease resistant varieties, durable and consistent in terms of quality. The planting of late season apples is further recognised as a means of extending the UK apple season and supply as well as a means of ‘filling in’ gaps within the season in the case of varieties such as Scrumptious and Katy.

Although key ‘flagship’ stores are found to present a widening range of ‘British’ varieties, including heritage and ‘modern’ cultivars, for most urban formats, a small range of ‘commodity’ apples are predominantly found. This is particularly the case in smaller format stores such as Sainsbury’s *Local* and Tesco *Metro* and *Express* which tend to offer a small range of key lines that, in the case of apples, tend to be in the form of ‘commodity’ varieties and club brands. The recent wave of planting of late season apples within the UK is recognised as increasing domestic apple production within the UK. Many of these late season varieties are recognised as club brands (notably Jazz™, Rubens® and Kanzi®) as well as varieties certain multiple retailers have exclusive retail rights around (such as Surprise). As discussed in Part one, these club brand varieties are based upon production and distribution regimes that operate according to a corporate logic, (i) maintaining globally harmonised privately regulated standard expectations; (ii) maintaining ‘big-set’ distributions via large-scale plantations of single varieties; (iii)

synchronising with global regimes of supply; (v) supporting the development of brand equity.

Multiple retailers are found to be supporting forms of privatisation of apple production within the UK, notably via the support of the club brand apples (Jazz™, Rubens® and Kanzi®) and the development of ‘own-brand’ ranges. This is leading to further consolidation and privatisation of apple production and consumption within the UK, focussed upon large-scale production that can meet the needs of big-set distributions of multiple retailers.

It is suggested the multiple retailer approach to sourcing British apples brand is indicative of the privatisation of not only regimes of apple production and supply but also of the socio-natures of the apple, via the trademarking and patenting certain varieties, the support of the club brand and the differentiation of produce via ‘own-brand’ ranges. As the two figures below demonstrate, ‘British’ own-brands in the case of the ‘Best of British’ Sainsbury’s (2015) range and Tesco ‘British Apple Selection’ (2015) are focussed upon the *brand* of Britain rather than specific varieties. The ‘own-brand’ in the case of the British brand is thus largely found to support the sales and development of modern varieties, patented varieties, club brands and the development of brand ecologies rather than necessarily agri-biodiversity.

Figure 4.2. British own-brands

Tesco’s ‘British Apple Selection’	Sainsbury’s ‘Best of British’ apples
	
<p>£1.47 x 7 Source: (Tesco 2015)</p>	<p>£1.99 x 5 Source: (Sainsbury’s 2015)</p>

The following section explores how the development of a hierarchy of ‘own-brands’ is enabling multiple retailers an increasing share of British apple crops, through differentiation of *qualities* of British apples. This is considered particularly instrumental within potentially more volatile British crops where the risks of production are not as easy to externalise as they may be further afield, as discussed in Part one.

Branding Class II

A number of retailers have increased the sales of class II fruits, via ‘market’, ‘economy’ or ‘basic’ ranges or ‘ugly fruit’ promotions. class II categories have a higher tolerance for ‘non-progressive’ defects such as blemishing, branch rub or russetting as well as a greater acceptance of size and misshapen fruit. They can also enable more flexibility around potential meteorological damage such as hail damage. As Neville states:

“If you look at the Basics range, we’ll allow a greater tolerance for non-progressive* defects. Whereas with the [premium] range we’d expect the apples to be sweeter in flavour..If it doesn’t sit it can be used as a class II fruit.”

Neville, QPO 1

*Non-progressive: a branch-rub or blemish for example, a mark that is not going to get worse with time.

The sales of class II produce is thus recognised as a means of absorbing produce that would otherwise be redirected or rejected, as well as diversifying and differentiating brand and range. As Supplier one explains:

“The class II product was virtually unsaleable so it ended up going to juicing. With the advent of the economy ranges, it meant that it could either continue to go to processing for juice or cider or it could go to a retail economy pack... if you went back to say pre-2005, if it wasn’t class I..there has been a decline on the wholesale market as the greengrocers and market stalls have died off.”

Supplier 1

The class II ‘own-brand’ ranges are found to be predominantly derived from British crops. The development of ‘own-brands’ offers multiple retailers avoiding saturating

markets with undifferentiated produce of specific varieties, as has been ascribed to the commodity varieties Gala and Braeburn. ‘Own-brand’ ranges are further recognised as a means of verticalising produce, through the development of hierarchies of ranges from ‘premium’ to ‘basic’. The differentiated forms of quality communicated via the range can in turn reinforce one another (for example, the price difference between ‘premium’ and ‘basic’ ranges).

As a result of exclusive contracts with producers, multiple retailers are found to be gaining increasing potential proportions and volumes of supply from British producers. The development of ‘own-brand’ ranges thus emerges as a potentially profitable pathway for produce that does not meet the quality requirements of class I. This is particularly relevant for British produce, where consistent qualities are recognised as sometimes difficult to attain (or at least to avoid) and the externalisation of risk harder. ‘Market’, ‘economy’ or ‘basic’ ranges and ‘ugly fruit’ promotions, such as those indicated in the figure below, thus offer multiples a strategy for the absorption of produce that may not meet the class I written standard specifications demanded by retailers and a means of coping with the instabilities of more proximate forms of supply.

Figure 4.3. Class II brands

Sainsbury’s ‘Basic’ Range	Tesco’s ‘Market Value’ Range
Family bag of class II apples, 500g. All shapes and sizes.	Market Value bag of 5 apples
	
90p x 9	90p
Source: (Sainsbury’s 2015)	Source: (Tesco 2015)

The sales of class II produce further constitutes a form of brand development in terms of corporate social responsibility, reducing grade-outs and quantities of rejected or redirected produce, recognised as appealing to those interested in more environmental and ethical forms of production, as well as cheaper produce.

Lower grade apples in the form of ‘basics’, ‘economy’ and ‘market’ ranges however currently account for a small component of the apples sold by multiple retailers. Within many of the smaller formats of the multiples, found to be particularly prevalent within inner city areas, lower grade apples tend not to be a major feature or present at all rather dominated by a small range of commodity and club brand apples.

Club brand apples and ‘own-brand’ ranges are recognised to constitute a form of privatisation of the spaces, natures and relations of the apple. These forms of privatisation are found to be influencing an increasing proportion of apple production, trade and consumption within the UK, predominantly determined by the multiple retailer. The club brand and ‘own-brand’ are indicative of the differentiation and verticalisation of the apple via ‘brand ecologies’, communicated via brands, packaging and labelling. As demonstrated by the case of the ‘own-brand’ the socio-natures, as well as spatio-temporalities of the apple, are increasingly determined and differentiated by the multiple retailer. The following section explores how these retail-led logics are impacting the spaces, natures and relations of the apple *beyond* the UK.

4.2.6. Globalising Commodities, Localising the Brand

The growing investment in the production of UK apples over the last decade is found to be impacting upon the spaces, natures and relations of supply and varietal range beyond the UK. The multiple retailer-led localisation of the apple via the brand and the ‘own-brand’ within the UK is found to be leading to further consolidation, verticalisation and privatisation of apple production beyond the UK.

For most retailers, the UK top-fruit market is recognised as a key category and tool for brand development but in no way a definitive source for apples. A form of varietal subsidiarity is found to emerge, whereby UK grown varieties are prioritised (notably, those producing ‘new’ club brands such as Jazz™, Rubens® and Kanzi®), bolstered by

the import of key commodity and club varieties not capable of being grown within the UK favoured during the apple season (such as Pink Lady® and Golden Delicious).

As a fruit technologist to a major multiple suggests, an increase of production within the UK should not be seen as a threat to exporters to the UK. Rather, she explains:

*“...it enables exporters to the UK to focus their attention on varieties such as Pink Lady and Granny Smith that were **not being produced** in Britain, thus removing a rivalry for shelf space” (Huxley in Barker 2010:17).*

Whilst Tesco are supporting the increase of British production and extension of seasonal supply, a fruit buyer for Tesco states:

“Customer tastes mean that we have to offer varieties such as Pink Lady and Golden Delicious which do not grow in the UK.”
(Croxon, Tesco fruit buyer quoted in Wallop and Costa 2010).

As Supplier two further outlines, in their programme of supply, they would prioritise a *British Braeburn* when available but would continue sourcing other varieties that are *not grown* within the UK throughout the calendar year, particularly key commodity lines:

Supplier 2: Increasing English supply will mean that there is a slight decline in French supply as a result of import substitution...

Interviewer: Is that because of productivity or more planting?

*Supplier 2: More planting. It's also because within the last 5 possibly 8 years, better varieties suited to this climate have been bred or have become available. The English volume of Braeburn is increasing...**the consumer in [multiple] has been saying they want an English apple**...So we've been saying we want French Royal Gala at the beginning of the season for probably 3 weeks and **then we won't want it**... maybe a period at the end but what **we do want from you is Golden Delicious, Granny Smith and Pink Lady**...we can't do without the French business if there is a consumer desire for those varieties...we've been very lucky for sure that we've got people who are prepared to understand that. Some people would just stick two fingers up to you and that's it. They won't engage with things like that.”*

Part Two: Conclusion

The multiple retailer-led re-localisation of the apple in the UK is leading to increasing influence of the multiple retailer over the practices of production, varieties grown and standards expected *beyond* as well as within the UK. As the previous excerpts suggest, there is an emerging consolidation of demand for those key commodity varieties not grown within the UK (such as Pink Lady® and Golden Delicious). This is found to be particularly heightened during the UK apple season. The re-localisation agenda of the multiple retailer within the UK is thus found to be leading to a consolidating, contracting varietal range and privatising production regimes both *within* and *beyond* the UK. It is further resulting in a hierarchy of supply that is spatially determined, whereby British produce is prioritised during the apple season. Possibilities of diversification of UK supply are found to be facilitated through emergent ‘own-brand’ ranges whilst varietal range and standards of global apple supplies are largely found to be consolidating both outside and particularly during British apple season.

As multiple retailers gain increasing proportion of control around production, distribution and sales of the apple in the UK, the development of brand ecologies emerges as a means of developing brand reputation and maximising profit whilst further facilitating the sales of a wider range of qualities. The privatisation of certain cultivars is further leading to an increasingly hierarchical market, whereby certain apple varieties are available only as ‘premium’ class I; whilst the segmentation of ‘own brand’ ranges enables the sales of a wider range of British produce, including class II. It is suggested that the hierarchies created through these verticalised ‘brand ecologies’ reinforce each another.

Having explored how the corporate logic of the multiple retailer is impacting upon the spaces, temporalities, natures and relations of the apple *within* the multiple retail environment, the following section considers how this logic is impacting beyond the multiple retail environment, with the case of the wholesale market. The verticalisation and privatisation of the apple, driven by the corporate logic of the multiple retailer, is found to have far reaching consequences upon trading and producing relations within the UK and beyond. In the case of the wholesaler, the practice of the redirection of rejected apples is found to reinforce hierarchies within the wholesale market that are determined increasingly by the corporate logic, further impacting upon the socio-natures of the wholesale apple and the trading relations of the wholesalers.

Part Three: Redirecting the Corporate Apple

As explored in Chapter three, multiple retailers have significant influence within the UK fresh produce sector. They are found to be increasingly involved in the management of the production, distribution and sales of fresh fruit and vegetables within and beyond the UK. Whilst multiple retailers account for the majority of fresh produce trade, the influence of the practices of the multiple retailer is wide-reaching. Indeed, multiple retailers are found to have significant impact upon the spaces, temporalities, natures and relations of the wholesale apple. Part three draws upon a series of semi-structured interviews with wholesale traders, suppliers and wholesale market representatives associated with the two key fresh fruit and vegetable wholesale markets of London – the sites of New Spitalfields Market¹³ (NSM), Leytonstone and New Covent Garden Market (NCGM), Bermondsey.

Spatio-Temporalities of the Wholesale Apple

During a series of conversations and informal semi-structured interviews with wholesalers and suppliers around the apple, it emerged that many wholesalers perceived access to UK fresh top fruit as difficult, partly as a result of the multiple retail consolidation of the UK top-fruit industry. Although several initiatives to encourage regional and seasonal supply were in place within the NSM and NCGM wholesale markets, only a few wholesalers were at the time engaged with direct supply. These tended to be those supplying greengrocers and public institutions. Several wholesalers spoke of the difficulty of making connections with British producers and suppliers. Many wholesalers spoke of the supermarket stronghold over British growers in terms of access and price, particularly those growers considered as ‘quality’.

¹³ NSM houses the largest number of food wholesalers within the UK, and is the UK’s largest horticultural market with an annual turnover of over 650,000 tonnes. It is a particularly key site for the procurement of imported fresh fruit and vegetables and an estimated 60% of the food sourced is imported (City of London 2011). According to one of the NSM development workers, approximately 15% is sourced from within 100 miles of London.

*“It is harder to source apples from producers in the UK since **they tend to be bought up by supermarkets**, have a direct relationship with the supermarkets...at least the best growers with the highest quality of goods. Others have gone skint...It is relatively easy to make links with UK producers. But now **most of the quality producers are in stronghold with supermarkets or have collapsed.**”*

NSM Wholesaler 3

*“There are not many left now. And **those who are left sell to supermarkets because they want the best deal...**every grower prides themselves with selling to the supermarket.”*

NSM Wholesaler 2

“They [supermarkets] pay the same as me but get twice the quality.”

NSM Wholesaler 1

Wholesalers are found to be currently positioned in a difficult space with regards to accessing British apples, situated between small-scale growers who have the potential to make stronger direct links with communities through direct sales and larger-scale growers on single contracts to supply multiple retailers. A number of wholesalers reflected upon diminishing opportunities for trade with UK growers. According to one wholesaler:

*“There are no English varieties any more. There is very little availability of UK apples. **UK growers just don’t sell their apples to wholesalers.** Transport prices are often blamed – too expensive.”*

NSM Wholesaler 1

Wholesalers in NSM are found to work predominantly via suppliers rather than directly trading with producers or producers cooperatives. For many wholesalers there has been a breakdown of connection or alliance with UK producers and producer co-operatives as a result of the stronghold multiple retailers are found to have with regards to commercial producers in the UK, as well as certain behaviours amongst producers they have fostered. This results in little sense of affinity with UK growers for some wholesalers, particularly when a significant proportion of produce accessible from UK growers that wholesalers are trading is that which has been rejected by multiple retailers. As one wholesaler reflects:

*“Now they [wholesalers] feel little sympathy if Tesco’s decide that the fruit is not good enough **since the producers decided to abandon them in the past.**”*

NSM Wholesaler 5

The multiple retailer is found to be shaping not only the spatio-temporalities of the wholesale apple but also wholesale trade relations. As an NCGM representative reflects:

*“If it’s a trader here and a grower, this has happened actually, they’ve sent in what they consider to be ‘shit’ – **supermarket rejects, packed badly, graded badly, then that’s when the relationship breaks down.** And actually that’s happened here between an apple grower and a trader...”*

NCGM Coordinator

Some wholesalers further perceived the UK apple as a relatively less profitable and more volatile option compared to imported apples. In contrast, the global commodity market enables access to a permanent supply base - if a crop is not available in one area, it can easily be sourced from elsewhere. Fresh produce is often considered cheaper from further afield, whilst also potentially more stable as a result of harmonising global standards and the demands of the UK as a ‘quality driven market’ focussed upon low price. According to one importer:

*“English markets always ask for **very good quality for very low price for wholesale markets.** Which is very hard because you have to pay for very good quality.”*

NSM Importer

Wholesaler two reflects that since standards have stabilised, prices are recognised as increasingly the differential determining trade:

*“Quality is not so much the issue. Years ago they’d be more particular. It was the wholesaler’s job to inspect. Keep it as stone cold green. Know everything about the product. You had to learn everything about the product. Gov’ner would learn you the tricks of the trade. **The good standard now is** – how much is it and can they get to work with it (eg is it going to work in the pound bowls?) but they still operate by word of*

mouth. Deals are done by word of mouth... It's got to be sold because its perishable. To find it's value, you've got to sell it."

NSM Wholesaler 2

Indeed, several NSM wholesalers speak of an increasingly price-focussed market:

"People ask for cheap apples now. Class II. Quality as well."

NSM Wholesaler 6

"There's a good standard now. "How much is it?" ... then they can get to work with it...years ago it had to be a certain way. Now, quality is not so much the issue. Price. People, if something is too dear, they don't buy it. Some products just won't sell."

NSM Wholesaler 2

Whilst some wholesalers suggested British apples harder to access and potentially more precarious in terms of quality, others suggested there is demand for British apples, but a resistance to price.

"People are asking for British but they go off it when they hear the price."

NCGM Wholesaler 2

The NSM wholesale apple emerges as increasingly global as a result of i. the ability to access *cheap, standardised* produce via global markets; ii. the difficulty in *accessing* British produce (particularly that which is perceived to be both good quality and affordable); iii. the rising *price differential* between domestically produced fruit and imported fruit. Interviews with wholesalers suggest that the multiple retailer is gaining increasing control around the price and quality of UK apples.

Socio-Natures of the Wholesale Apple

The wholesale market is recognised as a site whereby the qualities of apples are controlled by externally determined standard specifications. Wholesalers emphasise that they have little influence or monitoring regarding the written standard specifications of the apples they sell. Many spoke of their role as trader, separate from the production process. According to one wholesaler:

“We’re just the buyers, we don’t have anything to do with production.”

NSM Wholesaler 7

Whilst the multiple retail sector is found to demonstrate a high level of involvement in the management of practices from orchard to store, wholesalers are essentially traders. As one veteran wholesaler explains that within the wholesale market, the point at which the apple is sold to the trader or importer as the point “*when the business starts.*”

Wholesalers remain separate from the production practices and tend to only begin to get involved at the point of sales. This approach differs from the multiple retail sector, found to be increasingly involved in breeding, production, distribution and sales. Indeed, the standards of the apples entering the wholesale market are found to be increasingly influenced by multiple retailers and consortiums of multiples, both via the enforcement of private standard specifications along the supply chain and via the redirection of rejected produce.

Unstable archetypes: Three Pink Ladies

The ability of the multiple retailer to redirect produce that does not meet the written standard specifications enforced enables the maintenance of stringent standards and qualities of the produce sold by the multiple *within* the multiple retail environment. As one wholesaler reflects:

“In the past, supermarkets paid higher prices for fruit meaning that producers could almost destroy the non-class I fruits. But now it is not prepared to pay premiums – there are no excesses. So for the producers, the returns are better if they steer of the problems in the first place.”

NSM Wholesaler 9

Whilst the aim of the multiple retailer and club brand is the standardisation of stable, durable apples via the imposition of written standard specifications and enforcement of quality control practices, the wholesale apple is found to be precariously positioned in terms of externally determined and regulated qualities. Multiple retailers are found to use the wholesale market as a site for sidestepping the potential perishability of the apple,

externalising the risk of any transgressions of the written standard specifications demanded. According to one wholesaler for example, the supermarkets ‘wash their hand’ of fruit that is not up to the standards required. Another wholesaler reflects:

“They only want top-drawer goods...but they don’t seem to appreciate the grower can not only grow class I stuff.”

NSM Wholesaler 5

The wholesale market emerges as a mechanism enabling multiple retailers the ability to maintain consistency of standards and quality expectations, via the redirection of any produce that does not meet the standards required. The resultant qualities of the redirected, rejected apple within the wholesale market emerge as precarious. Upon release from storage, the apple has a rapid rate of senescence, leading to an accelerating pressure to sell the produce. One trader, for example, speaks of a 10-12 day window before apples start to decompose. In the case of the rejected, redirected apple, wholesalers have no control around the ‘release’ of apples. There are found to be a wide range of stages of apple senescence within the wholesale market as discussed in the below excerpt.

During one interview, a wholesaler offered a tasting of three different apples of the same variety of the Pink Lady® club brand.

This morning I spoke with one of the wholesalers and he encouraged me to try three different Pink Lady apples. Whilst they were all the same variety of apple, they tasted so different. One was a Pink Lady™, three months old from France. Very sweet and quite crunchy, with a smooth skin. The second was a Pink Lady, 6 months old from Chile. This seemed even sweeter. Almost sickly. Not as crunchy and a slightly bumpy skin. The third was Pink Lady from Brazil, also estimated to be 6 months old. It was pappy, a little musty. Such different tastes for one variety.

Fieldwork notes. 9th December.

As this vignette indicates, the three Pink Ladies sold by one wholesaler that originated from three distinct places of origin, were different ages and had quite different tastes. Even amongst one variety and one class, tastes can differ as a result of post-harvest treatment, storage and age (both in terms of time post-harvest and time since release from cold storage).

Whilst the multiple retailer and Growers' club are found to enforce specific written standard specifications for each apple variety, wholesale apple qualities are found to be potentially more volatile. Whilst the senescence and potential volatility of the apple is managed by the multiple retailer via specific written standard specifications and various forms of defense along the supply route, the volatile natures of the apple might begin to be tasted in the wholesale market. The wholesale apple emerges as potentially more precarious in terms of senescence, ranging from recent release from cold store to nearing the point of senescence.

Socio-Relations of the Wholesale Apple

The redirection of rejected apples is found to have significant impact upon the trade relations of the apple within the wholesale market and beyond. 'On the spot' sales are found to be particularly heightened as a result of the accelerating perishability of redirected, rejected fruit upon release from storage. According to two wholesalers:

“Sales are in bad shape...There's a tight cash flow... People ask for cheaper produce now as well as good quality. But the cheap go rotten quickly. People ask for cheap apples now. Class II. Quality as well.”

NSM Wholesaler 10

“Fruit is getting harder to sell, so we do need to get better at growing it. And also dealing, managing excess as well.”

NSM Wholesaler 9

Several wholesalers however were fiercely defensive of the quality of produce sold at wholesale markets. According to one established wholesaler, it is important to note that the sale of the rejected supermarket apple remains an 'exception' to operations at NSM.

It was suggested that there are a few traders who are considered at the 'hub' of rejected fruit markets, operating almost exclusively on these markets, with direct contact with supermarket suppliers. In other cases, fruit and vegetables sold were considered "good quality". One wholesaler for example emphasised that "the bulk of fruit entering NSM comes as category one."

However, amongst many wholesalers, there was a prevailing sense amongst many that the 'rise of the supermarket' was a contributing factor to diminishing return on sales and marginalisation of quality produce. As a representative from NSM reflects:

"The supermarkets have it so easy. Because they've got car parks which are normally free. It's a one stop shop so you can get everything you need. It's warm and sheltered. But then if you want fresher and cheaper produce then you go to a street market. But they tend to be in the middle of town. They tend not to be near a car park. So it can be very awkward. People don't tend to shop on a daily basis. They tend to go out and do a weekly shop. It used to be we bought everything fresh every day. And we'll probably go back to that because everything goes in full circle. But in the mean time what we tend to do is doing a big shop on a Saturday or Sunday or whatever."

NSM Representative

Some wholesalers attributed the dominance of the multiple retailer in terms of market share as a key factor influencing the reduced sales at NSM and the increase price pressure.

Corporate Influence

Consideration of the wholesale market provides insight in to the impact of the corporate logic beyond the direct domain of the multiple retailer. The multiple retailer is found to be gaining an increasing extent of control around the spaces, temporalities, natures and relations of the apple consumed within the UK, including those within the wholesale market. Wholesalers emerge as traders of pre-defined spaces, temporalities and natures of the apple that are found to be increasingly influenced by the multiple. It is suggested that the corporate logic is found to have significant impact upon the socio-natures of the wholesale apple and trading relations within the wholesale market, particularly in the case of the rejected, redirected apple.

Whilst global agri-food supply has been described as placeless and timeless, based upon 'distance and durability' (Friedmann 1993:221), the wholesale market emerges as a place where the temporalities of the apple, particularly post-harvest, may begin to emerge. The Pink Lady® vignette demonstrates the difference in taste of one variety (or in this case, brand) that differs according to age, as well as origin. Whilst the bulk of fruit entering NSM is 'category one', with a less stringent form of quality control enforcement compared to the multiple retailer on site, there can be significant variations within these categories, particularly in terms of age and stage of senescence. Although standards of the wholesale apples sold tend to fall in to class I or class II, a broad spectrum of stages of senescence of apples within these classes. The redirection of rejected apples is thus found to intensify hierarchies of qualities within the wholesale market. Rejected produce is found to be particularly precarious, with degrees of senescence requiring rapid sales. This is leading to more 'on the spot' trading relations within the wholesale market, whilst the produce that is sold is found to be potentially precarious, requiring rapid sales on the high street or market.

The practices of the multiple retailer, particularly via the normative forms of quality control enforced and practices of penalisation and rejection of apples that do not meet the standards specified, is found to have wide-ranging impact beyond the direct realm of the multiple – influencing not only the bio-physical natures of the apple but also the nature of trading relations within the wholesale market and the sites supplied. These hierarchies of qualities are found to impact upon practices of wholesalers, as well as traders and shoppers at markets and sites selling and buying these apples.

The wholesale market emerges as a space of (i) bifurcating qualities; (ii) increasing volatility of certain apples that have been redirected by multiple retailers and subsequent increasing price-focussed trade relations; (iii) marginalisation of the wholesale market from the urban agri-food system. These tendencies are recognised as partly informed by the practices of the corporate logic.

Conclusion: From Apple Varieties to Apple Brands

Multiple retailers emerge as increasingly involved in the practices of production and distribution of apples from orchard to store as well as the management and control of varietal range and standards required. The management strategies outlined above in the form of global information monitoring systems, externally determined production and harvesting regimes, written standard specifications, quality control enforcements and subsequent penalties for not meeting the specified requirements enable multiple retailers to achieve consistency in terms of supply and standards.

There is a notable growth in investment in varieties that are *global* in reach and consistent in *standards* so facilitating a ‘permanent global harvest’ for 52 weeks of the year within stores. Certain club brand varieties such as the Pink Lady®, Jazz™ and other key commodity varieties are recognised as key lines for the retailer as apples that are consistently available throughout the year in standardised form. This is contributing to the *global consolidation, standardisation and privatisation* of varietal range and regimes of apple supply.

The corporate logic is further found to be supporting the rise of the brand. The brand (either club or own brand) emerges as increasingly the basis of communication of qualities created by the multiple retailer. Club brands and ‘own-brand’ ranges emerge as a further means for retailers to manage and control supplies and externalise risk. Shifting consumption beyond *matters* provides the retailer the scope to verticalise and privatise production, manoeuvre produce and further manage consumption patterns. The brand emerges as the next frontier in terms of enabling multiple retailers not only the management of the biophysicality of the apple but furthermore the privatisation and ownership of it.

In recognition of the combined potential value of the British apple market and the profitability of the club brand, corporations are supporting the development of a producing and trading market of club brand apples such as Jazz™, Rubens® and Kanzi® within the UK. These club brands are particularly favoured by multiple retailers in both meeting demand for ‘British’ sourcing within a wider framework of a 52-week supply regime that is globally reaching. This chapter suggests that the increasing investment in

UK production and demand for UK apples by multiples however is found to only reassert the demand for global commodity apples. If the multiple continues to gain power, the apple is set to be increasingly designed and managed by the multiple.

The corporate logic is recognised as resulting in increasing *consolidation* and *privatisation* of the spaces, temporalities, natures and relations of the apple grown within the UK and beyond. Globally harmonised supplies are driven by privately determined expectations of standards and stability in terms of supply. Certain varieties and qualities, in the form of commodity varieties and club brands, emerge as particularly prioritised. With distance, it is suggested that there is less potential for negotiation in terms of qualities accepted and varieties required.

Although UK multiples publicise the diversification of varietal range and expansion of qualities available in terms of British supply, for the most part, British apples remain highly determined by standardised expectations and large set distribution requirements, leading to the consolidation of key commodity and club varieties. Whilst there are slight peaks of diversification during the UK season and ranges of quality within some of the larger format stores, these tend to be the exception. Indeed, the rising number of small format multiple retail stores are found to be consolidating in terms of varietal range and qualities. This is driving demand for a small range of commodity, club brand apples and ‘own-brand’ ranges, further compressing apple varietal diversity and reinforcing hierarchies of qualities and verticalised, privatised ‘brand ecologies’ within and across multiple retail outlets.

The practices of the multiple retailer are found to have further wide-ranging influence upon the spaces, natures and relations of the apple in the UK, as explored in the case of New Spitalfields Market.

Chapter Five: The Agro-Ecological Apple

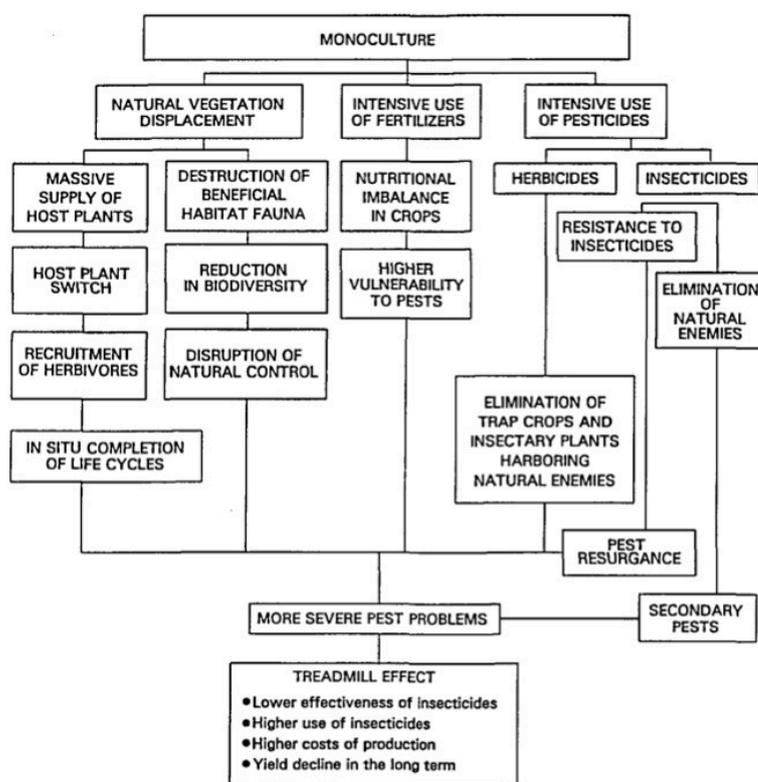
If the corporate apple is found to be consolidating and privatising at a global scale, what of the non-corporate apple? Whilst an increasing extent of control and consolidation of the agri-food sector is to be found when considering the corporate apple logic, it is suggested that direct forms of supply have the potential to support place-based, agro-ecological practices.

Part one of this chapter explores how agro-ecological practices can support productive, diverse, efficient and resilient agro-ecological systems. Part two then considers approaches to diversity, production, reproduction and trade of the agro-ecological apple and the wider communities of practice that may support them. Finally, this chapter explores the various forms of agro-ecological practice that may support the production and distribution of the agro-ecological apple within the context of the UK.

Part One: Agro-ecological Practices

As explored in the previous two chapters, the corporate logic is found to influence and transform the spaces, natures and relations of a widening socio-ecological and political landscape. In the context of the apple consumed in the UK, this logic is supported via (i) the consolidation and privatisation of production; (ii) the contraction of varietal range; and (iii) the standardisation and the branding of produce. In an attempt to increase productivity, the global agro-industrial food complex is leading to loss of agri-biodiversity, acceleration of soil erosion, depletion of soil fertility, diminishing crop nutrition and significant increases in greenhouse gas emissions. The drive to increase yields has led to increasing dependence upon agro-chemical inputs in the form of pesticides, fertilisers and herbicides. In turn, this has led to the depletion of microbial and mycorrhizal life in the soil, the breakdown of nuanced interconnections and interdependencies of the agro-ecosystem and the subsequent ‘lock-in’ to the ‘pesticide treadmill’ (Altieri and Nicholls 2005), as conceptualised in the diagram below.

Fig 5.1. The agro-chemical treadmill



(Altieri and Rosset 1995:167)

The concept of the farm as an integrated system operating in a ‘circular economy’ whereby seed, grain, livestock and fruits and vegetables are grown and reared on site has been progressively fragmented, distorted and stretched into a global industrial ‘value chain’ of food and fuel (Econexus 2013:2). A small number of powerful global agri-industrial corporations control a growing proportion of farming, breeding and trade. This power and influence penetrates not only the sustainability of current production processes and practices, but also the future vitality of crops, as well as the democratic foundation of agri-culture (Shiva 2008; De Schutter 2014). Agro-ecologists propose that the agri-industrial food complex is resulting in the erosion of the production base of the ecosystem as well as the democratic base of agri-culture.

According to Altieri and Nicholls (2005:15) the potential implications of the agri-industrial food complex include:

- The breakdown of *inter-linkages*, beneficial *interrelationships* and *cycles* between crops, soils and animals within and beyond the agricultural system.

- The erosion of *habitats* for beneficial predators leading to the proliferation of crop herbivores and pest outbreaks.
- The loss of *nutrients* of the agricultural system as a result of ‘open loops’ and agri-food chains rather than ‘closed loop’ systems.

(Altieri and Nicholls 2005:15)

The vulnerability of crops to disease, disorder and attack is particularly pronounced when crops extend beyond the ranges and conditions to which they have adapted, increasingly the case as a result of globalised forms of commercial breeding and production (Sperling, Remington, and Haugen 2006), further perpetuating the dependence upon inputs such as pesticides, fertilisers and fungicides.

As well as depleting the health of agro-ecosystems, the replacement of diversified cropping systems to simplified cereal-based systems, spearheaded by the Green Revolutions of the twentieth century, is recognised as a contributing factor to the micronutrient malnutrition witnessed in many developing communities (Demment, Young, and Sensenig 2003). According to Thornton Smith (2009:15), “the narrowing of the range of crops has...meant that part of the broad nutritional base has been lost from local diets the world over.” In contrast, diverse agro-ecosystems are recognised by nutritionists as supporting diversified nutrient outputs (Alloway 2008; De Schutter 2010b). Indeed, the fundamentals of organic farming are based upon “the development and support of health” (De Schutter 2014:5).

Whilst the global-agri-food industry may dominate commodity trade, “the majority of the world’s peasant farmers tend small diversified farming systems which offer promising models for promoting biodiversity, conserving natural resources, sustaining yield without agrochemicals, providing ecological services and remarkable lessons about resiliency in the face of continuous environmental and economic change” (Altieri and Nicholls 2012:7). Today, agro-ecology, in its many forms, is practiced by many of the peasants of the world who constitute nearly half the world’s peoples and produce at least 70% of the world’s food (ETC 2009:3). Indeed, much of the food consumed today in the world is grown from farmer-bred seeds without the use of industrial agrochemicals (*ibid*). However, whilst agro-ecological approaches may form the global majority in terms of production, they account for a marginal proportion of the food produced and traded

within the ‘developed’ world, where food production and distribution are predominantly controlled and managed by global corporate agri-food retailers.

There is growing recognition of the need for more healthy and democratic agri-food systems amongst a number of international organisations including the UNEP, UNHCR, FAO and IAASTD (De Schutter 2014; De Schutter 2010b; De Schutter 2009; UNEP 2009; IAASTD 2008). The support of healthier, sustainable agri-food systems is recognised as particularly crucial within the ‘developed’ world, where depletion of soils and agri-biodiversity, caused by decades of intensive forms of agriculture urgently require regenerative and restorative practices. The following section turns to consider the practice of agro-ecology, recognised as an approach that supports diverse, resilient, efficient and productive agro-ecosystems and potentially healthier, democratic and thus regenerative agri-food systems.

5.1.1. Practices of Agro-ecology

According to Silici (2014), agro-ecology can be understood as having three facets: first, as a *scientific discipline* involving the holistic study of agro-ecosystems. Second, as a set of *principles* and *practices* that aim to enhance the resilience and sustainability of farming systems. Third, as a *movement*.

As a *discipline*, agro-ecology provides basic ‘ecological principles’ for the design and management of agro-ecosystems that are both productive and conserve natural resources, while remaining culturally sensitive, socially just and economically viable (Altieri 2004:444). As a set of *principles and practices*, agro-ecology is based upon the enhancement of ecological processes and beneficial interactions in order to support resilient and efficient farming systems less dependent upon off-site inputs and less prone to external shocks (*ibid*). As a *movement*, agro-ecology is reliant upon community participation and horizontal methods of knowledge exchange (Altieri and Toledo 2011).

Agro-ecology encompasses a range of practices including organics, biodynamics, permaculture and agroforestry as well as a wide-range of traditional farming approaches. Whilst agro-ecological practices are globally *diverse*, they are considered *convergent* in terms of the principles upon which they operate. This includes: (i) context-dependent soil, water and biodiversity management regimes; and (ii) maintaining and enhancing agri-

biodiversity (Koohafkan and Altieri 2010). According to Gliessman (1998:2), agro-ecological approaches share the common vision whereby the practice “maintains the resource base upon which it depends.” Gliessman (1998b) suggests agro-ecology practices are united by the principles of the design of diverse, resilient, productive and efficient systems. Part one considers these guiding principles in turn.

Sustaining Productivity

The agro-ecological approach views the system as a food web rather than a food chain, whereby all elements, cycles and processes within the system are implicitly interrelated, interconnected and interdependent of one another, as demonstrated in the diagram below:

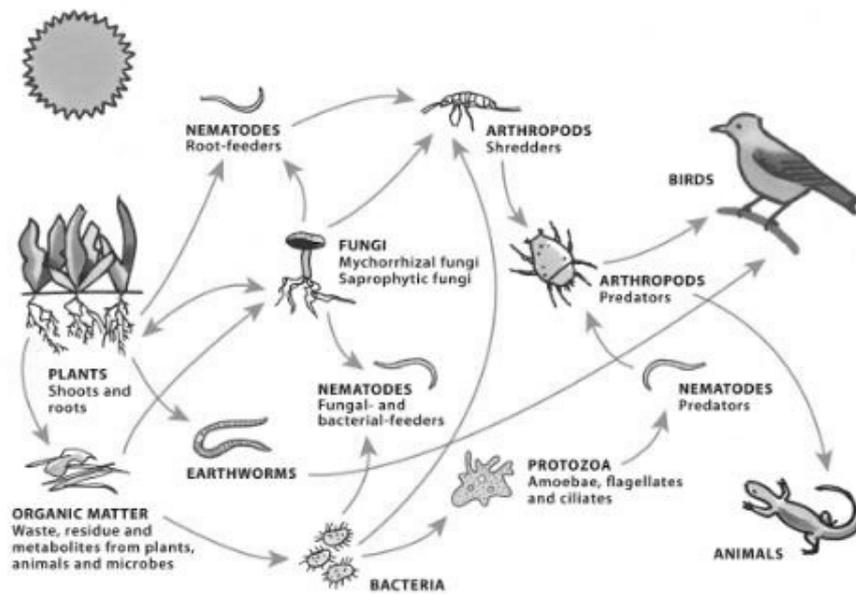
Fig.5.2. Food webs of the agro-ecosystem



(Altieri 1988:13)

A healthy agro-ecological system hinges upon a healthy soil life. This is achieved through enhancing soil microbial and mycorrhizal activity and optimising fertility and health supporting cycles. Ecological interactions and interdependencies are supported by above and below ground biodiversity, leading to more efficient use of resources and nutrient cycling and regulation of pest populations (Altieri and Rosset 1996). The diagram below indicates a simplified version of some of the key components of a healthy soil food web.

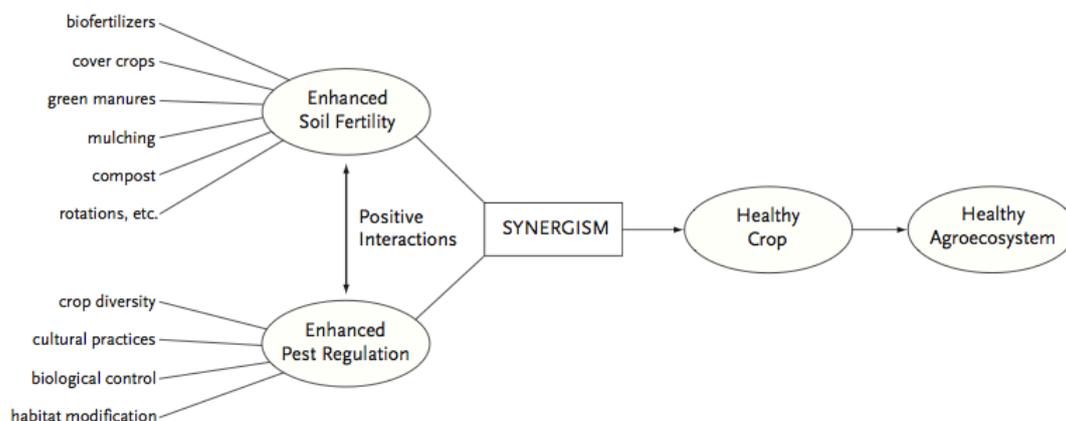
Fig. 5.3. The Soil Food Web



(AgriCulturesNetwork 2014)

The ‘integrity’ of the agro-ecosystem relies on “synergies of plant diversity and the continuing function of the soil microbial community supported by a soil rich in organic matter” (Altieri, Ponti, and Nicholls 2005:33). The diagram below illustrates what Altieri, Ponti and Nicholls (2005:33) describe as the ‘synergism’ between soil fertility management and enhanced pest management, resulting in healthy crops and agro-ecosystems.

Fig. 5.4. Soil fertility management and integrated pest management synergies



(Altieri, Ponti and Nicholls 2005:33)

As the diagram above indicates, plant nutrition is optimized by healthy soil food webs. According to Altieri, Ponti and Nicholls (2005:33), the plant could thus be considered a ‘connector’, functioning as an “integrator of the above ground and below ground components of agro-ecosystems, which are otherwise largely spatially separated.” Practices to enhance and optimise agro-ecosystem health and productivity may include: crop rotations; polycultures; agroforestry systems; crop-livestock grazing; cover crops and mulching (Altieri 2004:447). In contrast, the application of agro-chemicals threaten the diversity of organisms in soil (Blum 2008:9) and breakdown of these synergies.

Supporting Efficiency

Agro-ecology has been described as an ‘agriculture of *processes*’ (Altieri 2012:7). In a healthy agro-ecological system, “ecological interactions and synergism between biological components provide the mechanisms for the systems for their own soil fertility, productivity and crop protection” (Altieri 2004:444). As Altieri (2012:7) explains “agro-ecological systems are not intensive in the use of capital, labor, or chemical inputs, but rather rely on the support of *biological processes* such as photosynthesis, nitrogen fixation, solubilization of soil phosphorus, and the enhancement of biological activity above and below ground.”

As a practice, agro-ecology is based upon the support of *cycles* rather than *inputs*. The inter-connection of energy cycles and processes within the agro-ecosystem minimises energy loss, enhances feedback loops and optimises efficiency, productivity and resilience of the system. Various components of the agro-ecosystem act as ‘ecological turntables’, supporting key functions that include nutrient recycling and pest regulation (Altieri 2012:7).

Immune, metabolic and regulatory processes are considered key for a healthy and thus efficient functioning agro-ecosystem. This includes (i) the strengthening of immune systems through biological pest control, targeted planting of pest antagonists and allelopaths and selection of pest and disease resistant varieties; (ii) the optimising of metabolic functions through the support of nutrient cycles and practices such as composting, mixed grazing and green manures; and, (iii) the balancing of regulatory

systems through supporting agricultural biodiversity and polycultures *in situ* and in the surrounding area (Altieri 2004).

Whilst agro-ecological approaches may require a lot of labour in the early stages, they aim to be labour saving in the long-term and supportive of system resilience. On-farm fertility or locally-sourced fertility building supports the resilience of the farmers and communities (Altieri and Nicholls 2005). In contrast, the geographical separation of production practices as well as the distancing of production and consumption has led to the loss of potential fertility input such as livestock manure and green waste and subsequent diminishing site resilience.

Enhancing Diversity

The health of agro-ecosystems are recognised as supported by diverse systems (Gliessman 1998b). Plant diversity for example supports abundance and diversity of predators and parasitoids (Pretty 2005:195). The interactions between species and resources enhance the long-term sustainability of the agro-ecosystem, leading to greater resilience of the farm system and wider food system. As diversity develops over time and through space, cycles become interconnected and the system and processes increasingly self-maintaining. A diverse range of crops and practices is thought to further support the resilience of the producer and community both *in situ* and beyond (Altieri 2004:446).

In-situ Resilience

The support of healthy, efficient, functioning processes and diversity *in situ*, combined with the reduced necessity for external inputs, promotes resilience of an agro-ecosystem. According to Altieri, Funes and Peterson (2012:4), diversified traditional farming agro-ecosystems represent “models of sustainability as they promote biodiversity, thrive without agro-chemicals, and sustain year-round yields in the midst of socioeconomic upheavals and environmental variability.” Traditional agro-ecological techniques such as green manures, crop rotations and the incorporation of mulch as well as bunds, terraces, barriers, ditches, for example, have been found to support top-soil and higher field moisture and reduce susceptibility to landslides, erosion compared to control plots on conventional farms (Holt-Giménez 2002).

Agro-ecological systems are recognised as not only supportive of *in situ* localised resilience but are further supportive of wider planetary health. Agro-ecological practices tend to support lower greenhouse gas emissions and in some cases, have been found to actively build carbon into the soil (De Schutter 2011). In contrast, inputs in the form of chemical fertiliser and fossil fuels are recognised as drains of energy and sources of greenhouse gas emissions. Indeed, within the agriculture sector, insecticides, herbicides and irrigation have been found to use the most amount of energy (Kehagias et al. 2015:4), whilst fertilisers and fuel are considered the biggest agricultural contributors to global warming (Smith et al. 2014; Ceschia et al. 2010).

Agro-ecological systems are recognised as offering hopeful possibilities for uncertain futures (Altieri and Nicholls 2012:9), where more resilient and regenerative agri-food systems are urgently required (IAASTD 2008; UNEP 2009; FAO 2010; De Schutter 2014). According to Koohafkan and Altieri (2010) and Altieri, Funes-Monzote and Peterson (2012:12) it is thus “crucial to preserve and rescue the ecological and cultural foundations of these systems, including the wealth and breadth of accumulated knowledge and experience in the management and use of agro-biodiversity and soil-water resources”. The support of research, innovation and extension of agro-ecological practices amongst farming communities is thus considered key (Holt-Giménez 2002; Francis et al. 2003; Pimbert 2006). Having considered the underlying principles that underpin the practices of agro-ecology and the relevance of agro-ecological practices in the context of regenerative agri-food systems, Part two of this chapter considers agro-ecological practices in the context of the apple.

Part Two: Agro-ecological Practices of the Apple

This section considers the cultivation of the apple, according to the principles and practices of agro-ecology. First, within an agro-ecological system, the orchard is recognised as constituting only an element of a wider integrated agro-ecological system. Second, the support of the agri-biodiverse apple is recognised as critical within an agro-ecological system. Third, place-based practices of reproduction as well as production are considered critical components of a resilient agro-ecological practice. Fourth, agro-ecological practices are recognised as dependent upon supportive socio-cultures or ‘communities of practice’. In conclusion, the agro-ecological apples, orchards and agri-cultures are identified as potential ‘connectors’ to healthier, regenerative agri-food systems.

Healthy Yields, Multiple Yields

Whilst agri-industrial production tends to focus upon *maximising* yield and profit, agro-ecological approaches are based upon the *optimising* of processes. Although specific yields per crop per acre may not be as high on agro-ecological sites, there is evidence to suggest that yields and agro-ecosystems are healthier. As Thornton-Smith (2009:23) explains “growth rates and yields are commonly reported as higher using chemicals ...yet it makes little sense boosting plant growth if the result is increased pest attack, post-harvest losses and a polluted environment.”

The intensification of production has been partly driven by the food security agenda. According to Waage et al. (2011:64), “crop development strategies have focused on quantity (cheap energy production) rather than on producing inexpensive foods that present a healthy balance of macro- and micronutrients.” This approach overlooks the ‘health’ of the system (*ibid*). Waage et al. (2011) notes for example that there is little consideration of the health implications of agricultural developments, particularly with regards to the development of national agricultural policies. Yet, there is a growing body of evidence providing evidence of the ill-health and the extent of depletion of soil and nutrition of the global industrial food system, including the depletion of trace minerals in food (Mayer 1997; Bergner 1997), and the link between pesticide exposure and ill-health, particularly as a result of chronic exposure to endocrine disrupting pesticides (EDCs) (Blair and Zahm 1995; Zahm et al. 1993; De Roos et al. 2005). Chronic exposure to

EDCs has for example been linked to “skewed sex ratios within the offspring of exposed communities, male and female reproductive tract abnormalities, precocious puberty, polycystic ovary syndrome, neuro-behavioural disorders, impaired immune function and a wide variety of cancers” (McKinlay et al. 2008:168).

In contrast, a range of studies indicate that agro-ecological and organic production can support more nutrient-rich crops and soils (Kolbe and Zhang 1995; Mader et al. 1993; Abele 1987; Schuphan 1974). Organic crops have been found to particularly higher in phytonutrients (Brandt and Mølgaard 2001; Weibel et al. 2000; Hamouz et al. 1999; Hogstad, Risvik, and Steinsholt 1997; Pither and Hall 1990). As well as potentially lower in nutrients and potential toxins, a number of studies suggest water content tends to be higher in conventionally grown crops compared with those grown in organic systems. This can lead to larger, heavier crops which may give greater yield in terms of weight and volume but are found to have lower nutrient ratio compared to smaller, more nutrient dense organically produced crops (Mader et al. 1993; Abele 1987; Schuphan 1974).

Determining and assessing productivity according to specific crop yields can be further misleading within diverse agro-ecological systems. Per unit of area of cultivated land, small-scale farms often emerge as more productive than large mono-cropping farms. Furthermore, agro-ecological sites tend to be more efficient per unit of energy utilized, leading to less input requirement and less energy expenditure. In a study by Ziesemer (2007:23) organic agriculture was found to use 30 to 50 % less energy in production than comparable non-organic agriculture. According to one study of organic versus conventional methods across 34 crop species, organic yields were found to be overall lower than conventional ones (Seufert, Ramankutty, and Foley 2012:229). However, this yield difference was found to be significantly varied depending upon specific conditions. The authors of the study thus conclude, “when farmers apply best management practices, organic systems...perform relatively better” (*ibid*). It is recognised as extremely difficult to make generalized comparisons between agro-ecological practices since the practices are context-dependent (Koochafkan and Altieri 2010) and necessarily dynamic (Altieri 2012:7). Silici (2014:15) states, agro-ecology “differs from conventional farming because its primary aim is sustainability (not productivity) and because its scope encompasses the agro-ecosystem (going far beyond the individual farm).” From an agro-ecological approach, productivity refers to the whole system. Subsequently, according to Silici (2014), at *policy* and *planning* level, there needs to be a shift from focus upon total factor

productivity towards optimising rather than maximising production.

As Friedmann (2005) notes, agriculture involves a relationship between society, nature and the bodily basis of human development. Maximizing production can lead to the depletion of the health of soils, crops and wider communities – ultimately diminishing the cultural basis of the practice. In contrast, optimising the health of the agro-ecological system can optimize the health of the crops harvested as well as those consuming them.

Within an agro-ecological system, the apple is recognised as only one of the diverse outcomes derived from the system. Whilst high yields are not the primary motive, they can be an outcome. More important than single crop yield per area is the support and enhancement of a healthy and resilient agro-ecosystem. The agro-ecological orchard emerges as part of an integrated and interconnected system focused upon optimising agricultural *health* rather than maximizing *yield*.

Agri-biodiversity of the Apple

Agri-biodiversity is defined as “that part of biodiversity that feeds and nurtures people - whether it is derived from the genetic resources of plants, animals, fish or forests” (Shand 1997:1). By the turn of the twenty-first century, thirty crops were providing 95% of human food energy needs, four of which (rice, wheat, maize and potatoes) were accounting for more than 60% of energy intake (FAO 2015). While approximately 150 plant species are cultivated globally as food crops, over 5,000 plant species have been domesticated and grown as food crops (ETC 2009:10). Meanwhile, there are an estimated 10-50,000 potentially edible plant species in the world (FAO 1993). Agri-biodiversity is not only threatened with marginalisation - it is further threatened with compounded levels of extinction. Globally, crop genetic resources are estimated to being lost at a rate of 1-2% per annum (Shand 1997). Pretty (1999:67-68) estimates that there has been an estimated 80-90% loss of fruit and vegetable varieties over the last century within the US.

This decline in agri-biodiversity is found to be of particular pertinence with the case of the apple. Globally, there are thought to be over 7,500 varieties of apples (although Juniper and Mabberley suggest that the global figure is more likely to be around 20,000)

(2006:50).¹⁴ Within the UK, it is estimated that there are over 2,300 varieties (Morgan, Richards, and Dowle 2002). Over the last century, there has been a significant decline in apple varieties. Many varieties have either been lost, forgotten or marginalised (Nabhan 2010). According to Pretty (1999:67-68), in the US an estimated 6,121 apple varieties have been lost in the twentieth century (an 85% loss). By the turn of the twentieth century, two varieties accounted for over 50% of the entire US crop (Shand 2000:11). A landscape of marginalized and diminishing agri-biodiversity emerges in the case of the apple.

In a study of the ancestry of popular commercial varieties of apples conducted by an apple breeder (Bannier 2011), the majority were found to be derived from a few apple cultivars. “By far the most common used ‘ancestor variety’ for breeding is Golden Delicious (347 times crossed into a total of 255 of the examined 500 varieties), followed by McIntosh (252 times cross-bred into 174 varieties), Jonathan (167 times crossed into 154 varieties) and Cox Orange (157 times crossed into 150 varieties)” (*ibid*). This is of significance not only in terms of agri-biodiversity but also in terms of IPM since the variety determines the need for inputs such as fertilizers, pesticides and irrigation (Shand 1993; Trapman and Jansonius 2008; Balint et al. 2013).

As explored in Chapters three and four, the global apple economy, dominated by a consolidating number of globally powerful corporations and consortiums is compressing apple agri-biodiversity. Meanwhile, there emerges a growing brand ecology of private apple cultivars, based upon a narrowing genetic range. Whilst previously diverse pools of genetic diversity were managed by farming communities, plant breeding, as well as production, has been transformed into a global economy. This has led to focus amongst the commercial breeding sectors upon those crop varieties and cultivars that demonstrate high yields, pest and disease resistance, uniformity and stability. Globalisation of trade has further intensified the drive for durable apples that have a long shelf-life and can be handled well in mechanised grading and packing systems, leading to further marginalisation of many apple varieties not suited for global big-set distributions.

Although concentration of varietal range and intensification of production is recognised as a beneficial process for global agri-businesses, as discussed in Part one, diversification

¹⁴ This diversity is due in part to the genetic heterozygosity of the apple. Baker (in Palter 2002:9) explains “because of its complex parentage, and the wealth of genetic material within its make-up, the apple shows more variability in its progeny than any other fruit.”

is considered a key survival strategy for agro-ecological systems and small-scale producers (Gliessman 1998b; Altieri, Ponti, and Nicholls 2005). According to Nabhan (2010), there are a number of ways that apple agri-biodiversity may be sustained and supported:

- *Orchards and apple trees:* the support and protection of new and existing orchards particularly old orchards and historic farms and gardens are recognised as sites of diverse apple varieties. In orchards that cannot be saved and trees that are ageing, Nabhan (2010:24) encourages taking scions for grafting.
- *Nurseries:* independent nurseries can support the provision of stock of diverse apple varieties;
- *Distribution platforms:* direct forms of sales including CSAs, farmers markets and box-schemes are recognised as potentially supportive of agri-biodiversity.

Small-scale agro-ecological farms and farming communities are recognised as potential hubs of ecological diversity of flora and fauna, including varietal diversity in terms of apple varieties and cultures (Saltmarsh, Meldrum, and Longhurst 2011). Forms of decentralised, distributed trade are recognised as further supportive of agro-ecological practice, as are distributed, community-based forms of breeding and training.

As well as production, breeding and distribution, apple agri-cultural literacy is recognised as a critical component in the support of apple agri-biodiversity. This includes:

- *Education and training* around grafting, pruning, identification and cultivation as well as processing supports the development of practices of apple agri-cultures;
- *Mapping and documentation* of apple varieties and orchards and recording of practices in order to develop a living archive of apple agri-cultures;
- *Knowledge exchange and celebration:* schools, nurseries, historical societies, parks and botanical gardens and other community organisations supports literacy around apple agri-cultures;
- *Networks:* regional and community orchard groups, seed saver networks and a range of socio-ecological organisations are recognised as platforms supporting education and engagement around apple agri-cultures.

(Nabhan 2010)

According to Nabhan (2010:23) “we are not merely concerned about saving apple genes for future plant breeders; if that were our goal, we would simply sample apple rootstocks, seeds and shoots, culture them in test tubes, and not care whether the trees themselves persisted in orchards or the flavours reached our tables. Instead, we are talking about renewing apple culture.” Nabhan (2010:23) thus argues agri-biodiversity ultimately hinges upon sustaining agri-cultures. The following section considers the spaces, natures and relations of the agri-cultures of agro-ecological apple reproduction.

Breeding Cultures

As explored in Chapters three and four, the global apple economy has become increasingly dominated by a narrowing range of varieties. Driven by the demand for uniform, stable (and branded) crops that are available in large volumes throughout the year, the corporate global agri-food logic is supporting a breeding agenda based upon the research and design of a narrow range of global ‘commodity’ varieties and ‘brands’. This is not only narrowing genetic diversity but further commodifying and privatising it. Rather than breeding for *in situ* resilience, this is a form of breeding for the accumulation of capital.

According to De Schutter (2010), resilience of the agro-ecosystem and agri-cultural communities is challenged by the privatization of plant and seed breeding. Fragmentation and privatisation of plant and seed breeding diminishes growers’ ability to reproduce or breed seed or plants *in situ*, traditionally a key component of a growers’ revenue stream and form of local resilience through varietal adaptation to specific localities. Rather than the saving, exchange and sales of plant cultivars and seeds through farmer-to-farmer exchange systems, the international commercial plant and seed breeding system marginalises breeding as a farmer-led farm-based practice. This leads to a subsequent de-skilling of growers from participating in breeding and seed saving, whilst giving further “monopoly privileges to plant breeders and patent-holders through the tools of intellectual property” (De Schutter 2009:2). These ‘monopoly privileges’ can place farmers in a double jeopardy, depleting locally attuned forms of agro-biodiversity developed over time, upon which the agro-ecosystem’s resilience and productivity so often depend; whilst further diminishing *in situ* seed-saving and plant breeding systems and skills, enforcing producers to participate in forms of breeding trade.

Plant and seed breeding is becoming an increasingly *ex situ* global agri-business, fragmenting and privatising regional and indigenous breeding cultures whilst eroding agro-biodiversity. The preference for certain varieties favoured by agri-food suppliers and multiple retailers leads to heightened monocultural planting rather than “a patchwork quilt of many different varieties planted on the same farm” (Altieri and Nicholls 2005:16). According to Altieri and Nicholls (2005:15) “commercial farmers witness a constant parade of new crop varieties as varietal replacement due to biotic stresses and market changes has accelerated to unprecedented levels. A cultivar with improved disease or insect resistance makes a debut, performs well for a few years (typically 5-9 years) and is then succeeded by another variety when yields begin to slip, productivity is threatened, or a more promising cultivar becomes available. A variety’s trajectory is characterized by a take-off phase when it is adopted by farmers, a middle stage when the planted area stabilizes and finally a retraction of its acreage.”

Whilst concentration of varietal range is beneficial for global agri-business managing big-set distributions, diversity and variability are key for small-scale farmers (Via Campesina 2013:1). Trapman and Jansonius (2008:16) suggest “by choosing the apple variety, the grower determines to a large extent the disease management...” The selection of cultivars appropriate for the climatic area can reduce the need for pesticide inputs. In New Zealand for example, an estimated 50% of total chemical costs of apple production are spent on managing scab (MacHardy 2000:801). Scab resistant cultivars could significantly reduce fungicide applications and ecological implications. The breeding of cultivars suited to the local context via forms of *in situ* breeding are considered key for small-scale producers, particularly those with an agro-ecological approach. Old and traditional apple cultivars have been recognized as potential sources of pest and disease resistance and means of significantly reducing pesticide inputs (Balint et al. 2013; Prokopy 2003). According to Balint et al. (2013:242), old apple cultivars “sustained in their original regions could be a significant source of genes for apple breeding programs”. In contrast, single varietal planting can make the farmer vulnerable to climatic flux, pest or pathogen outbreak and longer-term changes, particularly in more challenging terrains.

As well as supporting agri-biodiversity and socio-cultural diversity, the reproduction as well as production of plants and seeds is considered a crucial farmers’ right. As outlined in the International Treaty on Plant Genetic resources for Food and Agriculture (FAO 2009), conserving, improving and supporting breeding is recognised as an essential

element of a farmers' right. As outlined below, there are a number of supportive mechanisms that may support diversity and variability *in situ*, including the protection of breeding rights, the support of participatory breeding and the support of training and research, development and documentation around breeding.

Protection of breeding rights

- protection of the right to freely breed and produce, save and exchange, share or sell plants and seeds and the right to gift or exchange of seed of any variety, or its placing on the market
- prevention of further erosion of plant breeders' rights;

Participatory breeding

- support of local/regional/national participatory plant breeding programs
- support of seed and variety saving organisations, plant breeders and seed savers;
- support of global networks of research, knowledge exchange and training around plant breeding; varietal nutrition and quality assessment methods.

Training

- public education and training opportunities around plant breeding and seed saving techniques and systems;

Documentation

- support of protected collections of community-led plant and seed banks and libraries and digital collections of ecologies and cultures around agri-biodiversity;

Distribution and Supply

- the support of local or regionalized, decentralized economies and distribution outlets that supply trees, fruits and open source propagating material.

[Drawing upon Buiatti et al. (2013) and Bloksma et al. (2001)]

Agro-ecological practices supporting place-based systems of reproduction as well as production thus emerge as supportive of agri-biodiversity, agri-cultures and indeed the democratic rights of agri-cultural communities.

Agro-ecological Agri-cultures

According to Gliessman (1998b:318), “recognising the influence of social, economic, cultural, and political factors on agriculture, we must eventually shift our focus from the sustainability of agro-ecosystems to the sustainability of our food systems”. Agricultural systems, he notes, are a result of “the coevolution that occurs between culture and environment” (Gliessman 1998b:324). It follows that “...a sustainable agriculture values the *human* as well as the *ecological* components of food production, and recognizes their linkages and interdependencies” (*ibid*).

Silici (2014) and Wibbelmann et al. (2013) emphasise the importance of considering agro-ecology in its broadest terms. According to Silici (2014:11), “if one accepts that sustainable agro-ecological systems encompass not only environmental, but also socio-economic sustainability, agro-ecological approaches should be concerned with issues such as equity, the preservation of indigenous knowledge, food sovereignty and the sustainability of local food systems.” It is thus recognised that “ecological change in agriculture cannot be promoted without comparable change in the social, political, cultural and economic arenas” (Altieri and Nicholls 2012:24). In an agro-ecological system, the support of agricultural biodiversity is recognised as mutually dependent upon the support of socio-cultural diversity (Altieri and Nicholls 2003:28) and democracy (Buiatti et al. 2013).

As explored in Chapters three and four, current corporate powers are transforming the socio-ecological and political landscapes of global agri-food systems. “Characterised by the monopoly market power of agri-food corporations” (Holt-Giménez et al. 2012:317), the corporate logic is found to be depleting agri-culture as well as agribiodiversity. Yet Holt-Giménez et al. (2011:323) suggests globalisation can support agro-ecology “if it is used to promote and support local control of land, the use of local knowledge, direct human involvement in agricultural production, and economic independence.” Blay-Palmer, Sonnino and Custot (2015) draw upon the notion of ‘communities of practice’, suggesting that connecting and integrating a network of sustainable agri-food systems can enhance resilience and bring about broader food system transformation without compromising the foundational motivational principles of sustainable, local food. Agro-ecology emerges as a politics of practice that, whilst place-based, has the potential to transcend the limitations of the local.

Whilst agro-ecological practices are globally diverse in terms of context-dependent management regimes, they converge in terms of principles (Koochafkan and Altieri 2010). All share a practice that aims to “maintain the resource base upon which it depends” (Gliessman 1998a:2). According to Goodman, DuPuis and Goodman (2012:32), a ‘politics of practice’ could enable amalgamation of agro-ecological practice. Whilst recognising difference, a politics of practice comes together as a community through diverse, dynamic yet *shared* practice. The final section of Part two considers potential distribution mechanisms recognised as supportive of agro-ecological practice. Whilst place-based, they may connect beyond place through ‘communities of practice’.

Communities of Practice

As discussed in Chapter one, SFSCs and various direct forms of supply are considered potentially supportive mechanisms for agro-ecological practices and agri-cultures. Direct forms of supply include farmers’ markets, farm shops¹⁵, box schemes and home delivery and various forms of community-supported agriculture (CSA). These forms of supply tend to be based upon the provision of seasonal, often organically produced food that is locally sourced. Producer-led, community-supported forms of supply such as farmers’ markets, box-schemes and CSAs are considered particularly supportive mechanisms for small-scale organic and biodynamic growers (Saltmarsh, Meldrum, and Longhurst 2011). Direct forms of supply are recognised to potentially support agro-ecological practice in the following ways:

Supporting agri-biodiversity: As decentralised and horizontal forms of distribution, direct forms of supply can facilitate the exchange of smaller volumes of a wider range of crops, varieties and qualities found to predominate integrated agro-ecological systems.

Supporting agro-ecological practices: In enabling the exchange of smaller volumes of diverse crops of a wider range of variety and quality, direct forms of supply are recognised as supportive of more agro-ecological forms of pest and disease management.

¹⁵ According to DEFRA (2013), “Farm shops and farmers’ markets allow farmers the opportunity to directly sell food and other produce to the general public. This direct form of selling is beneficial to both the farmer and the consumer as it increases profit margins while offering locally produced fresh foods.”

Supporting place-based practices: In enabling the exchange of smaller volumes of diverse crops of a wider range of variety and quality, direct forms of supply are further recognised as supportive of seasonal, locally distinct supply, enabling greater alignment with the rhythms and cycles of the seasons of the locality and localised climates.

Supporting producer livelihoods: Direct forms of supply can offer a more financially rewarding alternative to wholesale distribution or multiple retail supply, particularly for those small-scale agro-ecological producers following organic and biodynamic methods who may tend to have smaller volumes of diverse produce of a wide-range of variety and quality. Producer-led and community-supported forms of direct supply are recognised as particularly supportive of producer autonomy regarding determination of varieties of crops grown, production and harvesting practices and volumes, varieties and qualities sold. As well as flexibility, producer-consumer alliances foster commitment to specific producers. This can support the resilience of the agro-ecological system and producer livelihood, particularly during periods where there are gluts or shortages of supply caused for example by pest, disease or meteorological damage. As discussed in Chapter one, community-supported forms of supply are particularly recognised as mechanisms whereby the risks of production are shared amongst producers and consumers, potentially providing more stable and secure income for small-scale agro-ecological producers.

Supporting agro-ecological communities: As well as supporting agro-ecosystems and producers, more direct and distributed forms of supply are recognised as regenerative to local communities. Dense, diverse local economic ventures have been found to have a multiplying effect within the local economy (Cranbrook 2002). According to one study by Sacks (2002:viii) “income into organic food box schemes generates about twice as much for the local economy as supermarkets.” Agro-ecological practices are recognised as supportive of health (De Schutter 2014:5). Distribution mechanisms supportive of agro-ecological practices are thus recognised as supportive of healthier, potentially more nutritious foods (Alloway 2008).

Direct forms of supply are recognised as potential means of countering the hegemonic tendencies of the corporate agri-food logic and a means of supporting place-based, small-scale, agro-ecological agricultural practices, more distributed, horizontal economies and, ultimately, healthier communities.

Having considered the guiding principles and practices of agro-ecology, Part three considers the practices of agro-ecological apple production and distribution within the UK. It presents four agro-ecological approaches to the production of the apple. It then considers direct forms of supply as potentially supportive mechanisms of supply of agro-ecological approaches.

Part Three: Communities of Agro-ecological Practice

Agro-ecological fruit production encompasses a range of practices that include organic, biodynamic, traditional and agroforestry approaches. This section presents some of the agro-ecological approaches taking place within the UK. It then considers a range of supply and trade mechanisms potentially supportive of these forms of agro-ecological production.

5.3.1. Agro-ecological Production

Traditional Orchards

A traditional orchard is considered a “group of fruit and nut trees planted on vigorous rootstocks at low densities in permanent grassland...managed in a low intensity way (meaning that they are managed with little or no use of chemicals such as pesticides or inorganic fertilisers)” (Burrough, Oram, and Oines 2011:3). According to Burrough, Oram and Oines (2011:4), the minimum size of a traditional orchard is “five trees with crown edges less than 20m apart”. Whilst size and age of trees and planting density can vary widely, planting density tends to be less than 150 trees per hectare with spacing of approximately 8m between the trees. Large trees are the norm and they tend to be planted on M25 rootstock (Marsden 1999:6). Traditional orchards tend to be planted with a longer timeframe compared to intensive bush form orchards, which tend to have an age of between ten to fifteen years.

Traditional orchards, particularly those managed traditionally and with an IPM or organic approach, are recognised as valuable habitats for a diverse range of wild life including small mammals, invertebrates, lichens and plants (Burrough, Oram, and Oines 2011). Older trees and larger tree canopies particularly provide habitats for invertebrates, birds and other beneficial predators and parasitoids whilst hedges, walls and surrounding woodland provide further shelter and habitat for a wider range of flora and fauna. Traditional orchards further tend to be situated within wider heterogeneous landscape mosaics recognised as supportive of biodiversity. In contrast to intensive commercial orchards, traditional orchards tend to rely upon the support of natural predators and a range of early to late fruiting varieties, reducing the risk of total crop loss which may be caused by specific pest, disease or climatic disruption. Codling moth and apple sawfly for

example may be present but are not in high numbers (*ibid*). Traditional orchards are thus considered sites of where “the balance between pests and predators is respected and the pest issues less of a problem” (Decouzon 2011:13).

Many traditional orchards integrate the grazing of animals, a practice dating back centuries (Parrett 2010). Often planted in meadows, as the trees matured, livestock were grazed under the canopies as part of an integrated farming system. Grazing regimes, particularly in spring and early summer months can reduce the susceptibility of fruit trees to a number of pests and diseases. According to Decouzon (2011:15) “having animals in the orchards seems to create a balance between trees and soil and fauna. Sheep presence would bring manure (fertilizer) and urine (nitrogen). As a result, there would be an increase of the number of micro-organisms and thus, an acceleration of the process of decomposition of leaves. In addition, the standing of sheep on leaves would improve leaves decomposition.” Contaminated apples are considered one of the causes of the spread of codling moth and other insect pests and the grazing of apples can reduce the susceptibility and spread of pests (Decouzon 2011). Fallen apple leaves are further recognised as one vector of apple scab and it is thought that the acceleration of leaf degradation through sheep trampling can decrease transmission of apple scab. The action of livestock grazing can thus reduce the need for herbicide, insecticide and fungicide spray regimes whilst supporting soil fertility. Livestock systems can also provide an additional income with the sales of meat and wool.

Integrated livestock grazing within orchards however has become a less common practice since spray regimes and the agro-chemicals used predominantly in modern intensive orchards can pose a danger to the health of grazing livestock. Within intensive plantations of small rootstock trees, there is less open space for sheep to graze. Livestock can also cause damage to the smaller trees with leaf loss impacting upon tree nutrition (Geddes 2012).

There are an estimated 25,350ha of traditional orchards across England and Wales (Burrough, Oram, and Oines 2011:1). Whilst the main crop within traditional orchards is apples (14,500ha), many traditional orchards often have a mixture of fruit trees including pear, apple, plum, medlar, cobnuts and cherry. It is estimated that 95% of the traditional orchards have been lost during the twentieth century, either grubbed or replaced with more intensive forms of orchard planting (Common Ground 2000:32). Many of the

traditional orchards that remain are very old as a result of the significant decline of the planting of orchards in the traditional style in recent times (Robertson and Wedge 2008:113), with some trees surpassing one hundred years.

Whilst traditional orchards and forms of integrated livestock grazing remain a minority in the landscape of UK apple production, the practices and approaches of the traditional orchard have certainly informed that of organic, biodynamic and agroforestry systems.

Organic Orchards

The FAO/WHO Codex Alimentarius guidelines for organic food define organic agriculture as “a holistic production management system which promotes and enhances agro-ecosystem health, including biodiversity, biological cycles, and soil biological activity. The primary goal of organic agriculture is to optimize the health and productivity of interdependent communities of soil life, plants, animals and people” (FAO/WHO 1999). Organic top-fruit production combines traditional techniques with modern technologies, whilst attempting to minimize external inputs. Synthetic pesticides or fertilizers are not permitted although mineral fungicides and biological forms of pesticides and insecticides are permitted where necessary.

Forms of ecological pest management are prioritised as well as forms of defense including grease bands and netting, certain biological controls including pheromone disruptors, biological pest control, granulose virus preparations, sticky fly traps (Soil Association 2013). A number of fungicides, insecticides and biocontrols are permitted according to EU Regulations although no herbicides are permitted for use [see appendix 5.1. for Soil Association guidelines regarding organic orchard practices].

Organic orchards can take a range of forms, from traditional orchard styles of planting to more intensive forms of planting with dwarfing rootstocks, irrigation systems and densities of 2,500-3,000 trees per ha. The planting of herbage, hedgerows and windbreaks, weed strips, cover crops and the experimentation with volatile and aromatic crops are amongst the practices advocated within organic orchards. As Kienzle et al., (2008) state, “the ‘ideal’ organic orchard provides not only fruit without the application of synthetic pesticides or herbicides but it is also an important contribution to ecology.” Practices are less determined by yield and standard specification, more about the principles of enhancing the health of the soil, tree, agro-ecological system and wider

environment.

There are approximately 2,053 ha of organic fruit and nut orchards within the UK (DEFRA 2015:6). A study by Firth (2005:8) suggests there are an estimated 20 growers specialising in organic top fruit. Most of those registered as eating apple producers grow apples alongside other crops or livestock (*ibid*). There are a further number of non-certified growers who use organic growing methods but may not be certified.

Biodynamic Orchards

Both organic and biodynamic practices are based upon the support of healthy socio-ecological environments and communities. Biodynamics differs from organics in that it moves beyond substituting chemical fertilizer inputs for organic matter. According to the UK Biodynamic Association (BDA 2014a) “biodynamic agriculture considers both the material and spiritual context of food production and works with cosmic as well as terrestrial influences.” Thornton-Smith (2009:26) describes the task of biodynamics “to strengthen connections between plant life and cosmic forces.” Two key practices differentiate biodynamics from organic approaches: (i) the application of a number of prescribed field and compost preparations; (ii) cultivation that is guided by the astronomical calendar (BDA 2014a).

The biodynamic approach to fruit growing is based upon a long-term approach to orchard planning which includes careful planning and design, selection of organic trees and pest and disease resistant varieties (Bloksma et al. 2001:25). According to Bloksma et al. (2001:29) “organic fruit growers can only work within a very limited number of natural crop protection products, such as sulphur and botanical extracts. Even fewer methods are available to biodynamic growers. Consequently, biodynamic fruit yield and (external) quality may vary considerably between years.” Input in the form of pesticides or fertilisers is avoided wherever possible. For example, the “use of copper or sulphur to control pests or disease in crops is only permitted if derogation is obtained from the Certification Officer prior to use. Derogation for use of copper will only be given for perennial crops or to treat blight in potatoes” (BDA 2013:12). Some non-toxic plant extractions are also permitted as pesticides.

Within biodynamic systems, pest and disease is recognised as indicative of unbalanced fertilisation and lack of soil fertility. Pest and disease prevention is thus based upon understanding life cycles and the underlying causes of problems and recognising the weaknesses in the agro-ecological system. Emphasis is placed upon systems supportive of biological life – this includes “soil cultivation (aeration), the building up of humus and tree care” (Pfeiffer 1947:18). Biodynamic orchards are integrated into a wider diverse farm system. Fertility of the orchard and pest and disease regulation are thus supported by the other components of the farm. The grazing of sheep and cattle amongst the trees is common within biodynamic orchards, as are beehives.

Within the UK, there are an estimated 90 biodynamic holdings, many of which have orchards. There are fewer than a handful of Demeter accredited orchards covering an estimated 100ha (BDA 2014b). Although widely traded “Demeter produce is marketed locally wherever possible” (BDA 2014a). Indeed, there is a relatively non-existent global biodynamic apple trade. The upscaling production of specific crops to a mono-cultural or intensive scale is counter to the underlying principles of biodynamics with the farm as a living organism (Groh and McFadden 1997). Consequently, there are few large biodynamic orchards. Rather, many biodynamics and farms are linked to CSAs, communities such as Camp Hill and Ruskin Mill and via direct forms of supply such as farm shops.

Agroforestry

Agroforestry shares much with organic, biodynamic and ‘traditional’ approaches. Whilst there is a wide diversity of agroforestry systems, all are based upon the integration of trees into the agricultural landscape. Agroforestry is defined as “a collective name for land-use systems and technologies, where woody perennials are deliberately used on the same land management unit as agricultural crops and/or animals, either in some form of spatial arrangement or temporal sequence” (Raintree 1985). Combining agricultural and forestry techniques, agroforestry systems tend to be classified as *silvo-arable* (integrating annual crops with longer-term perennials such as deciduous trees and shrubs in alleys) or *silvo-pastoral* (integrating livestock, forage pasture and trees) (Crawford 2010).

Agroforestry approaches to growing apples include orchard alley cropping of fruit trees and nitrogen-fixing trees or timber crops. Fruit trees such as apples can also be

intercropped with annual crops such as cereals. Alley cropping for example can reduce susceptibility of apple trees to scab, whereby the alleys provide greater opportunities for air circulation and incorporation of leaves in to the soil through cultivation. This in turn can reduce the need for fungicides (Briggs 2011).

With fewer trees per hectare and mixed plantings, yields of specific crops tend to be lower per hectare in agroforestry systems. However, according to Smith (2010:4) “total productivity is usually higher than in monoculture systems due to complementarity in resource capture.” Smith et al. (2014:283) suggests agroforestry is not suitable for “large scale apple producers who rely on economies of scale.” However, it is suggested that agroforestry can work within small-scale system such as a market garden, “where apples could contribute to direct marketing channels such as vegetable box schemes or farm shops. Having such a wide range of varieties within the system means that harvesting would occur over a longer period” (*ibid*).

According to Crawford (2011) there are approximately 250ha of forest gardens and a further 250ha of agro-forest within the UK, most of which have local direct forms of supply or are used principally for home consumption, although some are operating commercially. The extent of agro-forested sites is however considered hard to calculate in terms of area, since many are unregistered and most are small-scale (*ibid*).

Place-based Production

Whether traditional, organic, biodynamic or agroforestry, the agro-ecological approaches to apple cultivation considered above are focused around the support of the long-term health and resilience of the system, reducing inputs and whilst supporting circular metabolisms. The apples cultivated within agro-ecological systems tend to be selected principally for their suitability to the local conditions, pest and disease resistance, capacity to extend the apple season, as well as for taste and socio-cultural reasons. Although the diversification of production and ecological form of pest management enacted via agro-ecology can lead to reduced crop-specific yields and less stability in terms of volumes and qualities it can result in greater range of diversity and potential overall yields per hectare. These approaches are therefore considered supportive of agri-biodiversity. Resultantly, agro-ecological systems require systems of distribution supportive of a wide varietal range and less stable standards and volumes. The following

section considers distribution mechanisms considered supportive of agro-ecological production, including apples, within the context of the UK.

5.3.2. Agro-ecological Consumption and Co-production

As discussed in chapter one, there are many forms of ‘direct’ supply ranging from national forms of online delivery to regional box-scheme delivery to direct producer-consumer CSAs and box-schemes. Within the UK there are a number of forms of direct supply. This includes:

- Over 700 farmers’ markets in the UK, of which about half are FARMA¹⁶ accredited (FARMA 2015). It is estimated that 10% of stallholders sell organic produce (Soil Association 2012:11).
- Around 4,000 farm shops¹⁷ as well as a number of other pick-your-own (PYO) farms (FARMA 2011).
- Over 500 box-schemes¹⁸ offering fruit, vegetables, meat and other products (Soil Association 2014). The two largest are Abel & Cole and Riverford.
- Over 80 CSAs in the UK, an increase from six in 2000 (Soil Association 2014) supported by an emergent CSA¹⁹ UK network.

¹⁶ FARMA is a co-operative of UK farmers, small-scale local producers and farmers' market organisers (FARMA 2011).

¹⁷ “To be considered a farm shop, you should aim to sell fresh produce and/or local foods that are normally grown, picked, reared or produced on your farm or on land close to where the shop is located” (DEFRA 2013b).

¹⁸ A box scheme is defined as “a box (bag, sack or net), containing freshly picked, locally grown, organic produce, delivered weekly to your door, or to a local drop off point. The operator decides what vegetables go into the box, and this will vary each week depending on the seasonal vegetables available” (Pillely 2001:4).

¹⁹ Community Supported Agriculture (CSA) is loosely described as “a mutual commitment between a farm and a community” (Pillely 2001:x). More specifically it has been defined as “a partnership [*i.e. a relationship based on mutual trust, openness, shared risk and shared rewards*] between farmers and the local community, in which the responsibilities, risks and rewards of farming are shared” (Pillely 2001:3). It has also been described as “any food, fuel or fibre producing initiative where the community shares the risks and rewards of production, whether through ownership, investment, sharing the costs of production, or provision of labour” (Saltmarsh, Meldrum, and Longhurst 2011:7).

As discussed in Part two, direct supply forms of are considered generally more supportive of agro-ecological production and small-scale production. However, as further explored in chapter two, the meaning of 'direct' emerges as potentially wide-ranging and ambiguous. According to a study by Pilley (2001:7), "producer-run box schemes generally have a closer relationship with their customers than companies selling produce bought-in from different farms." Within producer-led box schemes, vegetables tend to be priority categories, along with seasonal fruit, if available. In a market review by the Soil Association (2006:51) for example, producer-led box schemes were found to source an average of 67% of organic fruit and vegetables from the UK, of which 43% was grown on the farm of the producer, 15% bought from other farms within 30 miles, 9% from other UK farms, 17% from wholesaler and 15% directly imported by the producers.

In contrast, retailer-led box schemes are found to be increasingly buying-in vegetables and fruit from increasing distances and sources, including wholesalers. They tend to demonstrate less commitment to specific farms or producers and can be less supportive of small-scale producers as a result of the larger volumes of produce required. Particularly in the case of national box-schemes, it is found that they source from a wider range of producers from a larger area. Non-producer owned box-schemes were found to source 20% of organic fruit and vegetables from local farms within 30 miles, 19% from other UK farms, 44% from wholesaler and 17% directly imported by the retailer (Soil Association 2006:51). According to some growers, retailer-led box-schemes are increasingly demanding in terms of quality expectations.

Whilst retailer-led box-schemes are found to offer produce of varying degrees of proximity from a wider number of sites, CSAs are found to be generally more localised in terms of supply. According to a study by Saltmarsh et al. (2011:20), 62% of the CSAs surveyed were found to supply produce exclusively from the site, 29% were found to supplement their own-produce with purchased produce and 9% were found to purchase all produce supplied. Produce supplied was found to be mainly vegetables although some CSAs also offer fruit, eggs, dairy products and meat.

Producer-led box schemes and CSAs are recognised as direct supply mechanisms particularly supportive of the provision of seasonal, local produce that is predominantly grown on site by the producer or other small-scale producers in the locality (Soil Association 2006). However, at present, direct forms of supply account for a very small proportion of FFV sales within the UK. Whilst there are a range of scales and forms of

direct forms of supply, organic FFV consumption, as with conventional FFV consumption, a large proportion of organic FFV trade is managed by a small number of multiple retailers. It is estimated that the four largest retailers accounted for over 70% of the share of UK organic fresh produce in 2011 (Kantar Worldpanel in FPJ 2011:13). Indeed, according to Firth (2005:10), of the organic fruits cultivated within the UK, 43% are sold at supermarkets, 20% via wholesale or direct and 37% are sold to be juiced.

Whilst the organic market for top-fruit is recognised as one of the key organic lines within the UK (Association 2011), of which apples account for a large proportion, UK certified organic and biodynamic production at present accounts for a relatively small proportion of dessert apples traded consumed within the UK. Of those organic apples traded in the UK, the majority are imported. It is suggested that the domestic market accounts for 10% of organic apple sales compared to 21% conventional (Firth, 2005). According to the Soil Association (2006:21) “most of the organic top fruit sold by UK multiple retailers continues to be supplied from overseas, where climate, lower disease pressure and different rules governing the use of permitted plant protection products put exporting countries at a distinct advantage over UK producers.”

Within the UK, there is a recognised market for domestically produced organic apples. However, aesthetic standards can still be perceived as too stringent for some UK organic growers, particularly those supplying multiple retailers and the wholesale market. According to the Soil Association *2010 Organic Market Report* for example, there are ‘persistent’ reports from those organic producers supplying supermarkets and some of the larger box schemes “of specifications being tightened and cheaper imports from mainland Europe being favoured” (Soil Association 2010:22). For many organic growers, the quality standards demanded, particularly by multiple retailers, are difficult to meet. This is leading to the redirection of a significant proportion of organic apples for processing, such as for apple juice and cider. The UK organic apple juice market for example is 50% met by UK organic growers (Soil Association 2006:21) whilst in 2005-2006 figures, volumes of sales of UK organic apples for cider and processing apples were over double the volume of sales of UK organic eating apples (Soil Association 2006:23).

Displacing the Agro-ecological Apple

The economic viability of small-scale production remains a major challenge for agro-ecological producers. Within the UK, there is a recognized demand for organic apples. Currently however, this is dominated by a small number of multiple retailers dependent upon import markets. Economies of scale demanded by the multiple retailers that account for a large proportion of organic apples consumed within the UK can make it difficult particularly for small-scale UK organic and agro-ecological producers of apples. Organic apple yields tend to be small whilst qualities can be less consistent, particularly from small-scale orchards and mixed-farms. Varieties tend to be mixed and may not meet the set-distribution needs of multiple retail lines.

Direct forms of supply, particularly forms that are producer-led and community-supported however, emerge as potentially more supportive of small-scale agro-ecological systems, whilst forms of co-operative distribution can be supportive for those growers lacking the customer base or locality for CSAs. Box-schemes and local farmers' markets can foster the provision of agro-ecological produce particularly within urban areas lacking access to agro-ecological sites of production (Pilley 2001). However, as Chapter six explores, there are a number of barriers preventing the scaling-out of agro-ecological practices and direct supply mechanisms.

Conclusion: Accessing the Agro-ecological Apple

Practice-based Communities

This chapter has explored how agro-ecological practices are potentially supportive of the cultivation of agri-biodiversity, socio-cultural diversity and democratic agri-food systems. In contrast to the global agri-business focus upon consolidation and privatisation, agro-ecological forms of production are based upon place-based, participatory practices. Although situated *in place*, agro-ecological practices are recognised as globally connected *beyond place* through ‘communities of practice’ (Blay-Palmer, Sonnino & Custot 2015).

Producer-led forms of direct supply are recognised as potentially supportive of small-scale agro-ecological producers and practices. These forms of direct supply and small-scale agro-ecological production however hinge upon the securing of physical, economic and political space for growing, trading and fostering socio-ecological ways of interrelating. This is recognised as particularly challenging in urban and peri-urban environments where access to fresh fruit and vegetables is dominated by the multiple retailer. It is further challenged by a national policy and planning framework which favours retailer-led, consumer-oriented approach to agri-food system transformation.

Currently, the UK government demonstrates an approach to agri-food that is largely steered by multiple retailers and retail consortia. Large firms are shaping supply chains, agricultural production and food consumption patterns (Waage et al. 2011). As discussed in Chapters three and four, agrifood policy is primarily based upon access to open, competitive, import-driven markets (HM Government 2008:ix). Neither agro-ecological practices nor direct forms of supply are considered means of achieving food security.

Economies of Scale

Whilst there is international recognition of the need to improve the resilience and sustainability of agri-food systems (De Schutter 2014:8) and whilst agro-ecology has been supported by a growing number of international organisations as a sustainable approach to agriculture that requires greater attention (IAASTD 2008; UNEP 2009; FAO 2010; De Schutter 2014), the UK national government approach to agri-food systems remain heavily determined by a paradigm of large-scale, intensive forms of production.

There is little support for agro-ecological production at national or municipal government level. According to the *'Food Futures'* report (Ambler-Edwards et al. 2009:23) “ ‘agro-ecological’ [*is*] seen to be synonymous with organic systems and engendered little confidence that there was any convincing prospect of these types of systems delivering the yields required. Rightly or wrongly, they are perceived as producing significantly lower yields than current systems while being more land- and labour-intensive” (*ibid*). This leads to a hostile national policy environment for agro-ecological practices and direct supply mechanisms. Small-scale, agro-ecological producers are found to be marginalised from current national policies and currently demonstrate little power in shaping or directing agri-food policy.

The production of certified organic and biodynamic apple production remains, at present, peripheral when considering UK apple supply. Currently, an IPM approach to top-fruit cultivation is advocated by DEFRA (East Malling 2007; DEFRA 2015a). There is little incentive for producers to manage according to principles of agro-ecology, whether organic, biodynamic or otherwise. Indeed, whilst large-scale farmers are subsidized via CAP payments, diversified small-scale farmers with sites under 5ha are not considered entitled to CAP payment (DEFRA, 2014). They are further penalized in the form of payment for certification of organic practices.

The UK approach to agricultural innovation and food security is focused upon large-scale agriculture – recognised as those capable “of delivering the biggest economic and environmental performance gains and of embedding new techniques and practices” (Jim Paice MP in House of Lords 2011:39). Large-scale farms are subsequently currently receiving the majority of investment in terms of investment for knowledge transfer. Small-scale producers, particularly agro-ecological practitioners are side-lined when it comes to national agricultural policy and investment in research and development. The role of small farms is considered important for local food markets “rather than in terms of boosting productivity” (House of Lords 2011:39).

UK farms are simultaneously found to be consolidating, whilst farming populations are diminishing and employment terms are increasingly flexible (Food Ethics Council 2010). In 2010, the average size farm was 90ha (Eurostat 2014). Meanwhile, the number of small-scale farmers and smallholdings is found to be in decline (DEFRA 2011b) whilst the value of land is increasing at unprecedented rates (RICS 2013). For entrant farmers,

this can be a massive barrier, particularly for those with little start-up capital. Whilst the development of land trusts and land co-operatives such as the Biodynamic Land Trust, the Ecological Land Co-operative and Incubator Farms offer hope for new entrant growers they currently account for a very small proportion of UK agricultural land and continue to meet obstacles in navigating policy and planning frameworks (Ecological Land Cooperative 2012).

Distancing Place-based Production

Lack of access to affordable and secure land threatens the survival of agro-ecological forms of production direct supply mechanisms such as CSAs. According to, Matthei (1997:232) for the survival of CSAs “nothing is more important than land tenure and reliable sources of funding.” Access to land is considered a particular challenge for urban and peri-urban areas where it is expensive, in demand and in some cases, hindered by regulations. As the ‘*Cultivating the Capital*’ (GLA 2010) report reports, it can be difficult to attain planning permission for agriculture within the London green belt.

Agriculture has been squeezed out of the urban and peri-urban environment in the UK and any resurgence currently held back by policy and planning frameworks. Consequently, agro-ecological production has been distanced from the urban and peri-urban environment, further challenging producer access to markets, particularly large conurbations such as London. For those remaining producers, diminishing farm gate prices and a struggling wholesale market are further enabling multiple-retail compression and consolidation of production (GLA 2010). As demonstrated in Chapter four, the practice of the redirection of rejected fruit to the wholesale market is encouraging a price-driven market, lowering quality expectations and indeed retail transactions of British produce, inhibiting the access of British apple producers to wholesale markets.

Retail-led Regulation

Whilst farm shops, farmers’ markets, CSA schemes and box schemes are considered potentially supportive mechanisms of agro-ecological practices, these can be difficult to initiate or access within large to medium urban settlements. This is compounded by a policy environment inhibiting small-scale, agro-ecological, urban and peri-urban agriculture whilst supporting retail-led, consumer-directed agri-food transformation.

Although there may be a growing consumer interest in direct forms of supply in the form of farmers' markets, box-schemes and CSAs, there is little regulation of the consolidating powers of the multiple retailers. The national government demonstrate an approach based upon the correction of market failures rather than the recalibration of practices. The role of the GCA for example is to *monitor* the conduct of multiple retailers and “*curb abuses of power*” (Seely 2012) rather than necessarily rebalancing the distributions of power. The dominance of multiple retailers in terms of agricultural policy, market-share and policy environment make it further difficult for direct forms of supply considered more supportive of agro-ecological practices to compete within the retail environment. The challenges of agro-ecological production and trade are thus compounded amidst a regulatory environment supportive of ‘market-led’ transformation, whereby supermarkets are considered the ‘familiar’ (HM Government 2008:64), and, it is suggested, default shopping environment for most citizens.

As discussed in this chapter, producer-led forms of direct supply are considered supportive of agro-ecological practice. These tend to be most resilient in locations where producers and consumers are in close proximity (Pilley 2001). The access of agro-ecological fruit is recognised as a particular challenge within cities such as London, where proximity to agro-ecological sites of production are found to be frustrated by policy and planning frameworks. Currently, the UK government are hindering the extension of agro-ecological practices, particularly in the urban and peri-urban environment, via the rise of investment in sustainable intensification and retail-led forms of market transformation and an obstructive policy and planning framework. Practices of consolidation, privatisation and externalisation of risk enacted by a small number of multiple retailers emerge within an enabling political and regulatory environment. This is leading to the verticalisation, consolidation and privatization of the apple.

Physical, economic and political space are recognised as critical for the support of small-scale agro-ecological production. Within the urban and peri-urban environment, the possibilities of proximate spaces of growing and trading are considered key in the support of socio-ecological interrelations and place-based practices. The following chapter considers an urban community-led distribution mechanism that enables an urban community to access agro-ecological produce and support agro-ecological producers and practices in the city-region and beyond. Whilst national policy and planning frameworks

remain obstacles to scaling-out the mechanism, the support of the local authority and community is recognised as critical in the viability of the operations and organisation.

Chapter Six: The Agro-Ecological Apple

As discussed in Chapter five, direct forms of supply are recognised as potentially supportive of small-scale agro-ecological systems, practices and producers. In contrast to the global agri-business focus upon the commodification, consolidation and privatisation of food, direct forms of supply can support access to local and seasonal, agro-ecologically grown food. Whilst the corporate logic is directed towards centralised, vertical forms of supply that favour large-scale forms of production, direct forms of supply tend to be decentralised and horizontal, facilitating trade with small-scale producers.

This chapter focuses upon a community-led distribution mechanism developed by the social enterprise Growing Communities based in Hackney, London. This model is found to be supportive of agro-ecological spaces, relations and practices within and beyond London. The model is further recognised as enabling access to an agro-ecological apple within Hackney, London.

Part one of this chapter considers the practices of two apple producers supplying the Growing Communities farmers' market and box scheme. They are found to be (i) *agro-ecological* (with organic or biodynamic practices); (ii) *proximate* (in terms of distance from Hackney); (iii) *diverse* (in terms of apple varieties, crops grown and site-based practices); (iv) *autonomous* (in terms of producer-led approaches to supply). It is suggested that the *community-led* approach to supply and distribution of the Growing Communities model supports and fosters these characteristics.

Part two of this chapter considers how the *community-led* approach to trade via the Growing Communities farmers' market and box-scheme mechanisms foster and support apple agri-biodiversity. The approaches to agri-biodiversity of the two producers supplying the Growing Communities farmers' market and box scheme with apples are explored via three apple archetypes: the Discovery, the Egremont Russet and the community-led box-scheme apple. It is suggested that the farmers' market fosters consumer *engagement* around the agri-biodiverse and agro-ecological apple whilst the box scheme fosters consumer *commitment*.

Part three of this chapter explores how Growing Communities are invoking agro-ecological *co-production* within Hackney, as well as agro-ecological consumption, via the development of an urban patchwork of farms and farmers.

Growing Communities present a practice of community-led co-production that is reconfiguring the spaces, natures and relations of the urban apple. This chapter suggests that producer-led and community-led forms of direct supply have the potential to stimulate and support agro-ecological production, trade and emergent agro-ecological agri-food systems. Currently however, agro-ecological practices remain marginalised within the political landscape, particularly in the case of urban agri-food systems. The scaling-out regenerative agri-food systems is dependent upon securing physical, economic and political space that support and enable regenerative agri-food practices to unfold.

Part One: Community Agro-ecologies

Growing Communities began in 1995 as a Community Supported Agriculture (CSA) scheme that linked thirty families living in east London to a farm in Buckinghamshire. In exchange for a weekly fee (and the occasional weekend of volunteering), families were provided with a weekly share of vegetables. Over time, the number of families and farms involved grew in to what is now the social enterprise Growing Communities. Growing Communities has since developed range of initiatives within and beyond London based around agro-ecological localisation and community-led forms of trade.

The Growing Communities CSA scheme has since evolved into London's first community-led box scheme that now delivers to over 1,000 homes offering a "weekly selection of seasonal organic produce" (Growing Communities 2014b). The boxes are delivered to fourteen distribution sites across Hackney every week (*ibid*). In 2003, Growing Communities also set up the first all-organic farmers' market in Stoke Newington. The farmers' market aims to source most of the produce sold from within a 60-mile radius of Hackney, with the furthest produce travelling 127 miles (Growing Communities 2014a). All of the produce sold is grown on organically certified or biodynamic certified sites. More recently Growing Communities have developed an extensive patchwork-farming network, including three market gardens and nine patchwork farms, which equates to approximately two hectares of Soil Association organically certified productive land within the Hackney borough. They have also acquired a larger nursery in the borough of Barking and Dagenham and are supporting a number of other groups across the UK in initiating similar forms of community-led trade.

6.1.1. Growing Communities and Agro-ecological Localisation

Growing Communities are working towards what they describe as a more ‘sustainable and resilient’ food system, guided by principles of agro-ecological subsidiarity (Growing Communities 2014). The work of Growing Communities is steered by the 12 principles and the Food Zone model, as outlined in figures 6.1 and 6.2 below.

Fig. 6.1. Growing Communities Principles

1. **Ecological food production**, defined as certified organic or biodynamic, sustainably harvested from the wild or home-grown without the use of artificial fertilisers or pesticides.
2. **Mainly plant based food production.** Any animal products we trade or support are from systems with high environmental and animal welfare standards. We define these as mixed farming systems, grass-fed livestock and farms that are aiming to reduce their dependency on bought-in animal feeds.
3. **Fresh/minimally processed food.** Fresh, unprocessed food is less energy intensive, better for health and needs less packaging.
4. **From appropriately scaled operations.** By prioritising small-scale sustainable producers we can make a direct contribution to their survival and the diversity and sustainability of the food supply chain.
5. **Local, seasonal and direct produce.**
 - Seasonal consumption can help to minimise the environmental impact of the food we eat. If produce is in season in the UK, it is more likely to have been grown locally.
 - Dealing directly with farmers help us to trade in a way that is personal, transparent and fair, cutting out the profit taken by intermediaries and helping the people that consume the food to understand where their food comes from and how it is produced.
6. **Low carbon.** We need to maximise the positive environmental impacts of our projects by using resources wisely.
7. **Trade fairly.** We must be prepared to pay farmers and suppliers what they need in order to be able to produce food sustainably, while also giving our

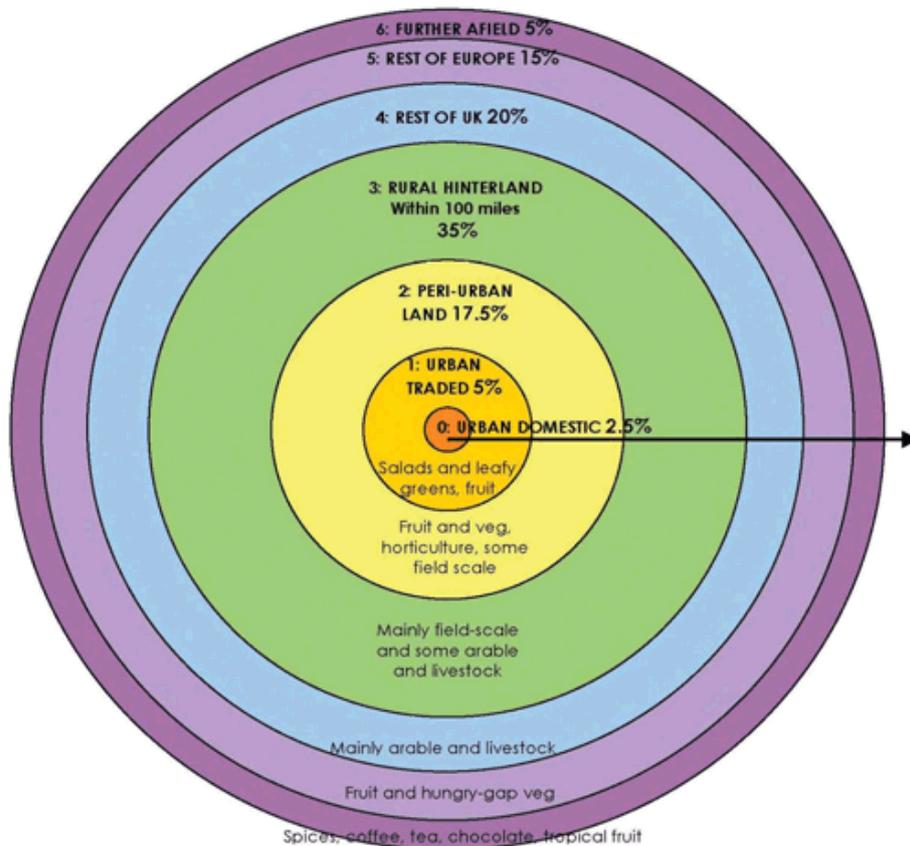
customers a fair deal and giving ourselves a fair return for our work.

8. **Promote trust.** We need to be honest and open in our financial dealings with those who supply our food (and expect the same from them).
9. **Promote knowledge.** We cannot make produce cheap but we can work to change perceptions of value so as to make the produce 'affordable'.
10. **Foster community.** We can't make 'community' happen but we can work to create the conditions whereby it has a chance to emerge and we can work to create situations whereby people feel connected with us, with each other and with the people who produce our food.
11. **Financially viable.** The best chance our projects have of growing into the long-term solutions we are seeking to establish is if they are able to exist independently of external funding.
12. **Enshrine the principles.** It is important that we have an organisational structure that ensures these principles are built in to our work, regardless of changes to membership, staff, committee or trustees.

Source: Growing Communities (Growing Communities 2014d)

The principle of agro-ecological subsidiarity presented in the 'Food Zone' model in figure 6.2. below is central to the work of Growing Communities.

Fig. 6.2. Food Growing Zones



Source: Growing Communities Manifesto, 2008. (Growing Communities 2008)

Agro-ecological Subsidiarity

Agro-ecological subsidiarity is based upon the principle that local, sustainable agricultural production is sourced from as close as possible. In following the principle of agro-ecological subsidiarity, Growing Communities prioritise the sourcing of salad within close proximity to Hackney, as the most perishable of products. Brassicas, roots and potatoes are mainly sourced from the peri-urban and rural hinterland of London as well as seasonal fruits such as apples. Other produce that is not available within these areas is then sourced from further afield, including hungry gap vegetables and tropical fruit (as outlined in the Food Zone model above).

Over and above proximity, agro-ecological production is recognised as the steering principle for the 'Food Zone' model. Growing Communities aim to support 'ecological food production' through the box scheme, farmers' market and various other ventures.

They define this to be “certified organic or biodynamic, sustainably harvested from the wild or home-grown without the use of artificial fertilisers or pesticides” (Growing Communities 2014b). For the farmers’ market and box scheme, Growing Communities have actively sought small-scale producers that meet their criteria in terms of proximity and agro-ecological practice. The guiding principle of agro-ecological subsidiarity has further informed the development of the patchwork-farm network within Hackney borough, which is now producing salad to meet the demands of the box scheme as well as a number of local restaurants and cafes.

Beyond salad from the patchwork farms, Growing Communities source the majority of produce for the box-scheme from 25 small-scale agro-ecological growers with whom they have long-term working relationships. Vegetables tend to include a range of seasonal items sourced according to the Growing Communities principles of subsidiarity and agro-ecology. In 2014, for example, 62% of vegetables and 23% of fruit were sourced from ‘local’ farms (defined as within 129 miles) whilst 88% of vegetables were sourced from the UK (Growing Communities 2014c). Growing Communities do not buy air freighted produce or produce grown in heated greenhouses.

In terms of fruit, the box contains “varieties of mainly UK and European seasonal fruit each week. These are a combination of the following depending on seasonal availability: pears, grapes, oranges, clementines, fairtrade bananas, kiwi fruits, plums, cherries, peaches, nectarines, limes, lemons, grapefruit, apples” (Growing Communities 2011). According to Growing Communities “only our Fair Trade organic bananas come from outside Europe” (Growing Communities 2014b) whilst other fruits such as kiwis and oranges are sourced from agro-ecological cooperatives in Europe. Apples included in the box-scheme are sourced from two key growers from ‘local’ farms. Varieties include Braeburns, Cox, Discovery, Fiesta, Jonagold, Russet, Spartan, Stark and Worcester.

Community-led Trade

Alongside the principle of agro-ecological subsidiarity, Growing Communities commit to a model of trade that they describe as ‘community-led’. Community-led trade is based on the idea that the community (in this case, the box-scheme members) “...work together with farmers and growers to take their food back from the supermarkets and agri-business by creating practical, community-led alternatives” (Growing Communities 2008).

Growing Communities claim that “through community-led trade we can reach out and support those farmers now and in the future who struggle to farm sustainably and make a decent living” (Growing Communities 2014b). According to Growing Communities, there are some key challenges for farmers and growers to ability not only to survive but also thrive. This includes:

- i. The need for a retail outlet which sells their produce at a ‘fair price’;
- ii. Assistance and support with pricing, marketing and product development;
- iii. A sense that they are connected to and appreciated by those that buy and eat their food.

(Growing Communities 2014b)

Growing Communities (2015) suggest “urban communities are well placed to provide farmers and urban growers with many of the things they need, by establishing alternative trading routes for those farmers and growers.”

According to one of the Growing Communities co-ordinators, community-led trade is based on the idea that communities are involved in managing trade in a form of ‘radical retail’ (Kerry). As an organisation, Growing Communities is a not-for-profit organisation based upon a ‘flat’ and ‘distributive’ organisational structure. It is run by its members and all members can vote and stand as director. Kerry emphasises that all employers are paid a London Living Wage.

Urban Agro-ecological Agri-Food systems

Whilst urban communities are recognised as ‘well-placed’ to provide small-scale, agro-ecological farmers and growers with what they need, accessing agro-ecological produce within the city can be difficult within the UK, particularly produce that has been produced in proximity (Pilley 2001). CSAs and producer-led box-schemes tend to be located further away from large conurbations and can be difficult to access for inner city dwellers. Meanwhile, small-scale producers can find it difficult to access urban markets, particularly if they are located more than a day’s return drive.

Pilley (2001:4) suggests box-schemes can offer potential rural-urban links for city dwellers seeking access to small-scale agro-ecological produce and for small-scale agro-ecological producers seeking trade. However, box-schemes operating within urban areas

tend to be *retail-led*, recognised as less supportive of small-scale growers (*ibid*). Forms of direct supply, including box-schemes, that are *producer* and *community-led* are found to support more autonomous forms of agro-ecological practice and more co-operative relations (Soil Association 2010). These forms of direct supply can support producer-led autonomy via the production and distribution of smaller volumes of diverse produce. Based upon a producer-consumer alliance, producer-led and community-led mechanisms can offer flexibility in terms of crop varieties, yields and aesthetics. Such forms of producer-led supply are recognised as less common within the urban environment, particularly in inner city areas such as Hackney.

The Growing Communities *community-led* approach to trade provides a case of direct agro-ecological supply within an urban context that differs from retailer-led forms of direct supply. The Growing Communities approach is driven not only by a desire to access provide urban communities with ‘sustainable, organic and seasonal food’ but also to support the scaling-out of agro-ecological practice within and beyond Hackney. As well as fostering small-scale agro-ecological producers, Growing Communities are initiating communities of co-production, through the development of the patchwork-farming network within Hackney. Growing Communities thus offer a case of placing agro-ecological practices in the city through community-led trade.

The following section considers the two producers that supply the Growing Communities box-scheme and farmers’ market with apples. It explores the agro-ecological practices guiding production and the community-led trade mechanisms supportive of these practices.

6.1.2. Agro-Ecological Practices of the Apple

Producer One: The Apricot Centre



Discovery apple tree

The Apricot Centre is situated on a 4-acre smallholding in Essex. The producer, Marina, is trained in organic and biodynamic horticulture and permaculture design. Marina was approached by the Growing Communities team and asked if she would be interested in supplying apples to the emerging farmers' market. Growing Communities explain that they were attracted both by the proximity of the farm to Hackney, as well as Marina's small-scale, agro-ecological approach. Marina agreed and has since been one of the key producers providing Growing Communities with apples, plums and greengauges both for the farmers' market as well as the box-scheme.

Permaculture and Biodynamic Design Principles

The Apricot Centre orchard was designed according to permaculture and agro-forestry principles and is managed organically and bio-dynamically (although it is not certified as Biodynamic). Planted on what was previously a pasture site, Marina explains that she spent a significant amount of time and energy on the initial planning and design of the site. The orchard design was based upon three key principles to minimize pest and disease. First, the selection of *pest and disease resistant* apple varieties. Second, the *wide spacing* of the trees (at 3m x 4m distances) so to avoid the transference of pest and

disease. Third, the *polyculture* design, whereby fruit trees are planted in ‘harvest zones’ or glades so to minimise pest and disease transfer. Marina explains that pest and disease management was the primary determinant of the design.

Following biodynamic practices, Marina does not spray her crops with anything, nor does she irrigate. Each tree base is covered with mypex to aid weeding and insulate the tree whilst grass is encouraged within the orchard to provide habitat for beneficial predators and pollinators.



Agro-forestry spacing

The orchard consists of three glades or ‘harvest zones’. Each glade or ‘harvest zone’ is planted according to blossoming and harvesting times, so to support pollination and ease harvest. The first area of the orchard is a section of plum trees that fruit in early August. The second area comprises of early-fruiting apple trees followed by a third area of mid-season and later varieties.



Early season glade

Apple varieties grown include Discovery, Scrumptious, Saturn, Red Windsor, Red Falstaff, Winter Gem, Monarch, Egremont Russet. The selection of a range of varieties enables a lengthy apple season, thus extending harvesting period and reducing susceptibility to pest and disease transfer, as well as spreading the risk of frost damage. In contrast, Marina explains, an orchard of only one or two varieties would result in a shorter harvesting period and a greater susceptibility to pest and disease transfer and frost damage. Marina has had to pull up some trees that have not fruited well or are prone to certain disease which she has replaced them with what she considers more pest and disease resistant varieties.

According to Marina, multi-functionality was a key element guiding the site design. As well as apples, there also several varieties of pears, plums, greengages, damsons and medlars. The orchard glades are surrounded with hazel that provides shelter and are used for coppicing. The site also includes a woodland area, a number of bee-hives, a mobile chicken coop and a small kitchen garden with a poly-tunnel where Marina grows flowers and a range of other vegetables and herbs.



Bee hives and Discovery trees

As well as market garden, the site is used for a range of educational and training purposes. Marina hosts forest school visits, permaculture design courses and other educational activities. Her partner also uses the site as a base for his therapeutic practice. *Multi-functionality* of the use of the site, as well as yield of the orchard, is central to the viability and resilience of the Apricot Centre.

Producer-led Practices

Growing Communities are currently Marina's main customers via the box-scheme and farmers' market. In the case of the box-scheme, Growing Communities ring Marina a week in advance to find out what is available and order accordingly. This provides a one-week window which informs to a certain extent the harvesting volumes. In the case of the farmers' market, Marina determines what to harvest and sell.

With the assistance of her apprentice, Marina harvests the fruits when they are considered ready to be picked. Marina explains that there are no quality control formalised procedures that require a set numerical value of pressure, sugar, colour or nutrition. Rather, the harvest is determined by subjective evaluation of the crop.



Harvesting Discovery apples

Producer-led Standards

Marina explains that they pick ‘by eye’ in two waves, the first time for good quality eaters, the second time to clear the tree. To harvest, she explains they “look for the colour, judge by eyes and feel.” Her apprentice explains that he makes a rough visual and tactile analysis of the fruit in terms of size and marking before picking. Marina suggests that approximately 90% of the fruits are harvested. The rest fall to the ground and are left as foraging matter or collected for animal feed.

Marina outlines four grades of fruit:

- i. ‘Good quality eaters’ to be sold at the market or Growing Communities box scheme;
- ii. ‘Poor quality eaters’ suitable for juicing or cooking, sold at the market, stored separately;
- iii. ‘Poor quality fruits’ that need to be used quickly, suitable for preserving, pickling and juicing;
- iv. ‘Non-saleable fruits’ to be composted or fed to the chickens.

Marina suggests that these grades reduce wastage, sorting out fruits that need to be used quickly from those that can be stored. She explains:

“There is very little wastage on site. The apples that have worms in them will be either chopped down and juiced or sent to the chickens. This is the same for greengages and

plums.”

Harvested fruits are stored in a cold storage unit with no gas taken out or added. The barn is also utilised if the fridge becomes too full. Marina supplies the Growing Communities farmers’ market and box-scheme until stocks run out, moving through the various varieties from the early fruiting Discovery and Saturn to the late, and better storing Monarch and Falstaff varieties.



Cold store

Since the orchard is managed according to biodynamic principles and low-intensive growing methods, there can be a broad range of ‘qualities’ in terms of size, shape and skin finish. This includes irregularities in terms of shape as well as cosmetic imperfections such as blemishes, russeting or indentations as a result of pest damage. This can be challenging for some customers not used to such qualities. Marina explains that she is often questioned about the qualities of the fruit at the market. In response, she offers an explanation as to why the fruit may look as it does, for example, if it is slightly misshapen or russeted outlining her organic practice. She adds that she often accompanies

the explanation of her practice with the offering of tasters of the fruit, suggesting that this is “the most important part”. She explains:

“People taste the fruit and get very excited as the texture and taste is so very different to a supermarket apple...that is why they buy them. When my fruit is not good, people do not buy it.”

At the farmers’ market, Marina encourages her customers to apply a form of ‘self-grading’ or ‘D-I-Y’ form of selection. Customers pick out the apples they want from the range of apples available in terms of shapes, size and skin finish. Marina emphasises that she has witnessed a diverse spectrum in terms of what a consumer might ‘accept’ as an ‘eater’ at the farmers’ market. Some customers have a preference for smaller apples. Other customers using the fruit for juicing, cooking or preserving do not mind irregular shapes, blemishes or slight pest damage if they are sold at a cheaper price.

Marina reflects that she has witnessed some of her customers have become less ‘picky’ as time goes on. She suggests that for many customers, irregular shapes, unusual colours and russetting are perceived as ‘appealing’ aesthetic features, signalling the organic aspects of the fruit. Marina explains many of her customers see “beauty in imperfection.”

“It’s like the choice to buy a hand thrown cup to drink out of that is slightly ‘imperfect’ rather than a plastic mug that is ‘perfect’ ... It’s authentic and real... plus it just tasted really nice.”

The exchange within the farmers’ market and box-scheme is recognised as a social, sensorial and educational exchange as well as an economic one. Marina views the exchange on the market part of her role not only as a salesperson but also as a grower and educator.

Diverse Yields, Diverse Functions

Marina explains that it is very difficult to make much of a profit from the market alone and spoke of the challenges of relying solely upon the sales of fruit. One day at the market may only provide a small profit when factoring in the salary of her growing assistant, transport, one day’s preparation and stall hire. She suggests that if she was a

hard-nosed entrepreneur she probably wouldn't be doing it, but "that's not why she does it." Whilst Growing Communities have encouraged Marina to diversify via jams, pickles, preserves and juice to increase income, Marina remains dependent upon other streams of income beyond fruit sales including teaching, design and consultancy. Supplying the farmers' market and box-scheme with apples becomes only one of the yields and functions of the site and Marina's practice.

In the case of the Apricot Centre, diversification of the yields and functions of the orchard and wider agro-ecological system and the site emerge as essential for resilience of both the system and producer. Economically, Marina depends upon more than the yields of the orchard. As well as production site, the Apricot Centre is an educational and therapeutic site. The *place* of the orchard and the guiding *agro-ecological practices* however are recognised as crucial for enabling diverse yields and functions *beyond the apple*.

Producer Two: Stocks Farm

Stocks Farm is a small-holding run by two brothers, Sid and Chris, also located in Essex. Prior to working with Growing Communities, Stocks supplied apples to a multiple retailer and local wholesale market. During the early stages of setting up, Growing Communities approached the brothers and asked if they were interested in supplying apples for the box-scheme they were in the process of setting up. Now Stocks supply the Growing Communities box-scheme and farmers' market as well as a number of other farmers' markets, several independent shops, a retail-led box-scheme and, occasionally, a local wholesaler. As this section explores, Stocks have diversified their practices and products significantly, with the encouragement of Growing Communities and others.

Community-led Design

Stocks are experimenting with various forms organic orchard management, varieties, pest and disease management and rootstock size. This includes:

- i. A heritage orchard with over 14 varieties on large M26 rootstock;
- ii. An organically converted orchard of Gala and Braeburn;
- iii. A newly planted orchard of Gala and Cox on M9 rootstock;
- iv. A traditional orchard with large trees, managed by sheep grazing (Spartan, James Grieve, Russets, Discovery and Worcester);
- v. A newly planted orchard of Cox and Braeburn on M9 rootstock.

The traditional orchard with large trees (on rootstock M111) is managed organically without sprays, mainly via the grazing of sheep, as well as application of seaweed feed. According to Chris, the sheep are useful for the regulation of rose apple aphid which used to be a problem in the orchard, as well as a number of other pests. The sheep also provide manure, supporting soil fertility and reducing the need for feed.



Traditional orchard with sheep grazing

Another orchard of newly planted smaller trees (rootstock M9) of the varieties Gala and Cox is managed more intensively. Chris sprays the trees with sulphate to stop codling moth as well as using seaweed folate as feed. There is also an orchard with a range of 14 heritage varieties, a traditional orchard with a small number of James Grieve, Russets, Discovery apple trees and a newly planted orchard of small trees (rootstock M9) of the varieties Braeburn and Cox. Chris is monitoring productivity and pest and disease levels according to each management approach.



Organically-converted Gala and Braeburn orchard

Some of these approaches have been partly influenced by the encouragement of customers. For example, the Gala and Braeburn orchard was planted when Stocks were supplying a multiple retailer. It has since been converted organically. One of the other box-schemes they supply also encouraged the planting of the varieties Cox and Braeburn. Growing Communities further encouraged further integration of livestock into their practices. Whilst the orchard design has partly been informed by customers, Chris explains that he has worked towards the cultivation of a range of varieties in order to extend seasons, so to avoid or at least minimise frost and other weather and pest and disease damage and expand diversity.

Stocks resultantly supply a range of varieties at the Growing Communities farmers' market and box-scheme. Chris suggests that most of the varieties of the apples sell without problem. Russets and Galas are particularly popular at the market, as is the Discovery at the beginning of the year. According to Chris, the organic methods he applies work well and he feels that he produces a lot for the area. In a good year, he estimates that he could get around 150 bins of eating apples whilst in a bad year, 30-40. Although they had experienced a poor crop in the year passed, this was caused by a heavy frost at the time of blossom. Chris suggests most other growers in the area were also affected. In contrast, during the same year pears and plums did well due to the warmer period prior, indicative of the benefits of diversification of crops that can buffer the impact of a poor apple crop.

Producer-led Harvesting

Chris explains that he checks the fruit on the trees to assess optimum picking time and does not apply sugar or pressure testing. The apples are harvested by hand when it is felt that they are ready. Chris suggests there is more room for manoeuvre when supplying his current customers compared to his experience of selling organics to a supermarket. According to one of the fruit pickers who has worked at the Stocks farm for over 15 years, "the supermarkets require 100% perfection." She expressed a difference in terms of the picking approach they employed when harvesting for the supermarket in the past compared to their current practices. Chris explains that since working with organic class II crops, he tends to use *visual* and *tactile* judgement to check quality. They use their thumb and forefingers as a gauge to check apple size is greater than 55mm and visually

check apples for any blemishes bigger than a thumbs' coverage. His tolerance levels of quality are determined in part by his own conception of what constitutes a 'premium quality' apple.

Although Chris does highlight increased flexibility in terms of quality control since supplying direct, he states that he still aims for a 'good class II' product (all organic produce is deemed class II). He suggests that he follows a slightly higher quality control than EU class II expectations and, to a certain extent, a slightly higher quality control as was imposed by the supermarket when he was supplying them organic class II. However, he does add that there is more room for flexibility. Whilst he tends to avoid apples smaller than 55mm diameter, which he feels are probably too small for sales, he adds that this is dependent upon the crop and that the majority of smaller apples do end up in 'children's bags'.

Chris explains he applies the same quality control to all of the apples he sells, regardless of the customers. He explains, "if we wouldn't eat it, we wouldn't sell it." He suggests that he has never really had a problem with quality from his customers because they aim for a good level of quality in their produce, grading out up to half of the crop. According to Sid:

"People are paying for a premium product...it should be good...or they won't come back."

Chris further explains that organic non-intensive orchards tending to give lower yields, thus justifying higher retail prices.

The apples that meet the grade are either sold fresh (notably the early season apples) or stored in controlled atmosphere stores, depending upon demand and variety. Apples that are too small or do not meet the quality requirements are sold to a local processor for juicing, some of which is then sold at the market. Rotten or apples considered unacceptable are fed to sheep.

As outlined, Chris and Sid have a fairly wide-ranging client base both direct and indirect, including a number of farmers' markets, box-schemes and independent shops. Whilst Chris demonstrates a relatively autonomous approach to quality, according to Sid, the

retail-led box-scheme they are supplying have been increasingly driving “a hard grade” and are becoming more selective regarding certain varieties – leading to the recent planting of Cox and Braeburn. These expectations are somewhat shifting practices, leading to tighter forms of quality and harvest management. Quality, in the case of Stocks emerges as largely determined by the most demanding of their customers – in this case, the retail-led box scheme they supply. However, in the case of Growing Communities, the development of a trading relationship has largely resulted in the integration of more agro-ecological practices.

Community-led Practices

Sid reflects that as a family business they have ‘grown’ with Growing Communities and developed their practice as a result of this trading relationship. Chris suggests that it was, in part, a result of their involvement with Growing Communities that led to the diversification of their modes of production and resulting products sold at farmers’ markets. In the early days of the Growing Communities farmers’ market, Stocks sold apples, rhubarb and a range of vegetables. After the primary meat producer at the market stopped selling at the market, Growing Communities organisers approached Stocks to propose that they experiment with the trade of meat as well as fruit and vegetables. Stocks already had experience with livestock and kept a flock of sheep as a hobby form of farming. They decided to try it out, purchasing the flock of sheep from the farm that was previously sourcing the market. According to Sid:

“...the meat thing was accidental.”

They now rear organic chickens, sheep and beef cattle as well as growing over 16 varieties of apple on their orchards. At the farmers’ market they sell honey, juice and eggs from their farm, a wide and expanding line of meat products and a range of cooked food including bacon rolls and sausages alongside the apples. Sid explains that the meat sales and egg sales provide the two families with the main bulk of their income - apples now provide something of a ‘bonus,’ depending on the crop. Sales of meat are found to be more profitable and relatively stable compared to apples. Although Chris adds that apples do remain a key crop at the market when available.

As with Marina, Stocks have significantly diversified operations on site. This evolved partly as a result of the changing conditions of the Growing Communities farmers' market and subsequent encouragement and support of Growing Communities, as well as Stocks' ability to autonomously determine practices on the farm. Chris reflects that although sales have declined at the Growing Communities farmers' market, partly attributed to the economic downturn, he adds that they have not been as dramatic as other points of sales. Sid emphasises the importance of direct supply, particularly the box-schemes. Indeed, when asked about his experience of organic sales, Sid states:

"If we didn't sell direct, it [farming] wouldn't sustain us...wholesale prices just wouldn't sustain."

Sid suggests the Growing Communities has been instrumental in assisting Stocks through diversification of crops, integration of livestock and deepening of agro-ecological practice. As a case, Stocks demonstrate the potentially supportive mechanism of direct forms of supply in the transition to more agro-ecological practices. Stocks have also been encouraged by Growing Communities to develop further links with the farmers' market customers and box-scheme subscribers. They now host an annual apple day harvest celebration at the site and are planning to develop a workshop space for cookery classes and butchery workshops.



Apple day held at Stocks Farm for Growing Communities

In the case of Stocks, producer-led autonomy has been tempered by the need to earn a livelihood. Currently Stocks cannot rely only upon the Growing Communities farmers' market and box-scheme for income. Their practices are thus partly guided by the most demanding of customers (most notably, the retail-led box scheme) whether in the form of 'harder grading', planting of specific varieties or diversification of practices.

6.1.3. Engaging Agro-ecological Consumption and Co-commitment

Community-led Production

Through the framework of the box-scheme and the farmers' market, Growing Communities have developed two mechanisms that support place-based, producer-led agro-ecological practices. Rather than command and control harvesting via programmed windows and technical advisors, in the case of the Apricot Centre and Stocks Farm, the producer is found to be relatively autonomous in terms of determining practices.

In the case of the Apricot Centre, Marina demonstrates autonomy in the design and practice of the site, including what form of orchard management, which varieties to plant, when to harvest and which qualities to sell. Stocks provide a more complex case as a result of their past history which includes involvement with multiple retailers and wholesalers and current range of supply pathways, both of which are found to influence practices in various ways. However, Chris demonstrates a predominantly producer-led approach to production.

In their relations with Growing Communities, Marina and Chris both demonstrate producer-led approaches to harvest in terms of what varieties to harvest and when. This is based upon their continuously evolving understanding of the harvesting process and the specific tasting and storing qualities of the varieties grown: they get to 'know' the fruit through 'growing' it. Both further share relative autonomy in terms of determining how they grade and what apples make the grade. Whilst feedback may encourage changes to the procedure (for example, Marina deciding to offer a lower grade of apples for

customers wanting apples for juicing, cooking and preserves and Stocks providing smaller bags of child-friendly apples), what produce makes it to the Growing Communities farmers' market stall and into the box, is largely producer-led. With a greater number of customers, including other box-schemes and local independent shops, as well as Growing Communities, Stocks experience a wider range of expectations around grading and quality. It is suggested Stocks demonstrate a 'harder grade' compared to Marina that is partly determined by the most demanding of their customers, as well as their desire to sell a 'premium' product. However, it is suggested that they still remain relatively autonomous in determining the approach to the grading process.

As both Marina and Chris demonstrate, for a small-scale agro-ecological producer, it is currently difficult, if impossible, to be reliant upon the sales of apples alone, particularly when working within an agro-ecological framework. For both, the ability to sustain a livelihood is dependent upon more than the sales of the apple and indeed, more than the orchard. Marina has a range of other incomes, notably via education and consultancy, whilst Stocks have a number of other trade routes. Whilst the agro-ecological apple is recognised as a starting point for developing relationships with Growing Communities, the need to diversify operations is crucial for both agro-ecological and producer resilience. With the support of Growing Communities, Marina and Chris have diversified in terms of crops grown and site functions.

The Growing Communities farmers' market and box-scheme are recognised as mechanisms that support agro-ecological producers through the process of agro-ecological diversification. They support not only production and supply of the agro-ecological apple, but more critically, the deepening and integration of agro-ecological practices, hinging upon diverse yields and functions. Both farmers' market and box-scheme are recognised as mechanisms that can support producers not only through shifting seasons and cycles of crops but also through these processes of diversification and change. These mechanisms however, only function as supportive if they are centred upon sustained community commitment.

Community-led Trade

The farmers' market and box-scheme emerge as spaces within the city where citizens may begin to engage with and commit to agro-ecological producers, produce and

practice. The farmers' market constitutes a terrain whereby consumer purchases are negotiated and determined through *engagement* with the produce, producer and practice. In the case of the box-scheme, consumers further *commit* to receiving pre-determined produce.

Engaging Interactions, Engaging Senses

At the farmers' market there is consistency in terms of the market site location and timing and the producers and commitment to agro-ecological forms of (organic and biodynamic certified) production. In contrast, the produce available changes with the seasons as well as the processes of diversification and integration. It is suggested that interactions between producers and produce help consumers navigate the seasonal cycles, rhythms and inevitable changes of crops, varieties and qualities that distinguish place-based agro-ecological production.

The farmers' market facilitates a direct form of material engagement with produce. Both Marina and Stocks encourage consumers to pick their own apples. Most of the apples at the farmers' market are sold loose, although they may have been loosely graded (Marina for example sorts apples according to size, offering 'child friendly' bags of smaller apples and lower grade apples for juicing, whilst Stocks do bag small apples). Marina explains that customers tend to pick out the apples they want from the range of loose apples available, which she describes as a secondary 'do-it-yourself' form of 'self-grading'. Selection of produce thus facilitates and fosters sensorial engagement whether through scent, sight, taste or touch. Marina further suggests tasting is used as a method to overcome potential concerns around the cosmetic appearance of the apple. Interaction with the produce as well as the producer is recognised as a key means of navigating around seasonal, varietal and aesthetic differences.

Through enabling consumers to interact with producers and produce through dialogue and sensorial engagement, the apple supports further engagement with the underlying agro-ecological practices and producers. Marina explains that she can better communicate the agro-ecological principles upon which her production method is based and the resultant aesthetic impacts this may have if consumers directly engage with the *tasting* of the apple. It is suggested these forms of engagement with producer and produce facilitated by

the farmers' market strengthen producer-consumer relationships, connections with and awareness of *place-based practice*, fostering a form of community *métis*.

Engaging Practices in Place

At the farmers' market, Marina and Chris offer a wide range of apples, some of which may not be familiar to consumers. Whilst customers may express preference for certain varieties and anticipate or celebrate the arrival of certain varieties, Marina and Chris provide the opportunity to try a wide-range of apples customers may not be familiar with. The seasonality of the apple is perhaps most materially translated through the varietal range available. The start of the apple season is marked by the arrival of the early-fruiting varieties. Early apples tend to be softer, thin-skinned and short-lasting. Later-fruiting varieties tend to be those that store well and look and taste different. An annual 'Apple Day' at the farmers' market further celebrates the diversity of apples available. Engagement with apple seasonality as well as varietal range supports the development of apple 'literacy'.

As well as exposure to the cycles of the season and the agri-biodiversity of the apple, the consumer is directly exposed to the impact of the local growing conditions that determine the yield and quality of the crop. The timings and durations of apple season are determined by the specific conditions of the growing year in place. Late frosts or hailstorms can have significant impact upon quality for example, as can the effect of biennialism. With a bumper crop, there may be an abundant supply whilst a late frost can severely diminish yields. Dialogue with the producer facilitate engagement with these cycles and support navigation of any disruptions or variation. The farmers' market thus functions as an interface between producer, consumer, product and place, enabling the communication of potential instabilities or fluctuations in supply and quality that are necessarily and unavoidably part of place-based practice.

Interactions around produce further enable engagement around local varietal range and the nuances of place-based agro-ecological production. Marina and Stocks for example cultivate varieties they perceive to be pest and disease resistant varieties, varieties that extend the apple season and apple varieties suited to the growing conditions of the local landscape. Exposure to and engagement with the varietal range grown by local producers

thus develops a form of place-based agro-ecological ‘literacy’ amongst consumers, deepening community *métis* in the process.

These forms of engagement with the producer, apple and place facilitated by the mechanism of the farmers’ market foster and support consumer connection with the seasonal cycles and rhythms of the growing year and the local landscape. Through engagement with the produce and producers, consumers develop awareness around agri-biodiversity and place-based, agro-ecological practices. As customers become more aware of and accustomed to the apple season and specific varieties, the need for guidance is reduced. It is suggested this could lead to a movement towards deeper forms of commitment to growers and agro-ecological practices in the form of the box-scheme.

Committing to Practices in Place

It is suggested that the resilience of the producers and Growing Communities hinge upon a form of co-commitment to community-led trade and agro-ecological subsidiarity that is particularly fostered by the box-scheme.

The Growing Communities *producers* commit to agro-ecological practices and the supply of agro-ecological produce to the farmers’ market and box-scheme.

Growing Communities as an *organisation* commit to long-term working relationships with the small number of small-scale agro-ecological producers, facilitating the distribution of produce at the farmers’ market and via the box-scheme. Through setting out specific requirements of growers in terms of organic and biodynamic principles and proximity to Hackney, operations and principles are made transparent and a form of solidarity amongst agro-ecological practitioners and consumers is fostered. The specific requirements in terms of agro-ecological practice and proximity legitimise the choice of producers and produce available in the farmers’ market and box-scheme and, it is suggested, further foster a form of co-operation and alliance rather than competition and opposition amongst producers and consumers. Marina and Chris for example work in tandem to price their apples. Through long-term commitment to the producers via the box-scheme model and the farmers’ market, Growing Communities support growers through the processes of change required to develop resilient agro-ecosystems, in turn supporting grower livelihoods.

Growing Communities further support producers in the communication of the nuances of place-based practices. Newsletters provide information around agro-ecological practices, crops and disruptions in supply. If fruit is smaller, larger, damaged as a result of meteorological issues (such as hail) or if there has been a poor growing year, the newsletters communicate this. In contrast, if there has been an abundance of a crop, it is celebrated. These forms of communication are recognised as fostering place-based agro-ecological awareness amongst the box-scheme subscribers.

The mutual commitments of Growing Communities and the producers foster the development of *producer-consumer* relations via the box-scheme and farmers' market. Marina for example suggests that she is heavily reliant upon regular customers at the market whilst Sid emphasises the financial stability the box-scheme gives them. The possibilities of sustained engagement within the space of the farmers' market and commitment via the mechanism of the box-scheme further enable the deepening of ecological literacy amongst consumers. The urban patchwork-farm network further deepens practices from engagement and commitment to forms of *co-production*.

Sustained and committed trade relationships are recognised as key for the resilience of the agro-ecological systems and producer livelihoods. Through fostering engagement, co-commitment and co-production, the farmers' market, box-scheme and patchwork farming network emerge as mechanisms supporting of communities of agro-ecological practice and, it is suggested, agri-biodiversity, as is further explored in Part two.

Part Two: Placing Agri-biodiversity

Direct forms of supply in the form of farmers' markets and box-schemes are recognised as potentially supportive of small-scale, agro-ecological orchards. The small-scale agro-ecological orchard in turn, is recognised as supportive of diversity of apple varieties. It is suggested that there are a number of reasons for this.

First, the planting of a range of varieties, particularly those that are recognised as suitable for growing within the local environment, supports the *in situ* genetic 'pool' of the locality. Second, the planting of a diverse range of apples that include early-, mid- and late- season varieties supports the *extension* of the apple season. This can be beneficial for pollinators and predators. Third, apple agri-biodiversity can support the economic resilience of the producer, extending the apple season and thus potential window for apple trade whilst further avoiding market saturation. Within a resilient and integrated agro-ecological orchard, whilst there are 'hungry gaps' outside of the apple season, there is a diverse range of apples available throughout the apple season and a range of other crops within the wider agro-ecological system outside of the apple season.

Part two explores three apple archetypes that demonstrate how the Growing Communities community-led trade mechanism supports apple variety diversity. Archetype one is presented as the Discovery, one of the earliest apple varieties to be harvested and a particularly soft-skinned variety. Archetype two is presented as the Egremont Russet, a late-season apple with distinctive aesthetics in the form of russeting. The third archetype is presented as the community-led apple. It is suggested that direct, community-led relationships such as those cultivated by Growing Communities can foster engagement with, commitment to and co-production of an agri-biodiverse, agro-ecological apple within the city and, in turn, support agro-ecological orchards, practices and producers.

6.2.1. Archetype One: Discovery Apple



The Discovery apple

The Discovery apple is famed as one of the earliest varieties signalling initiation of British apple season. Ruby-red skinned with a creamy-white and often blushed, sweet flesh, the Discovery is a popular apple [see appendix 6.1. for further varietal details]. However, the Discovery does not ‘handle well’ in global agri-food chains. The Discovery apple is neither suitable for ‘distance’ nor durability. The Discovery has soft-flesh and thin skin, making it vulnerable to bruising and damage. Furthermore, as tends to be the case with early apple varieties, it is not known to store well. Juicy and crisp when freshly picked from the tree, the Discovery tends to become softer and mealier with age. Cold storage can also cause the Discovery to lose its signature blushed flesh and aroma. Indeed, as one producer for a number of multiple retailers explains, “products like Discovery have a much shorter shelf life and therefore cannot be stored for longer periods” (Producer One).

With its susceptibility to damage in the grading and packing process and short-shelf life, the Discovery is not recognised as a key commodity variety by large suppliers or retailers. Although sourced by multiple retailers as a celebration of the start of the apple season, it remains a component of brand development rather than signifying a key line. It is for example, not often found within smaller format multiple retail stores such as those that tend to be found in inner-city areas such as Hackney. Many multiple suppliers are

resultantly supporting the cultivation and breeding of alternative early varieties that offer better endurance in transit and on shelves. Indeed, a dramatic proportion of Discovery orchards have been lost within the UK. Between 1985-2009, the area of Discovery apple in the UK diminished by 75% (DEFRA 2013c).

Within direct systems however, the Discovery is found capable of making an appearance, albeit an ephemeral one. As a popular variety, it is recognized amongst small-scale producers supplying direct as a valuable variety to grow and supply. The Discovery has good resistance to scab, making it particularly favourable for agro-ecological growers wishing to avoid the use of agro-chemical inputs. Although the Discovery is a poor storer, it can be integrated in to a diversified orchard system comprising of a range of early, mid and late apple varieties. Whilst this can lead to low volumes, particularly within small-scale orchards, direct supply enables producers to overcome the potential limitations of operating with low volumes or short supply windows since box-schemes, farm-shops, farmers' markets and CSAs can accommodate for varying volumes, varieties and availability.

Localised forms of direct distribution from producers to consumers further support the provision of more delicate apples such as Discovery, with potentially rapid transit from tree to consumer. Furthermore, within producer-led direct forms of supply there tends to be less grading and fewer packing processes, thus reducing handling and minimising susceptibility to skin damage. In the case of the Growing Communities box-scheme for example, customers do not handle the apples until they receive the box whilst at the farmers' market, producer-consumer interaction enables the impartation of information around the susceptibility of certain varieties to bruising and can support avoidance of 'excess handling' (for example, via tastings).

With thin skin and soft flesh, the Discovery refuses to be 'put on the shelf'. Nor is it recognised as a variety suitable for global distribution. However, it is celebrated as one of the earliest apple varieties within the UK. Direct forms of supply such as the Growing Communities farmers' market and box-scheme facilitate and support access to delicate crops such as the Discovery, which can be in short and limited supply, particularly within urban areas such as Hackney.

6.2.2. Archetype Two: The Egremont Russet



Egremont Russet

In contrast to the Discovery, the Egremont Russet is a late apple variety. With thick, rough skin, Russet apples are also known as ‘rusticoats’ or ‘leatherjackets’ [see appendix 6.2. for further details]. They are not renowned as the juiciest of apples. Nor are they perhaps ideal as an ‘apple on the go’, tending to be peeled before eating. Yet, when peeled, they reveal a creamy, sweet flesh.

As an apple, the Egremont presents several challenges to centralised forms of supply and big-set distribution. First, Egremont Russets have a naturally occurring form of ‘russet’ (referring to the coarse quality of the skin). Although russetting does not affect the edibility of the apple it is not favoured amongst modern apple breeders. Indeed very few new apple cultivars are found to naturally russet, whilst very few key ‘commodity’ varieties have the tendency to ‘russet’ (Marks 2010). Chris for example explains that russetting was not permitted below the shoulder of the apple when he was supplying to a supermarket. However, in the case of the farmers’ market, Chris explains that Egremont Russets sell well once he has reassured any concerned customers that the russet is naturally occurring and does not effect eating quality.

Second, whilst the Egremont is recognized as a good storer, developing a deep golden tone and sweet, nutty flavour, cold storage typical of modern supply chains can prevent

the Egremont Russet from fully maturing and can result in a less rounded taste (Morgan, Richards, and Dowle 2002). In contrast, if stored in a cool ambient condition, it may fully develop the distinct taste it is renowned for (*ibid*).

Third, there can be a tendency for Egremonts to biennialise and they can be small-sized (Morgan, Richards, and Dowle 2002). This can be a challenge for big-set distributions based upon pre-determined harvest windows and volume projections. However, in small-scale, diversified systems, this is not considered as much of a problem. Chris of Stocks for example does not view the tendency to biennialise or be small-sized as problematic since they have a diversifying range of crops to buffer smaller harvests, whilst he also suggests that smaller apples can be popular amongst some consumers.

Direct forms of supply offer opportunities to overcome some of the potential challenges of an apple variety such as the Egremont. As a result of the various forms of engagement facilitated by direct forms of supply, there is more scope for producers to inform customers about factors such as russeting – in this case, providing reassurance that it does not affect eating quality. Through interaction between producers and consumers and experience via taste, possibilities of engaging with less familiar varieties such as Egremont Russet are thus facilitated. There is also recognised greater flexibility regarding volumes and sizes of supply within producer-led and community-led forms of supply and trade, enabling the management of naturally occurring outcomes of the cultivation of certain varieties, such as variations in size and biennialism.

Opportunities for interaction and exchange of information via producer-consumer dialogue at the farmers' market or via the Growing Communities newsletters are recognised as particularly crucial for overcoming preconceptions, enabling clarification of potential misunderstandings, such as those around russeting, as well as steering around handling, as in the case with the delicately skinned Discovery and offering opportunities to taste. These forms of engagement are considered essential for the viability of the agro-ecological, agri-biodiverse apple. The following archetype recognises the Growing Communities box-scheme mechanism as further supportive of the agri-biodiversity of apple production within agro-ecological systems.

6.2.3. Archetype three: the Growing Communities apple



Growing Communities Box-scheme selection

Source: Growing Communities (Growing Communities 2014b)

The Growing Communities box-scheme apple supplied by Marina and Stocks, is non-determined in terms of variety. Nor is it determined in terms of colour, size, shape or skin finish. Whilst there are specific expectations in terms of modes of production (i.e. that it follows organic or biodynamic certified practices) and proximity (i.e. in terms of distance from site of production to Hackney), there are not any specific written standard requirements of the apple placed upon the producer. The Growing Communities box-scheme apple is recognised as practice-based, place-based, and community-led.

The apple varieties offered within the Growing Communities box are determined autonomously by the two small-scale producers considered in the previous section. Varieties available include Braeburn, Cox, Discovery, Gala, Fiesta, Jonagold, Russet, Spartan and Worcester. However, the apples are not limited to these specific varieties. Growing Communities accept that these varieties may change depending upon the agro-ecological practices of the producers involved and the specificities of the season. The varieties in the box are thus supportive of place-based, producer-led agro-ecological practice.

As a mechanism, the Growing Communities box-scheme enables flexibility around apple season timings, durations, volumes and varietal range. Harvest timing and grading are producer-led. As Marina and Chris both explain, they harvest when the apples are 'ready'. There are no specified quantitative expectations of the materiality of the apple such as size, shape, skin finish or sugar content or specificities around volumes or harvest windows. Rather, the Growing Communities box-scheme emerges as principally based upon commitment to values of agro-ecological production and trust in the producer-led approach to production. This community-led form of supply relies upon a relationship of *co-commitment* between producers, Growing Communities and box-scheme subscribers. The agro-ecological principles producers follow are recognised as key drivers that underpin the alliance between producer, consumer and Growing Communities.

Producers supplying the box-scheme commit to agro-ecological practices, defined by Growing Communities as certified organic or biodynamic.

Growing Communities make a long-term commitment to buy produce from a small number of agro-ecological producers and to purchase at a fair-price. In committing to specifically agro-ecological producers, Growing Communities are supporting the agro-ecological practices of small-scale producers. In providing a relatively stable income for producers, particularly via the box-scheme, Growing Communities are found to be supporting livelihoods, as well as agro-ecological practices. As well as distributors, Growing Communities facilitate dialogue between producers and consumers via newsletters and a range of events.

In purchasing a weekly box from Growing Communities, *box-scheme subscribers* commit to accept the box, and the fresh produce it contains, including apples and the resultant qualities that result from the specified forms of agro-ecological production. In subscribing to this mechanism, consumers are supporting a community-led form of supply and producer-led form of production and thus the agro-ecological practices and livelihoods of these producers.

The Growing Communities box-scheme provides a resilient yet flexible platform from which produce grown according to agro-ecological principles may be distributed. The box-scheme apple is found to be one that is seasonally and locally appropriate,

determined by the growing conditions of the locality, the principles of agro-ecology and the practices of the producer. The decentralised and horizontal form of distribution enables the support of small-scale producers who practice agro-ecological farming *in place*. As a community-led distribution scheme, there is more scope for autonomous, producer-led practices. The mechanism is enabled through social, as well as ecological relationships based upon wider commitment to agro-ecological practices and trading mechanisms that support them. The box-scheme thus acts as a mechanism supporting place-based growing and trading.

Part Two: Conclusion

Archetypes one and two demonstrate how more localised and direct forms of producer-led supply such as the farmers' market and Growing Communities box-scheme have the potential to support the distribution and sales of a wide range of varieties of apples, particularly those that are lesser known varieties, those with less familiar aesthetic features such as russeting, those with a short harvest window, as well as those that are recognised as not storing or travelling well. These direct forms of supply are also recognised as potentially supportive of smaller volumes and variations in volumes, qualities and size. Flexible, producer-led forms of supply can support small-scale agro-ecological producers through potential challenges that may arise such as biennialism, pest and disease damage or frost and hail damage.

In turn, these forms of direct supply support the ecological and economic resilience of agro-ecological producers, practices and apple agri-biodiversity, particularly supporting lesser known varieties that may not be commercially viable within more centralised forms of distribution. Mechanisms such as the farmers' market and box-scheme thus emerge as supportive of agro-ecological agri-biodiversity. Furthermore, these mechanisms can foster and support agro-ecological diversification of sites that grow and supply apples. In the case of the apple, it becomes a connector, the point of synergy between producer and consumer and urban and rural space, from which both rural and urban space can be further supported in pathways towards more agro-ecological forms of production. It is recognised as a mechanism supporting not only practices, but livelihoods, through the co-commitment to community-led trade.

Direct forms of supply such as the Growing Communities box-scheme and farmers' market are recognised as supporting place-based, agro-ecological practices within and beyond the city. The profit generated from the Growing Communities box-scheme is further used to support the development of possibilities of community co-production, via the patchwork farm network, as explored in Part three.

Part Three: Co-producing Agro-ecological Agri-food Systems

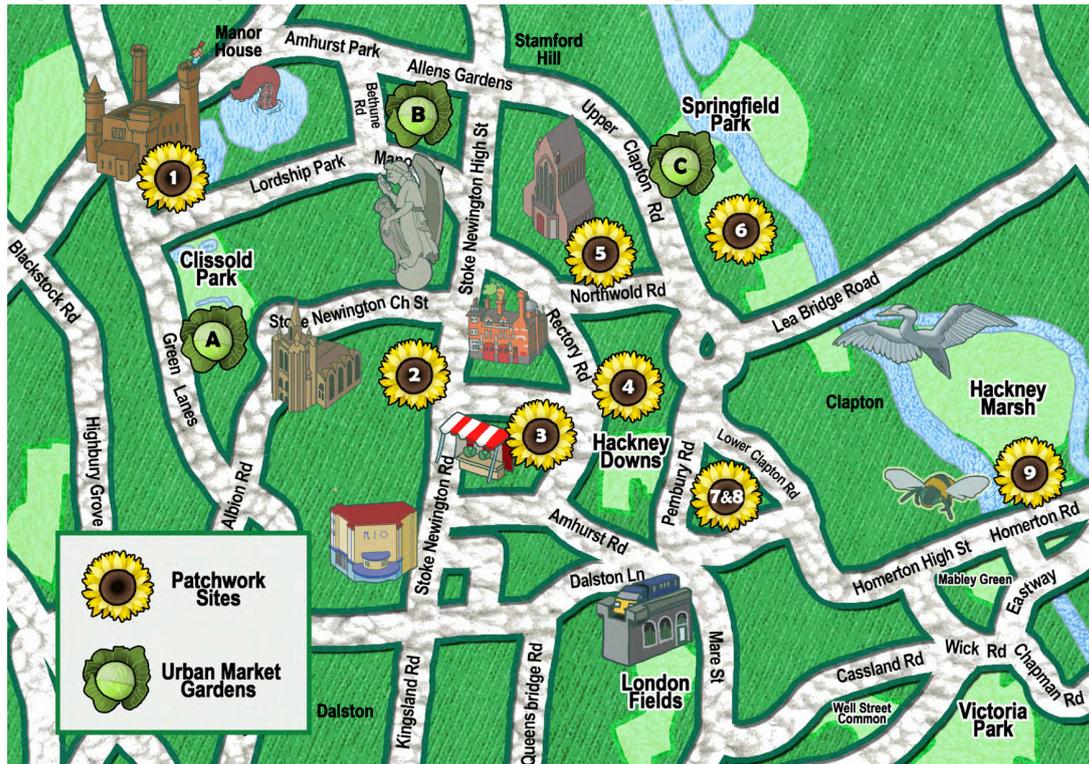
As well as the farmers' market and box-scheme, Growing Communities are supporting the development of agro-ecological growing spaces within Hackney and the surrounding peri-urban area. Indeed, many involved with Growing Communities would consider themselves *co-producers*, rather than consumers. The income from the farmers' market and box-scheme has supported the initial outlaying costs of the three market gardens and the emergent network of small urban farms, alongside the support of a Local Food fund.

Co-producing Communities

Urban growing has been a key component of Growing Communities work from infancy of the organisation. In 1997, they acquired a butterfly tunnel acquired in a public park in Stoke Newington, Clissold Park. This was followed by subsequent acquisitions of a number of other sites on the margins of Hackney public parks including Springfield Park in Clapton in 2001 and Allens Gardens on Bethune Road in 2004.

Growing Communities now run three market gardens within Hackney, managed by a head grower and assistant grower, employed to oversee production. Growing Communities have also set up a ten-month apprenticeship training program, providing training for a team of apprentice-growers. Following completion of the program, apprentices are encouraged to set up their own patchwork farm within Hackney to grow salad to feed in to the box-scheme. There are now also nine patchwork farms encompassing over two hectares of land in Hackney (including St Paul's and St Michael's vicarage gardens, The Castle Climbing Centre, Hackney Marshes Tree Nursery, Stellman Close, 24 Clapton Square, 25 Clapton Square, St Matthews church garden, Landfield Estate and Kynaston avenue) (see fig. 6.3. below). As well as the growers employed and apprentices, the sites also rely upon a team of over 120 informal volunteers and are open to volunteers during garden on Mondays and Tuesdays (Growing Communities 2014b).

Fig. 6.3. Growing Communities Patchwork Farms Map



Patchwork Sites

1. Castle Site
2. Kynaston Site
3. St. Pauls Site
4. Stellman Site
5. St. Michaels Site
6. St. Matthews Site
7. & 8. Clapton Sites
9. Tree Nursery Site

Market Garden Sites

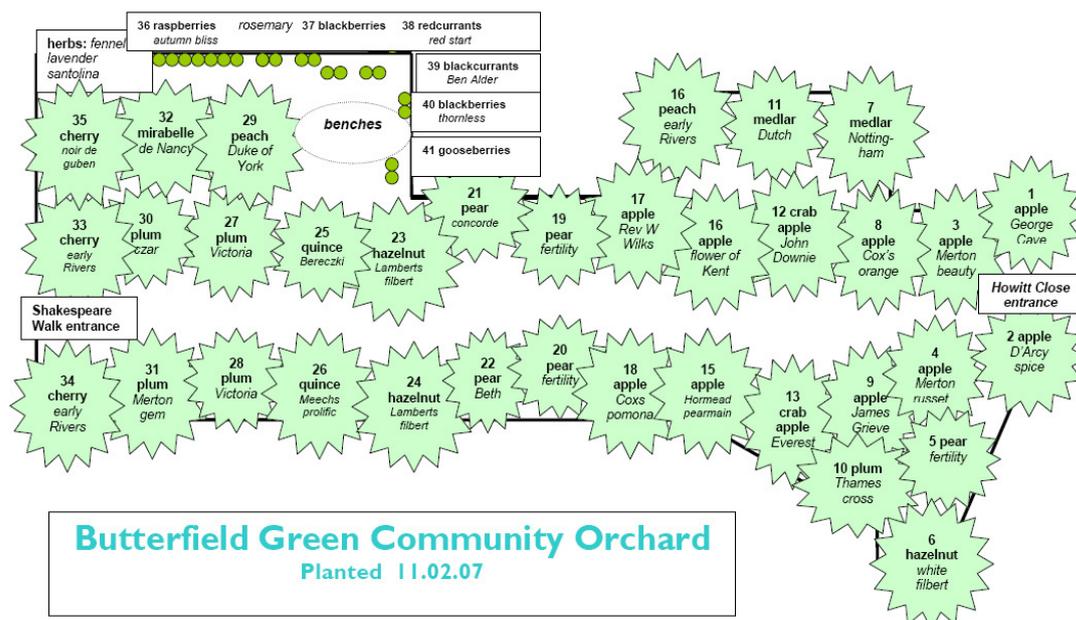
- A. Clissold Park Market Garden
- B. Allens Gardens Market Garden
- C. Springfield Park Market Garden

(Growing Communities 2014b)

The patchwork farm sites are managed according to organic principles and are Soil Association certified. Most of the market garden and patchwork farm sites focus on the production of salad crops, herbs and flowers providing salad for the box-scheme and over 30 restaurants and shops 10 months of the a year. Growing Communities estimate that they produce almost one tonne of salad per year (2014). Some of the sites are also used as for community horticultural education, including organic gardening classes.

As well as developing a network of market gardens, Growing Communities have supported a number of other agro-ecological initiatives within Hackney and beyond. In 2007 Growing Communities worked with a local resident’s group to plant a community orchard in a public the Hackney area. As indicated in the diagram below, the site was planted with 35 fruit trees and a range of fruit canes, herbs and wild flowers planted in between the trees to “improve Butterfield Green by providing a place for enjoyment as well as sharing knowledge about growing fruit” (Butterfield Green Orchard Users Group 2015). The fruit trees planted included a range of local varieties. According to the orchard user group “this preserves different varieties of fruit as far as possible, as well as making sure that the fruit trees are best suited to our local growing conditions” (Butterfield Green Orchard Users Group 2015). The orchard is now maintained by local residents with support from the parks service and managed according to agro-ecological principles.

Fig. 6.4. Butterfield Green Community Orchard



Source: (Butterfield Green Orchard Users Group 2015)

Growing Communities have also supported a number of school food-growing projects within the borough. Beyond Hackney, in 2012 Growing Communities have acquired a 1.4 acre ex-council nursery site in Dagenham, the first Growing Communities ‘Starter Farm’, which is leased from Dagenham Council. The site includes a large glasshouse and produces a range of crops to supply the box scheme including tomatoes, cucumbers and aubergines. Beyond London, in 2009, Growing Communities also launched a ‘Start Up’ program which supports other groups across the UK with setting up of similar community-led box-schemes.

Retrofitting Space

In working to support agro-ecological agri-food systems *within* Hackney, Growing Communities are found to be retrofitting public and private space for production as well as trade. With the support of the local authority, housing associations and a number of community groups Growing Communities have made use of public, private and community-owned space for the patchwork-farming network, box-scheme distribution hubs, farmers’ market as well as the Growing Communities headquarters.

The three market gardens, as well as a number of the patchwork farms are located on Hackney Council parkland (owned by Hackney Council and managed by Hackney Council Parks Department). Several of the garden sites are located on parcels of land that were considered unused or ‘out of use’ within the Hackney parks. The Springfield site was, for example, an abandoned park nursery site, previously used for propagation for council plants. Growing Communities have actively approached the council in order to gain access to these sites. The Growing Communities headquarters is also leased by the Hackney Council for a ‘peppercorn rent’ (Kerry, Growing Communities, 2015). Most of the market garden and patchwork sites are on five to ten year leases, although Kerry of Growing Communities suggests longer-term leases would be preferable.

A number of the patchwork farms are located on community-owned and privately-owned land, including land owned by a church and a number of housing estates, as well as land leased by community groups, including Hackney City Farm. The farmers’ market is located in the grounds of St.Paul’s Church. Beyond Hackney, Growing Communities also

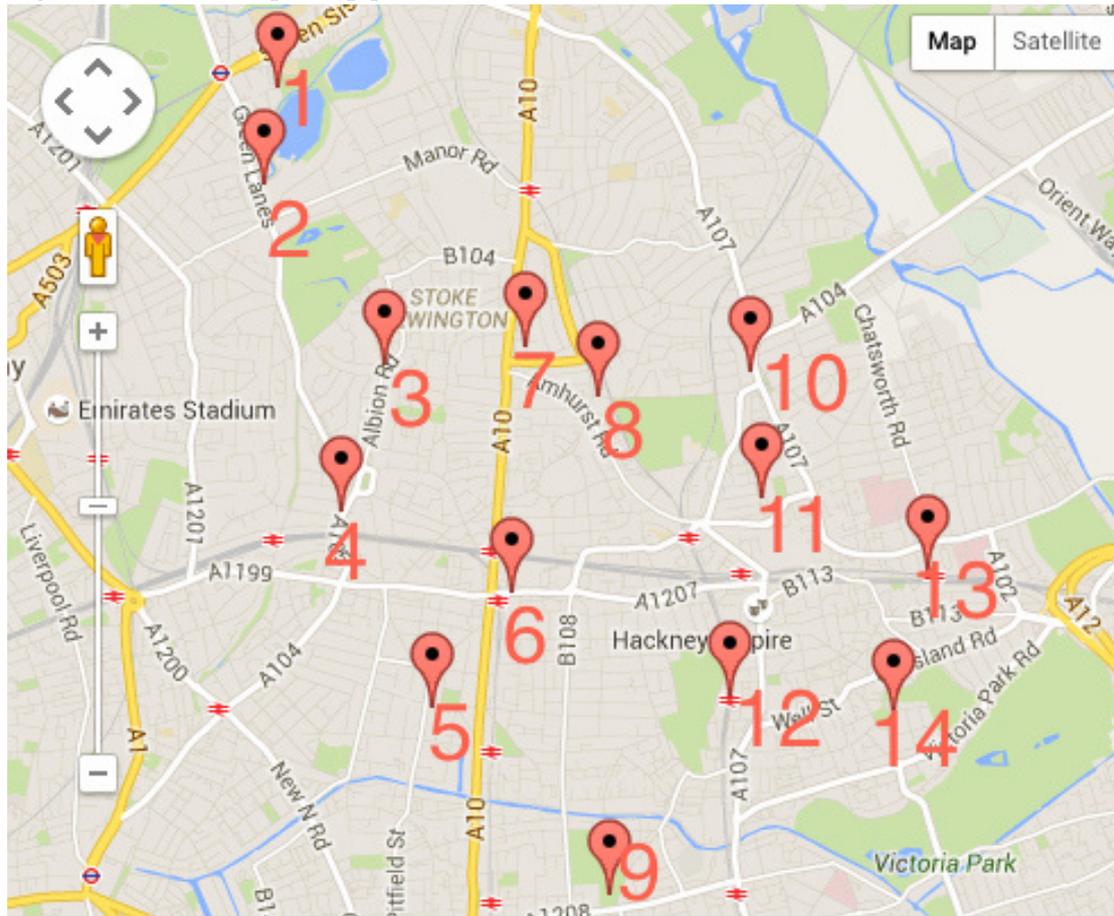
lease the Starter Farm site from Dagenham council at a low rate. Secure access to these sites and affordable rates depend on the goodwill of the council and community.

Multiple Functions, Multiple Relations

As well as supporting growing in Hackney via the market garden and patchwork farming network, Growing Communities have developed a network of trading sites. The fourteen sites used for the distribution of the box scheme and the farmers' market, located in a church-yard, are predicated upon the notion of multi-functionality of social space. The box-scheme pick-up points tend to be based within pre-existing community sites and are shared with other users (see fig. 6.5.). Distribution sites include three health food shops, an arts centre, studio, a community garden, community centre, city farm, two churches and a climbing centre, as well as the Growing Communities headquarters. With a wide geographical spread of the pick-up points, the distribution of the sites Growing Communities co-ordinator Kerry suggests they "avoid putting all our eggs in one basket." They further support accessibility for the wider Hackney community.

In distributing the patchwork-farm locations and box-scheme outlets via a wide range of community-based initiatives that stretch beyond food, Growing Communities demonstrate a resilient decentralised and horizontal form of production and trade. If one site is no longer capable of functioning, the model continues to operate whilst the distribution of the scheme enables accessibility for a wide range of the Hackney community. These pick-up points depend upon long-term commitment and goodwill of these organisations (Growing Communities are not charged for use of these sites as pick-up points, aside from the two health food shops).

Fig. 6.5. Box scheme pick-up points and Farmers' Market Location



(Growing Communities 2014e)

Distribution Sites

- | | |
|----------------------------------|----------------------------------|
| 1. Redmond Community Centre | 8. The Russet |
| 2. The Castle Climbing Centre | 9. Hackney City Farm |
| 3. Mother Earth | 10. Organic and Natural |
| 4. Mother Earth | 11. Black Cat |
| 5. St. Peters – De Beauvoir Town | 12. E5 Bakehouse |
| 6. Dalston Eastern Curve Garden | 13. Hatch House |
| 7. The Old Fire Station | 14. St. John of Jerusalem Church |

The Growing Communities producing and trading mechanisms hinge upon a supportive and enabling local authority, as well as the support of community groups and local businesses in committing to long-term provision of both growing space, trading and distribution sites at free or affordable rates. According to Kerry of Growing Communities, “allowing communities to have space to grow and trade food is absolutely key.” Hackney Council emerges as a key enabler in terms of the functioning of the organisation and development of the patchwork-farming network. Indeed, without long-term access and security of tenure of these sites for production, trade or distribution would be difficult to manage, particularly within an area where green space is becoming increasingly compressed and land and living costs increasing at unprecedented rates.

Conclusion: Placing Agro-ecological Systems

This chapter has explored how the Growing Communities farmers' market and box scheme mechanisms of community-led trade present an alternative to the corporate logic that currently dominates the current UK agri-food system. The Growing Communities box-scheme, farmers' market and patchwork farm network emerge as supportive of agro-ecological practice. Through the mechanism of community-led trade, Growing Communities are supporting the transformation of the spaces, natures and relations of the Hackney apple, based upon an agro-ecological logic.

Place-based growing

In the case of Growing Communities, *diversity, flexibility, autonomy* and *co-commitment* emerge as key determinants supporting the direct agro-ecological apple. As Part two of this chapter has explored, agri-biodiversity within agro-ecosystems is fostered through direct forms of supply such as the Growing Communities farmers' market and box-scheme. However, agro-ecological practices are based not only upon diversification of certain crops and varieties grown, but also the integration of agro-ecosystem processes, cycles and resultant *in situ resilience*. In the case of the Apricot Centre and Stocks, Growing Communities have supported producers in the diversification of agro-ecological practices and site functions as well as varieties, crops and products. In agro-ecological agri-food systems, whilst practices are producer-led, the readiness of crops is ultimately determined by natural rhythms and cycles. The transition to diverse and integrated agri-food agro-ecosystems is thus dependent upon forms of trade enabling place-based practices. Agro-ecological systems, particularly those that are small-scale, require a flexible form of supply enabling distribution of smaller volumes of a wider range of crops and products.

As discussed in Part one, diversity, flexibility and autonomy hinge upon the commitment of organisations such as Growing Communities and consumers to supporting small-scale agro-ecological producers not only in their practices but with their livelihoods. Through mechanisms such as the box-scheme and farmers' market enabling forms of long-term commitment, growers' are supported in the transition towards the integration and deepening of agro-ecological practices.

Place-based Trading

Growing Communities view their role not only as distributors of organic and biodynamic produce but as advocates of change. Indeed, Julie Brown, one of the founders of Growing Communities, describes the box-scheme as “a driver, a mechanism for creating change” (Growing Communities 2014). According to Kerry, this form of ‘radical retail’ is based upon changing not only the practices of the production of food but also of the trading of food. Through the box-scheme and farmers’ market, Growing Communities have developed a mechanism of trade that is based upon supporting the livelihoods of small-scale agro-ecological growers whilst also providing Hackney residents with seasonal, local, agro-ecological produce, sourced according to the principle of agro-ecological subsidiarity.

The farmers’ market, box-scheme and patchwork-farm network are recognised as mechanisms supporting not only small-scale agro-ecological practices outside of the borough but also supporting access to agro-ecological produce and production within. They offer an example of a community-led box-scheme functioning within an inner-city urban environment. Growing Communities further emerge as retrofitting the fabric of the agri-food system within Hackney through the mechanism of community-led trade. The income generated from the box-scheme, is used “to drive further change and set up more projects” (Growing Communities 2014). As the patchwork-farming network increases in density within Hackney and scales-out beyond, Growing Communities are recognised as supporting the extension of agro-ecological production within the city-region of London.

As discussed in this chapter, the farmers’ market, box-scheme and patchwork farming network support agro-ecological practice not only through the power of purchase but also through fostering community engagement, co-commitment and ultimately forms of co-production. The provision of physical, economic and political space emerges as critical in supporting these place-based practices.

Space for place-based practice

The provision of secure, affordable spaces for growing and trading is recognised as instrumental in helping or hindering organisations such as Growing Communities. This hinges upon the support of the local council, other community groups and local bodies. Most of the patchwork-farm sites are on five to ten year leases from Hackney Council.

According to Kerry of Growing Communities, the local authority could do more by providing more spaces for growing and trading at affordable rates with longer-term leases. Kerry suggests longer-term leases are preferable in providing security of tenure, as exemplified by Organic Lea (with a thirty year lease from Walthamstow Forest Council) and Hackney City Farm (with a one-hundred year lease from Hackney Council).

The safe-guarding of the public estate and assets is recognised as crucial for the survival of ecological growing spaces in the case of Growing Communities, particularly in the context of the urban environment. Access to affordable housing is further key for the continuation of initiatives for groups such as Growing Communities. Kerry spoke of the emerging challenges of living in Hackney, where rent for example has increased 800% over thirty years (Stirling Ackroyd 2014). This is making it difficult for some to remain within the borough, including a number of those employed by Growing Communities. Indeed, many of the growers have left to relocate to more affordable areas either within London or beyond. Currently, the income of growing can barely sustain living in an inner city borough such as Hackney. Kerry states that all Growing Communities employees are paid the London Living Wage but is worried about how it will be possible to afford to live within Hackney as rent continues to grow. Marina further spoke of the challenges for young start-up growers in small-scale horticulture alongside recognition of the importance of horticultural production as a professional practice, which can and should provide growers with a decent living wage.

One of the main principles of Growing Communities is to “support small sustainable farmers and help them to thrive...generate income” and help them to become “financially viable” (Growing Communities 2011). They suggest that “dealing directly with farmers help us to trade in a way that is personal, transparent and fair” (*ibid*). The farmers’ market, box-scheme and patchwork farming network emerge as mechanisms enabling urban communities to support small-scale agro-ecological producers, whilst also accessing agro-ecological produce. Growing Communities have supported Marina and Stocks in diversification of practice partly in an effort to support income generation, as well as deepen agro-ecological practice. However, as discussed in Chapter five, there are a number of wider structural factors that remain that make it difficult to earn a decent living as a small-scale agro-ecological producer. Neither Marina nor Stocks are able to maintain a living exclusively via the Growing Communities mechanism. Marina is reliant upon a range of other incomes beyond selling produce whilst Stocks farm supply a

number of trade routes. Chris emphasises that it can be a struggle as a small-scale producer. The Growing Communities box-scheme and farmers' market require organic certification - something that cash-strapped producers can find difficult to afford. Transport costs, stall hire costs and labour costs emerge as further challenges. In turn, the diversification of supply routes in the case of Stocks is found to compromise the ability to be fully autonomous in terms of production and supply. Sid for example spoke of one box-scheme "driving a harder grade" and the request of one of their suppliers to plant specific varieties of apples.

Whilst Growing Communities are supporting small-scale agro-ecological producers and ecological food systems in some way, the challenge remains for small-scale agro-ecological growers to make a decent livelihood only via Growing Communities forms of supply. As Marina reflects:

"I think it is also about the internalisation of costs ... the organic grower carries out multiple roles - wildlife habitat, nitrate management, building soil matter, carbon sink, but you get a lower yield for not splashing around chemicals and fertilizers... I don't get any subsidy yet if I farmed chemically I would... subsidy is the only reason most farmers stay in business."

Furthermore, whilst Growing Communities are "pushing for change", at present, the Growing Communities model is accessed by a very small proportion of Hackney residents. There are a number of structural challenges that mean that the Growing Communities model remains marginal in terms of the proportion of food it accounts for within Hackney. Growing Communities currently work with approximately 25 small-scale producers and reach over 1,000 homes whilst within Hackney where there is a population of over 250, 000. The challenge remains to scale-out Growing Communities' approach to 'radical retail' in the form of agro-ecological growing, trading and co-production in a city such as London.

According to the Land Workers Alliance (LWA 2014), limited access to land, lack of agro-ecological training and resources remain challenges for small-scale agro-ecological producers. Growing Communities as an organization are attempting to support producers through sharing the burden of some of these costs in approaching local authorities, private estates and community groups for land for growing and trading within the urban and peri-

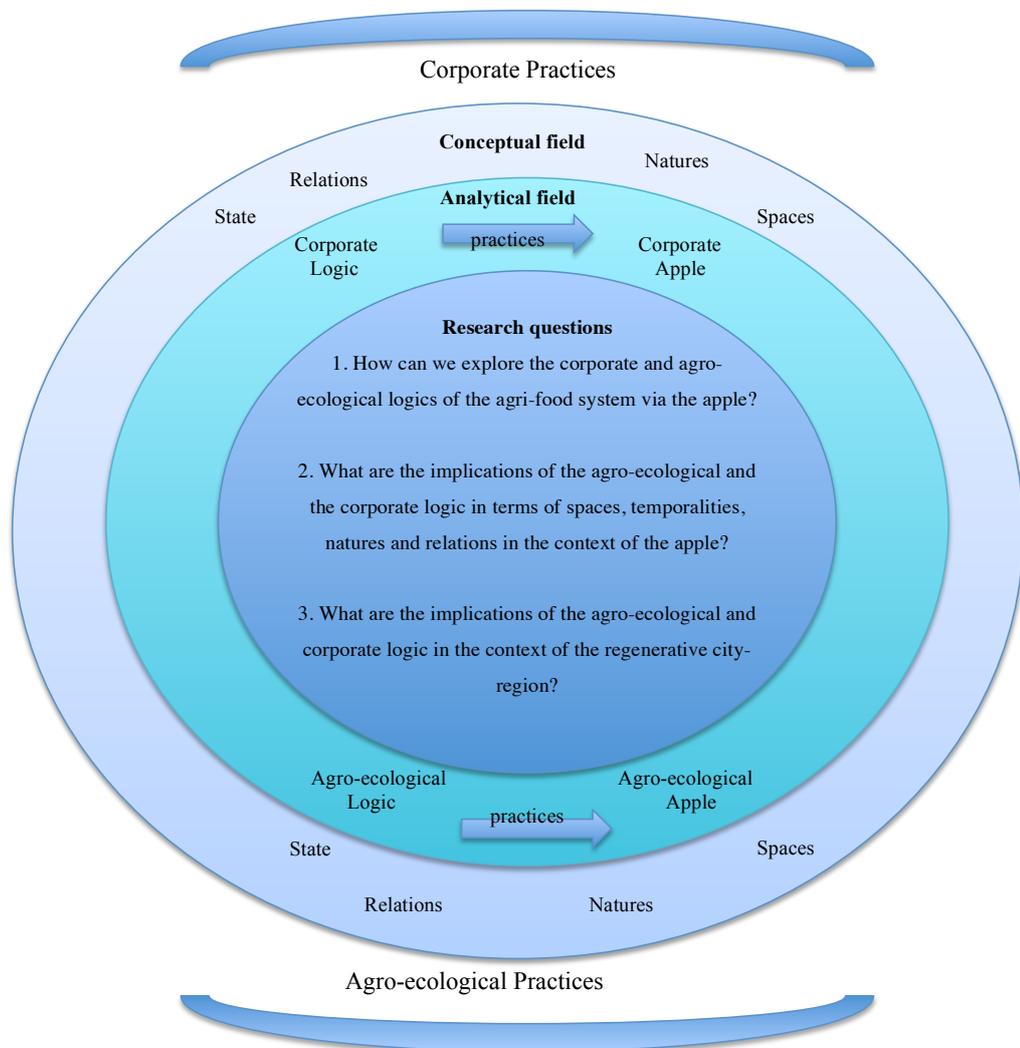
urban environment. They are further attempting to support agro-ecological training through various volunteering, apprenticeship and employment opportunities. They could offer further support for example, by reducing stall hire costs, provide financial support to meet certification costs and for the purchasing of expensive equipment and tools or other outgoings of the producer. As well as supporting access to more affordable infrastructure and distribution, Growing Communities could for example support small-scale producers with labour costs, for example, via apprenticeships as well as supporting further start-up growers with access to land both for living and cultivating. However, Growing Communities are not currently in the financial position to do this and, according to Kerry, are committed to a model of self-sufficiency and the avoidance of becoming grant-dependent.

Whilst Growing Communities emerges as a catalyst for change amongst producers and communities, there is only so much that can change a small community-scale distribution scheme can provoke without wider, systemic socio-political change. Currently, agro-ecology remains marginalised in terms of local, national and international policy and planning frameworks. Supporting access to secure, affordable space growing, trading and living emerge as key initial steps towards fostering agro-ecological agri-food systems within a city such as London. In order for agro-ecological practices to scale-out further however these communities of practice also require political space, whereby the wider political framework is rebalanced in order to provide an enabling environment for communities of agro-ecological practitioners.

Chapter Severn: Conclusion

This thesis presents a relational interpretation of the spaces, natures and relations of the urban apple through considering the practices and the guiding logic of the corporate and agro-ecological urban apple in Hackney, London. As demonstrated in the diagram below, through the analytical framework of political ecology, this thesis has attended to the practices of the multiple retailer and an agro-ecological community-led distribution mechanism. In doing so, it is suggested that this provides insight into the corporate logic and agro-ecological logic.

Figure 7.1. Reiterating the conceptual framework of the thesis



This final section reflects on how conceptually, attending to practices can offer insight into the corporate and agro-ecological logic through considering:

- (i) spaces of practice: physical, economic and political;
- (ii) natures of practice: including agri-biodiversity, breeding;
- (iii) relations of practice: growing, distributing, trading;
- (iv) scales of practice: spatial, temporal and relational;
- (v) the state and practice: policy, planning, regulations and institutional framework.

Part one considers the spaces, natures, relations, scale and state in the context of the corporate logic. Part two considers the spaces, natures, relations, scale and state in the context of the agro-ecological logic. Part three then considers how political ecology as a conceptual framework can offer insight into practice and the spaces of possibility in terms of more regenerative agri-food systems.

Part One: Corporate Globalisation

As discussed in Chapters three and four, power within the UK agri-food system is found to be increasingly concentrated amongst a small number of multiple retailers. Five multiple retailers are estimated to account for approximately 80% of the grocery market (Wood 2011). The majority of apples consumed within the UK are purchased via a multiple retailer, with almost three-quarters of top-fruit sold via the 'big four' (Tesco, Sainsburys, Asda and Morrisons) (Kantar 2010 in FPJ 2011b:13).

As explored in Chapter four, the multiple retailer is found to have increasing influence over the spaces, natures and relations of the production, distribution and consumption of the apple within the UK. This influence is found to be wide-ranging, impacting upon practices beyond the direct multiple retail environment. The practices of the multiple retailer emerge as both pervasive and exclusionary, reinforcing an asymmetry of power within the UK agri-food systems that is (multiple) retailer-led. Currently, the national political landscape of the UK emerges as one that is enabling the practices of multiple retailers and the corporate logic upon which it is based to gain traction. As multiple retailers gain power, the agri-food system emerges as consolidating and privatising, determined by practices that are increasingly retail-led and consumer-oriented.

Using an analytical framework of political ecology this section considers the corporate logic through attending to the practices of the multiple retailer and the ways in which these practices determine the spaces, natures and relations of the multiple retail apple.

1.1. Corporate Space

The spaces and practices of the multiple retail apple emerge as (i) *divided*; (ii) *standardised*; (iii) *hierarchical*; and, (iv) *privatised*.

Divided Space

Whilst multiple retailer supplies are recognised as globally *integrated*, production and consumption is spatially *divided*. Spaces of production emerge as increasingly distanced from spaces of consumption. This process of division is enabled via globalised and standardised forms of distribution. Although the recent re-localisation agenda of multiple retailers is demonstrative of more proximate spaces of production, producing and consuming spaces remain disconnected. There is a clear division between producers and consumers, with the position of power firmly placed in the hands of the consumer.

As explored in Chapter four, the sites of production of the multiple retail apple are retail-led, managed via globalised information, production and distribution systems and globally harmonised standards. These regimes of production require producers to follow the demands of the retailer. Increasingly, multiple retailers and retail consortiums are demanding exclusive contracts with producers and suppliers. This is found to have significant impacts upon those within the regime as well as those excluded from the regime. Several wholesalers for example mention the difficulty of obtaining UK apples as a result of the stronghold of the multiples on many apple producers of the UK.

Standardised Space

Multiple, retail-led production regimes emerge as supporting the production and consumption of a narrow range of commodity and club varieties of homogeneous standards. These are found to be produced by a small and consolidating number of large-scale intensive growers. Stringent forms of quality control enforced by the multiple retailer aim to maintain standard specifications. As discussed in Part one of Chapter four, the apple growers that supply multiple retailers tend to be those with the technology and infrastructure required to meet the written standard specifications and the volumes required of certain varieties for big-set distributions. In the UK, a small number of large commercial top-fruit producers are prioritised by multiple retailers as those who can meet the volumes, varieties and the written standard specifications required. Small-scale

growers with more less volume, diverse varieties or less accurate forms of technology for maintaining standard specifications tend to be marginalised and excluded from these regimes. This is found to further perpetuate the ‘technological treadmill’ “where those who first adopt inventions and more efficient methods gain, while the majority who lag behind follow suit at a loss and those who trail furthest get pushed out of business” (Food Ethics Council 2010:67).

Hierarchical Space

The consumer-directed regimes of the multiple retailer are resulting in increasing pressures upon production. Producers and sites of production are increasingly bearing the weight of retailer-led demand and the verticalisation of profit and power, as demonstrated by the economically depleting farm-gate prices for producers (GLA 2010:18) and ecologically depleting regimes of production for ecosystems (Altieri and Nicholls 2005). Suppliers and producers are increasingly aware of the penalties of not meeting the specified standard requirements. These requirements are leading to upstream pressure upon growers. Apples that do not meet the requirements are redirected, rejected or classified as class II whilst producers that do not meet the requirements are penalised, placed on a warning or discharged. Hierarchies are located not only *within* the multiple retail regime but further perpetuated and intensified *beyond*. As discussed in Chapter four, wholesalers and street traders are found to be particularly vulnerable to the impact of redirected, rejected produce. The brand is further recognised as a mechanism that reinforces hierarchies both within and beyond the multiple domain, whilst further privatising the spaces, natures and relations of the multiple retail apple.

Privatised Space

The power of the multiple hinges upon the *management* and *privatisation* of the spaces, natures and relations of the agri-food system. The multiple retailer places a clear demarcation upon the spaces, natures and relations managed by the corporation, protecting those within the regime whilst aiming to erode the power of those outside. In following the corporate logic, the multiple retailer has command and control, determining practices, produce and forms of engagement. Within the orchard, technical experts, globalised information networks and written standard specifications provide growers with globally harmonised forms of management. Producers become custodians of the brand

rather than the land. Citizens are viewed as consumers of the brand, ideally loyal, potentially for life.

The brand distances consumers not only from producers but from the spaces, natures and relations of production. Consumption, including that of the apple, is increasingly directed via brand identity. As Arvidsson (2005:251) states, “the branding of life does not so much replace communal or collective pursuits with the individualised pleasures of shopping; as much as it tends to make sociality and the production of a common evolve through and on the premises of brands.” Driven by the pursuit of profit and power, the priority ecology of the multiple retailer is that of the brand.

1.2. Corporate Natures

The corporate logic is based upon the ability for the apple to function as a commodity. This is leading to (i) global regimes of production and supply; (ii) globalised standards; (iii) the development and diversification of brand ecologies. In following this logic, the practices of the multiple retailer are recognised as significantly impacting upon the bio-physicality of the apple.

Global Commodities

The priority for the multiple retailer in terms of apple supply is the continuous availability of a standardised product throughout the year. This is enabled via globalised regimes of production and supply, managed with precision to ensure continuous supply. Innovations in cold storage further enable the multiple retailer to negate the temporality of the apple, decelerating the ripening process. As discussed in Chapter four, apple varieties favoured by multiple retailers tend to be those that have the ability to travel and store well as well as those that are widely available throughout the year. A contracting range of varieties thus dominate the multiple retail-led apple economy. There are further signs of a consolidating supply of a key range of commodity and club brand apples as a result of the rise of the small format store.

Global Standards

The apples circulating within the global apple economy are determined by globally harmonised written standard specifications managed by private retail consortiums. These standard expectations are found to inform production practices. In order to meet specified standards, the majority of orchards supplying multiple retailers are managed according to large-scale, intensive forms of monoculture, often of single variety plantings that can meet the distribution requirements of the multiple retailer. As well as controlling global regimes of production and regulation of standards, the multiple retailer is found to be increasingly directly involved in the cultivation and breeding of apple varieties. As discussed in Chapter three, the majority of commodity apples are bred from a narrow genetic range of apple parent cultivars, with an increasing proportion of patents and club brands.

Brand Ecologies

As a result of the globalisation and harmonisation of standards of the global commodity apple, multiple retail apples are found to be increasingly differentiating apple economies via brands, whether as own brands or club brands. The standards enforced by Grower Clubs and multiple retail consortiums, in many cases exceed the global standards required of commodity apples. This enables the placing of a premium on such produce.

The rise of the global apple commodity and the branded apple is recognised as contracting agri-biodiversity and place-based practice, whilst expanding global regimes of production, reproduction and trade of brands. As Arvidsson (2005:252) states, via the creation of a brand, 'nature' is not only commodified, it is further privatised both as commodity and as socio-natural assemblage. Whilst the brand apple emerges as a tightly managed ecological entity, it is simultaneously highly malleable as a social construction. The corporate brand apple is recognised as an expression of the disembedding of the apple from place-based practice and the embedding of the apple brand into the corporate regime. In order to cultivate brand ecologies the nature of the apple is distanced, commodified and privatised.

1.3. Corporate Clubs

Corporate apple relations are recognised as based upon (i) minimising and externalising risk and (ii) brand development and defense. Both aim to support the corporation in terms of the accumulation of profit and brand equity.

Minimising and Externalising Risk

Maintaining distance from the site of production, producer and produce supports the multiple retailers' ability to maintain uniform and stable aesthetics and supply. With spatial distance, regional weather conditions and fluke meteorological events or socio-political disruptions do not carry as much traction. Distancing from production and place is considered a means of rationalising expectations. As Supplier one states, "*distance concentrates the mind.*" Multiple retailers minimise the potential risks and vulnerabilities of place-based agro-ecosystems by globalising regimes of production and supply and enforcing globally harmonised standard expectations, regardless of proximity.

In contrast, spatial proximity can lead to more difficulties around maintaining specific standards and therefore supply. As discussed in Chapter four, whilst global, centralised relations enable *ex situ* resilience of the corporation, localised sourcing, such as the sourcing of British produce, is recognised as potentially problematic for multiple retailers. The enforcement of written standard specifications and penalties for transgressions however supports the multiple retailer in maintaining consistent standards whilst further diminishing possibilities or expectations of place-based exceptions or forms of flexibility. Indeed, the corporate logic emerges as based upon the commitment to standards rather than communities.

Brand Regimes

As discussed in Part one of Chapter four, opportunities to engage with the apple and the practices and places of production are minimised as a result of global, centralised forms of supply and the perceived placelessness and timelessness of the global commodity apple. The brand further diminishes opportunities to engage with the socio-natures of the apple. Brand-based forms of interaction are rather determined by forms of labelling, packaging, branding. The rise of the apple brand minimises consumer *ecological literacy*

whilst fostering *brand equity*. Corporate relations are recognised as profit, consumer and brand oriented.

Brand defense emerges is considered critical amongst multiple retailers in maintaining brand equity and fostering brand identity. Whilst production and distribution regimes support the production of stable apples, various monitoring and defense strategies maintain apple standards and brand equity. This includes the development of variety-specific written standard specifications, normative quality control procedures, and penalties for non-compliance. Apples that do not meet the written standard specifications required of the variety or brand are redirected or rejected. The practice of redirection and rejection emerges as based upon defense of the brand and corporate interests rather than the support of the producing or consuming communities these practices affect.

1.4. Corporate Scales

As explored in Chapters three and four, multiple retailers coordinate production and distribution regimes that span the globe, providing a carefully orchestrated continuous supply of standardised produce 52 weeks of the year. Scaling-up via *global regimes of production* facilitates continuous, standardised supply whilst further enabling multiple retailers to minimise potential uncertainties of seasonality, climate and socio-political events. Such regimes facilitate the transgression of the limitations of place-based practices of production. The scaling-up of *brand regimes of production* is found to further enhance the resilience of the corporation.

Globalising Supply

Multiple retailers, whether as independent entities or retail consortiums, are found to be increasingly influencing the practices of production as well as the ecologies of the apple at a global scale, whilst maintaining autonomy and distance from the places of production. The scaling-up of regimes of production enables suppliers to avoid potential ruptures and vulnerabilities in terms of supply, such as risk of failed supply as a result of localised risk of crop damage. As Supplier one explains, resilience of the multiple retailer is based upon the ability to procure apples from elsewhere if there is widespread damage to crop or if producers do not meet the demands specified. Sites of production are increasingly monitored and managed according to globalised, centralised information systems. These globally harmonised, technically determined practices are further enabling multiple retailers to minimise and externalise risk.

Localising Brands

As discussed in Chapters three and four, the FFV sector is recognised as a site of both profit and innovation for the multiple retailer. Apples are recognised as critical categories within the FFV sector. The sourcing of British apples is particularly recognised as a site of profit and brand development amongst multiple retailers. British club brands such as Jazz™, Cameo™ and Kanzi™, as well as own-brands, are found to be particularly favoured by multiple retailers. With global club brands such as Jazz™, Cameo™ and Kanzi™ there is continuous supply throughout the year. Indeed, the planting of the aforementioned club apples that can be grown in the UK, including Jazz™, Cameo™ and Kanzi™, is leading to the scaling-out of these cultivars and regimes of cultivation beyond

the UK in order for continuous supply of these varieties beyond the British apple season. The rise of the 'British' club brand apple is thus leading to the scaling-out of private club brand apple regimes beyond the UK. Branding of the 'British' apple further emerges as a means of avoiding the potential instabilities of sourcing proximate produce, as a result of the privately regulated stringent quality demands placed upon the club apple, as demonstrated for example with the demands for only class I quality.

Privatising Scales

Whilst production regimes are increasingly bound by privately determined, globally enforced, technically defined practices, multiple retailers demonstrate an ability to transgress the limitations of space and time whilst appropriating nature in the process. Increasing spatial, temporal and biophysical control of the apple reinforces the verticalisation of multiple retailer power. As governors of a 'regulatory regime of private governance of food' (Tennent & Lockie, 2010) multiple retailers both 'co-ordinate' and 'control' of production whilst simultaneously passing on risk (*ibid*). The private regimes of regulation exercised via globally enforced written standard specifications are found to reconfigure and reorient the spaces, natures and relations of the globally traded apple according to the demands of the corporate logic. Within the UK, the development of own-brand ranges such as 'basics' and 'economy' are demonstrative of multiples use of lower grade apples from those growers with whom they have exclusive contracts. However, the practices of inclusion and exclusion remain determined by the multiple.

The scaling-up of the club brand and own brand apple fosters the development of a vertical, privatised agri-food system. The profits generated from the brand apple support and strengthen the corporation whilst disempowering those on the periphery or those outside of the corporation or club. Those apples that do not meet the specifications demanded are redirected to other realms, including the wholesale arena. As discussed in Part three of Chapter four, the practice of the redirection of rejected apples is further perpetuating a hierarchy of qualities within the UK retail arena beyond the direct domain of the multiple. Brand ecologies are thus further reinforcing the power asymmetries of the agri-food system. The scaling-up of club and own brand apple regimes of production is cultivating branded forms of nature, privatisation of space and profit-centred relations.

1.5. The State and the Multiple

The power and influence of the multiple retailer explored in this thesis is largely determined by the policies, regulations and institutional frameworks of international, national and local governments. In the case of the UK, the national government is found to be supportive and empowering of many of the practices of the multiple retailer practices and the underlying corporate logic.

Privatising Production

As discussed in Chapter three, the trajectory of sustainable intensification currently dominates UK national agricultural planning and policy. A large proportion of commercial UK fruit production is sold via multiple retailers on exclusive contracts. This tends to be in the form of large-scale intensive monoculture plantations of single or a few varieties resulting in a smaller number of growers cultivating a greater proportion of crops, including apples. Whilst there has been state support of research and development around Integrated Pest Management (IPM) and state endorsement of IPM practices (Pennell 2006), there has been little investment or support of agro-ecological forms of production and ecological pest management. Over 9 out of 10 apples cultivated in the UK are treated with pesticides (Garthwaite et al. 2012:6) and approximately 85% are cultivated within 'intensive' systems (DEFRA 2006). As discussed in Chapter three, significant proportions of new commercial orchards in the UK are found to be those of club brands such as Jazz™.

The support of fruit production in the UK, particularly the production of agro-ecological fresh produce, remains marginalised in terms of state planning and policy frameworks and investment with regards to research and development. UK agricultural research has seen a reduction in real terms of around 40% between 2002 and 2006 (Ambler-Edwards et al. 2009:33). The focus of research investment that remains is focussed upon around the sustainable intensification via large farms (House of Lords 2011:39). Subsidies based upon acreage further incentivise large-scale production, as does the policy focus upon total factor productivity (Silici 2014). Meanwhile, there is little monitoring of agribusiness impacts in the form of true cost accounting (Price 2013). This further puts pressure upon those growers attempting to integrate and reduce negative externalities. Indeed, many organic growers speak of the added costs they undertake in terms of demands for certification. The emergent production landscape facilitated and supported

by the state emerges as one based upon sustainable intensification in consolidating, large-scale farms, supplying a powerful customer - principally, the multiple retailer.

Privatising Consumption

Whilst fresh fruit and vegetable consumption is advocated by government bodies, there is little involvement of the national government with regards to how it is produced or traded. As discussed earlier, the fresh fruits consumed within the UK are predominantly sold via the multiple retailer, the majority of which are imported (see chapter three). In the case of top-fruit, of the small proportion of fruits cultivated within the UK, a large proportion of which are distributed and sold by multiple retailers. As discussed in Part three of Chapter three, a small proportion of fresh fruits consumed are produced organically.

There is currently further little regulation regarding the demands multiple retailers place upon producers and suppliers or the rise of the privatisation of fresh produce. Rather, voluntary, industry-led regulations are favoured (HM Government 2010:8). For example, the Cameo™ Growers' club demand the sales of only sell premium class I. The rejection and redirection of significant proportions of produce is found to impact upon other spheres, notably the wholesale arena, as explored in Chapter four. Active support of private research into agricultural innovation is heightening privatised forms of plant breeding and the rise of patents. Yet the privatisation of apple varieties is recognised as resulting in an increasingly hierarchical, centralised fruit and vegetable sector.

The national government approach to agri-food systems is based upon catalysing change amongst the powerful and correcting market failures where they arise rather than necessarily necessarily realigning powers and practice. 'Market transformation' approaches are for example advocated in order to engage supermarkets to work towards a more 'sustainable food system' (Darnton et al. 2009). According to a DEFRA commissioned report "it is imperative to incorporate supermarkets in any strategies to bring about change in food behaviours among individuals" (Darnton et al. 2009:10). 'Food 2030' for example is based upon enabling consumers to "use their influence and spending power to support those who produce sustainable and healthy food." However, the exercise of choice in supporting those who produce 'sustainable and healthy food' can be difficult for individuals, particularly if there is little consumer choice around who

produces food or the practices of production within a food consuming environment dominated by multiple retailers.

Without the ability for retail store development on the high street and beyond, multiple retailers would be limited in the ability to sell the majority of apples consumed within the UK. Currently, however, there is little regulation with regards to the power certain multiple retailers have regarding the acquisition of real estate and trade of fresh produce. In terms of the consuming realm, the state, whether at local, regional or national level has the ability to regulate the density of multiple retailers in space. They can also support wholesale markets, street markets, farmers' markets local and regional food economies via market zoning and various other forms of policy and planning. According to Morgan and Sonnino (2010), public procurement, planning and the support of public-private partnerships are particularly powerful mechanisms by which local authorities and municipalities may support sustainable agri-food systems. At present however, the state are inadvertently empowering the multiple retailers as 'de facto' policy makers in terms of the agri-food systems of fresh fruit and vegetables (Freidberg 2007:325). The current 'light-touch' approach to governance (Food Ethics Council 2010) is enabling the extension and deepening of the locus of multiple retail power in controlling the majority spaces, natures and relations of the UK agri-food system through privatised regimes of production. There is little regulation with regards to the power and practices of multiple retailers within the fresh fruit and vegetable sector aside from the Grocery Code Adjudicator, appointed to "curb abuses of power" – rather than necessarily rebalance them.

Having considered the spaces, natures, relations and scales of the multiple retail apple and the role of the state in fostering corporate practices and interests, Part two turns to consider the spaces, natures, relations, scales of the agro-ecological apple and the role of the state in fostering or frustrating these communities of practice.

Part Two: Agro-ecological Localisation

Growing Communities present a case of agro-ecological subsidiarity of an urban agri-food system via the mechanism of community-led trade. Through the support and extension of agro-ecological practices within and beyond Hackney, Growing Communities foster access to proximate, agro-ecological food, including the apple. However, as an organisation, Growing Communities aim to do more than provide a direct interface between producer and consumer for accessing proximate, agro-ecological produce. As well as enabling community-led trade with a number of small-scale producers via the farmers market and the box-scheme, the development of the urban patchwork-farm network is also a key component of the Growing Communities approach to community-led trade.

In this concluding section, it is suggested that Growing Communities present a case of community-led growing and trading through the farmers' market, box scheme mechanism and patchwork farming network that is fostering agro-ecological spaces, natures, relations and practices within and beyond Hackney, London. As Chapter six explores, the potential of this form of community-led distribution hinges upon access to physical, economic and political space. The support of government and civil society at various scales is recognised as critical for such forms of community-led distribution to scale-out.

2.1. Agro-ecological Places

Although diverse in terms of practice, the producers supported by Growing Communities share the underlying principles of agro-ecology. As outlined in the Growing Communities 12 Principles (figure 6.2), the support of agro-ecological (specifically organic and biodynamic) practices is at the centre of the Growing Communities model.

Supporting Agro-ecological Places

In the case of the sites providing apples to the farmers' market and box scheme, both demonstrate apple *agri-biodiversity*. In growing a wide range of early, mid and late varieties of apples, the Apricot Centre and Stocks offer a diverse range of apples throughout the season at the farmers' market and via the box scheme. Many of the varieties were specifically selected as pest and disease resistant cultivars, as well as those considered suitable for the locality. The sites of the Apricot Centre and Stocks are further recognised as sites of *diversification* of production beyond the apple. In the case of Stocks, this includes the integration of livestock into the orchard system and meat into the market. In the case of the Apricot Centre, this includes the development of a range of preserves and juices. The diversification of crops and practices have in turn supported more integrated and resilient agro-ecosystems. In the case of Stocks, the grazing of livestock supports the pest and disease management and fertility of the orchards. In the case of the Apricot Centre, the integrated agroforestry design at the Apricot Centre supports pest and disease management. As discussed in Chapter six, these forms of diversification and integration have been actively encouraged and supported by Growing Communities. As well as *in situ resilience* within the agro-ecological system, these processes of diversification and integration, supported through the mechanism of community-led trade via the farmers' market and box scheme, aim to further foster producer economic resilience.

Urban Agro-ecological Places

Whilst Growing Communities support small-scale agro-ecological production *beyond* Hackney via the farmers' market and box scheme, they are also enabling the development of agro-ecological productive spaces, practices and practitioners *within* Hackney. Through the development of the patchwork-farming network, part-funded via the profits of box-scheme, Growing Communities are embedding agro-ecology within the fabric of

the city. Along with the farmers' market and box scheme, the patchwork farm sites are recognised as spaces where the community can further engage with the practices of agro-ecology through *co-production*.

Through the support of agro-ecological places of production via the community-led trade mechanism and the patchwork-farming network, Growing Communities are reorienting and reconfiguring the productive, distribution and trading practices of a small proportion of the Hackney agri-food system.

2.2. Agro-Ecological Natures

It is suggested Growing Communities foster the agro-ecological apple via the model of community-led trade in two key ways. First, through implementing a model of trade supportive of agro-ecological practice and agro-ecological places of production. Second, through implementing a model of trade enabling direct forms of community engagement, commitment and participation with agro-ecological produce, practitioners and practice.

Place-based Practices

As iterated above, Growing Communities support producers who practice agro-ecological growing methods. Although diverse in terms of design and practice, growers are united by the agro-ecological principles they follow. As agro-ecological support systems, the box schemes and farmers' market are predicated upon their ability to support place-based, agro-ecological forms of production. Integrating seasonality and ability to cope with change is thus integral to the Growing Communities model. The farmers' market and box-scheme are recognised as supportive platforms for the distribution of seasonal crops and varieties grown in small-scale agro-ecological systems, as well as lesser known crops and varieties or qualities (such as russeting), which may be unfamiliar to consumers. They further support the production of a diverse range of cultivars and crops and the wider process of diversification and integration of agro-ecological practices. As discussed in Chapter six, a wide range of apples are supplied at the farmers' market and in the box-scheme from the thin-skinned delicate early Discovery to the later, thicker-skinned Russets.

Distribution mechanisms that support producers through the rhythms, cycles and uncertainties of production are recognised as key for small-scale, agro-ecological growers working directly within the bio-physical environment and often unpredictable climatic systems. The community-led mechanism of trade is recognised as supportive of place-based agro-ecological practices and forms of agro-biodiversity in three key ways: First, *flexibility* of supply via the direct relations fostered by the farmers' market and the small-scale, non-specific ordering format and newsletters of the box-scheme. Second, the support of *producer autonomy* in determining place-based agro-ecological practices. Third, *commitment* to what is supplied by small-scale, agro-ecological producers. In the case of the Apricot Centre and Stocks, Growing Communities have been supportive of the process of diversification both of production and produce and the deepening of agro-ecological approaches practices through long-term commitment to trade.

Engaging Ecologies

The development of community ecological literacy and engagement is recognised as critical in developing committed trade relations, recognised as a key element for resilient agro-ecological practices. The farmers' market, the box-scheme and events such as the annual Apple Day provide opportunities for consumers to engage with the agro-ecological produce, practices and local apple season. In the case of the farmers' market, engagement with producers and produce foster consumer awareness around seasonality, agro-ecological practices, agribiodiversity and local production conditions. The weekly pitch of a small number of consistent producers present throughout the year further supports the development of social as well as ecological relationships. Through conversations at the farmers' market, as well as via information provided in the box-scheme newsletters and via the patchwork farm network, community ecological literacy is cultivated. In the case of the box-scheme, as well as the produce itself, newsletters provides support in translating and navigating these rhythms and changes. These forms of direct interaction and engagement with produce, practice and practitioner are recognised as mechanisms enabling consumers navigate the rhythms, cycles and changes of the seasons, crops, varieties and qualities of place-based agro-ecological systems. Nurturing the natures of the agro-ecological apple hinges upon nurturing social relations.

1.3. Agro-ecological Communities

As discussed above, Growing Communities describe themselves as more than just an organisation enabling the provision of ‘seasonal, local, organic food’. They further describe themselves as an organisation of *community-led trade*. They are recognised as facilitating *agro-ecological relations* between producers and consumers whilst further facilitating the development of *communities of co-production* within Hackney and beyond.

Community-led Commitments

As a community-led form of distribution, Growing Communities aim to support the resilience of a core group of small-scale producers. It does so in three key ways. First, through fostering *direct* producer-consumer relationships at the farmers’ market and via the box scheme, disruptions can be communicated and potential losses minimised. Second, through supporting *flexibility* around crop yield and quality and producer-led autonomy in determination of quality and variety. Third, through *commitment* to long-term support of diversification, integration and deepening of agro-ecological approaches.

As Growing Communities state in their principles, they aim to support the livelihoods of small-scale farmers and help them to become “financially viable” (Growing Communities 2014b). The patchwork farming network further extends the support to urban small-scale farmers. Commitment to long-term trade via the box scheme and the provision of space via the market supports the resilience of a small number of producers and the agro-ecological systems they manage. In turn, the growers commit to following the agro-ecological certification criteria demanded by Growing Communities. Whilst there are parameters in terms of the requirement for organic or biodynamic certification of producers supplying the box-scheme and selling at the market, the details of the practices are autonomously determined by the producers. This hinges upon a form of mutual commitment, trust and transparency of practices.

Co-producing Communities

The box-scheme, farmers’ market and patchwork farms are recognised as spaces whereby socio-ecological relationships with agro-ecological food systems may be cultivated. The farmers’ market and box scheme are recognised to support access to agro-ecological

produce whilst they also provide an interface for community engagement with and commitment to agro-ecological practices. Whilst the farmers' market support wider community connection with the *consumption* of local, seasonal, agro-ecological food, the urban patchwork farming sites support community connection with the *production* of local, seasonal, agro-ecological food. Through the development of the patchwork farm network, Growing Communities support the cultivation of an agro-ecological community of *co-production* within the city. Beyond just cultivating *agro-ecological literacy*, the patchwork farming network cultivate *agro-ecological practice*. It is suggested that forms of engagement, co-commitment and co-production within a community of practice supports solidarity, for example supporting more equitable pricing structures within community-led trade.

Through the mechanism of community-led trade, Growing Communities are recognised as *empowering* a community of practitioners that include small-scale agro-ecological producers, consumers and an increasing number of co-producers. The farmers' market, box-scheme and patchwork farming mechanisms thus support the scaling-out and deepening of forms of community connection with place-based agro-ecological practice and the emergence of communities of practice.

2.4. Agro-ecological Subsidiarity

As discussed in Chapter six, the Food Zone model (see fig 6.2), based upon the principle of agro-ecological subsidiarity, places a priority on seasonal, local, organic produce as close to source as possible. Salad, recognised as particularly perishable but undemanding in terms of space, is for example prioritised as the most ecologically localised crop. The Food Zone model then expands outward, aiming to source as much seasonal vegetable and fruit from the hinterlands of London.

Proximate Production

Although committed to sourcing as 'local' as possible, Growing Communities are not territorially bound. As well as supporting agro-ecological production and trade within Hackney, Growing Communities have developed the Dagenham *Starter Farm* and the national *Start-Up* scheme supporting other community groups in initiating similar models of community-led distribution. Kerry of Growing Communities suggests they consider

themselves part of a network of ‘radical retailers’ globally connected by the food sovereignty movement. Alongside other CSAs and forms of producer-led and community-led forms of direct supply, Growing Communities are based on decentralised, horizontal forms of distribution.

Whilst grounded in place, supporting agro-ecological localisation of the Hackney food system, Growing Communities share ideas and practices beyond place. As an organisation, they are actively connected to wider debates in London, nationally and internationally in terms of “building community-led alternatives to the current damaging food system” (Growing Communities 2008). They have for example been involved in contributing to the work of Sustain, London Food Link and the London Food Board, including contributing to the ‘*Cultivating the Capital*’ (GLA 2010) report and London Food Strategy ‘*Healthy and Sustainable Food for London*’ (LDA 2006).

Community-Based Practice

Whether via the farmers’ market, the box-scheme pick-up points or the patchwork farming network, Growing Communities are developing opportunities for community engagement with agro-ecological produce and practice. Through the community-led distribution mechanism of trade; the support of small-scale, agro-ecological production; the patchwork-farming network, the Starter Farm and the Start-Up scheme, Growing Communities are *scaling-out* forms of community-led trade and co-production. These forms of place-based production, trade and engagement are recognised as necessarily decentralised and horizontal yet capable of scaling out and connecting as communities of practice.

The scaling-out of these communities of practice hinges upon access to land for both growing and trading. Security and affordability of tenure of space for growing and trading are crucial for the resilience and scaling-out of the Growing Communities model of community-led trade and the agro-ecological producers, practices and systems it supports not only *in place* but *through time*. As discussed in Chapter six, as well as physical space, economic and political space are recognised as critical. Local authorities, national government and international forms of governance can help or hinder the scaling-out of what, at present, remain fringe when considering the proportion of population of Hackney residents engaged with the work of Growing Communities.

2.5. The State and Agro-ecology

According to Kerry of Growing Communities, access to land and space for growing and trading is critical for the work of Growing Communities. Without the school-yard or church-yard, the market would not function. Without the box-scheme hubs, the box-schemes would not be distributed. Without the market gardens and patchwork farms, salads could not be grown. Likewise, without the possibilities of agro-ecological practice in the small-scale farms that provide Growing Communities with produce, the box-scheme and farmers' market would collapse. The farmers' market, box-scheme and patchwork farm network hinge upon access to land and space.

Urban Space

The provision of affordable, secure land and space is key for the resilience of an organisation such as Growing Communities. Within Hackney, Growing Communities are dependent upon a range of growing sites and trading spaces. This includes:

- patches of the *public realm* in the form of park space;
- *community-owned land* in the form of church-yards and city farms;
- *private land* in the form of patches of housing estate sites and access to cafes and studios.

In the infancy of the organisation, Growing Communities were permitted access to parkland for the first market garden site. Hackney Council now allow Growing Communities to utilise small patches of land in most of the council parks for a nominal rate, including rates. Indeed, many of the urban spaces enabling the patchwork farm initiatives are council owned. They now rent a number of sites from Hackney Council at a 'peppercorn' rate, including the headquarters at the Old Fire Station, a council-owned building owned. The support of Hackney Council in the provision of land for growing and distribution is recognised as critical for the forms of community-led co-production enacted by Growing Communities.

Although recognised as supportive in the provision of producing and trading spaces however, leases are currently relatively short-term. As Kerry reflects, the provision of leases in trust can support the safeguarding of land in otherwise risky futures. Longer-

term leases provide greater stability for the communities involved. Safe-guarding of the public estate and assets is considered crucial for the survival of ecological growing spaces. In contrast, lack of security of tenure and safeguarding of land threatens the resilience of agro-ecological production and community-led enterprises.

Whilst access to space for growing has been predominantly provided by the local council, Kerry emphasises that Growing Communities are not completely reliant upon public land. A number of the patchwork farm sites are leased by other bodies including a housing estate and a local church. As a community-based organisation, they are supported by a diverse range of businesses, social enterprises and community groups in the area, as well as the council. The support of local community groups is recognised as particularly key for community-led trade. In terms of trading sites, the farmers' market depends upon the support of a local church whilst the box-scheme depends upon a number of community and privately-owned spaces including the city farm, arts studios and cafes as drop-off sites. The decentralised, horizontal organisational model of Growing Communities in terms of growing and trading depends upon access to a range of sites.

One of the representatives of the Hackney Tree Musketeers highlights the need for the provision of green space within local authority strategies and local development plans. He further warns of what he describes as the “intensification of urban footprints” and the subsequent compression of green space. As well as safeguarding the public estate for food growing, he emphasises the importance of spaces for biodiversity and physical activity as well as urban growing when approaching green infrastructure strategies. This is of particular relevance in a borough such as Hackney, where land assets are increasing at unprecedented rates - increasing 800% over the last 30 years according to Stirling Ackroyd (2014). As Kerry reflects “pressure on metropolitan areas is incredible.” She expresses concern at how Growing Communities will continue in an environment where land is increasingly difficult to access and living costs are rising at unprecedented rates. As discussed in Chapter six, the provision of affordable housing and living costs as well as space and land is recognised as crucial for the success of organisations such as Growing Communities and those small-scale producers practicing agro-ecology.

Rural Hinterlands

The Hackney local borough and other London boroughs are recognised as critical in the support of Growing Communities in having the space and land to develop the community-led trade system. Similarly, in the surrounding peri-urban areas of Hackney, a number of other council owned sites have been made available for agro-ecological production. The Growing Communities *Starter Farm* is on a ten-year lease from Dagenham Council secured until 2023. Whilst an associated agro-ecological workers' co-operative, Organic Lea rents a growing site for their market garden enterprise on a thirty-year lease from Waltham Forest Council. According to one Organic Lea representative, the council lease the nursery and land at a 'reasonable rate' as they "recognise the relationship as part of its food-growing strategy" (Adam Payne in Devlin et al. 2014:54).

In contrast, much of the agro-ecological work beyond the city is located within privately owned land. This can be a major stumbling block for small-scale agro-ecological producers, particularly entrant growers. Growing Communities source from a number of growers, many of whom own or rent their land. In the case of the two apple producers, both own the sites. Yet both still express difficulties regarding the economic viability of their business. Marina is involved in a range of education and consultancy. Whilst Stocks are dependent upon other trade routes including another box-scheme and wholesaler.

The issue of accessing space and land is not limited to urban space. A small proportion of the population own the majority of the agricultural land in the UK. The cost of bare-land has increased more than threefold between 2004 to 2013 (Devlin et al. 2014:53). For entrant farmers, this can be a massive hindrance, particularly for those with little start-up capital. Kerry suggests safeguarding the public estate, particularly in terms of county farms and the small-holdings that remain is critical in supporting small-scale producers. According to Kerry "the value of county farms is enormous" and areas of Grade One agricultural land²⁰ "an amazing resource." She considers the work of groups such as the Blue Finger Alliance (Bristol Blue Finger Alliance 2015) as critical, in campaigning to protect Grade One agricultural land. However, Kerry reflects that 'pony paddocks' and land prices remain a challenge for accessing suitable land to grow, particularly within the peri-urban hinterlands and areas surrounding London.

²⁰ Grade One agricultural land is defined as 'excellent' according to the Agricultural Land Classification (National Land Management Team 2003:1).

Spaces of Agro-ecologies

As demonstrated by the case of Growing Communities, local and regional forms of government and city-region policy and planning can provide support for small-scale agro-ecological production and community-led trade through supporting the provision of (i) secure, affordable physical space for growing and trading. They could also provide (ii) economic space in terms of public procurement tenders, the support of public-private partnerships and appropriate forms of regulation around market-share; and, (iii) political space in terms of enabling, multi-scalar and integrated supportive political framework.

Currently, there remain a number of challenges for developing city-region or agro-ecologically agri-food systems of subsidiarity. As explored in Chapters three and five, currently the national government is supportive of market-led, consumer-oriented agri-food policy whereby supermarket shopping is considered the 'default' option for the nation and local markets an exception. Agricultural policy is further focused upon large-scale, intensive production. Until agro-ecological forms of production and direct forms of supply are recognised as viable options rather than peripheral alternatives, they will continue to be both marginalised in political and economic space. Indeed, currently, Growing Communities account for a small proportion of agri-food trade within Hackney. The majority is sourced via multiple retailers.

Part Three: Communities of Practice

This thesis suggests that attending to practices in place illuminates how the corporate and agro-ecological logic impact upon spaces, natures and relations at a range of scales. This final section considers how a framework of political ecology supports attending to practices in place. It further questions the implications of the findings in terms of the implications for the city-region. This section first considers the importance of attending to practices in place. It then considers how attending to practices in place supports the consideration of a relational approach to the spaces, natures and relations of agri-food. It considers the divergent corporate and agro-ecological logic in terms of their approach to expanding communities of practice, either via scaling-up and scaling-out. The city-region is recognised as a 'space of possibility' in providing a supportive political space and framework for regenerative agri-food practices, including those of the apple.

3.1. Practices In place, Out of place

Swngedouw and Heynen (2003:912) have problematised the absence of place and situating in place of political ecology, calling for a more 'relational interpretation of space'. In the field of agri-food studies, Goodman, DuPuis & Goodman (2012:32) invite a consideration of agri-food provisioning based upon a politics *in place* rather than *of place*. This thesis seeks to respond to these calls amongst urban political ecologists and agri-food scholars by drawing upon a relational geographical approach in the *situating* of the logics informing the practices around the apples traded in Hackney. Relational geographers such as Massey (2005) encourage a cosmopolitical understanding of place and relationality. Relational geographies *situate* the processes and politics of landscapes, environments, objects and practices (Massey 2011). Whilst the apple considered is situated *in* Hackney, it is not exclusively *of* Hackney. Place and scale are recognised as open, plural and contested - mutually constitutive, imperfect, continually emergent (DuPuis and Goodman 2005:369). Whilst attending to practices *in place*, political ecology encourages attention to *political* space and the loci of power, distributed at a range of scales. As Marsden (2000) notes, political ecology considers meso and macro levels. Political ecology thus asserts the questioning around the locus of power.

In the case of the apple situated in Hackney, power is found to be as largely held by a small number of multiple retailers. This distribution of power is recognised as largely informing and determining the natures, relations and spaces of the Hackney apple. The

national government are recognised as reinforcing this majority power. In contrast, the agro-ecological apple in Hackney is recognised as marginal in terms of distribution and power in determining the natures, relations and spaces of the Hackney apple, further undermined by national political frameworks. In the case of Growing Communities, local authorities, with the pressure of civil society, emerge as critical actors in beginning to reclaim and redistribute some political power and space.

Displacing Practice

The corporate logic, enacted through multiple retailer practices, is leading to heightening forms of verticalisation, consolidation and privatisation of the spaces, natures and relations of the apple. The practices of the corporate logic are recognised as determined and reinforced by the progressive corporate consolidation and control of growing, distributing and trading space and the practices enacted within. As explored in Chapters three and four, the corporate logic is based upon the accumulation of profit and power through the creation of global supply clouds that both externalise and minimize risk whilst strengthening and defending corporate brand identity. Global regimes of breeding, production, distribution and trade aim to emancipate the apple from the restrictions of time, place and the limitations of biophysicality whilst corporate regimes of consumption emerge as increasingly based upon the stimulation of brand ecologies. As presented in Part two of Chapter three these practices are exemplified by the archetypes of the commodity apple; the global club apple; the localising club apple; and, the development of the multiple retailer ‘own-brand’.

Placing Practice

In contrast, the logic of agro-ecology is based upon the support and enhancement of the health and resilience of spaces, natures and relations of the agro-ecological community. Agro-ecological practices recognised as necessarily context-dependent (Koochafkan and Altieri 2010) and dependent upon decentralised, distribution mechanisms of trade. The practices of agro-ecology hinge upon place-based approaches to production, distribution and trade whilst fostering community *métis* through forms of engagement and relation with produce, producer and practice. The Growing Communities community-led mechanism of trade is determined by its ability to support diverse varieties, crops and qualities implicated within place-based agro-ecological systems. As presented in Part two

of Chapter four these practices are exemplified by the archetypes of the Discovery, Egremont Russet and Growing Communities box-scheme apple. The community-led agro-ecological apple is recognised as non-determined, producer-led, place-based and agri-biodiverse.

This thesis draws upon Whatmore and Thorne (1997) warning of the risk of focusing exclusively upon these ‘hotspots’ – to consider the points of seepage. It is for this reason that different practices of the apple were explored. This thesis has sought to follow the advice of Goodman et al. (2012:57) in attending to polyvalent and heterogeneous spaces and practices *in place*. It is recognised that there are different logics informing the practices of apple trade within Hackney playing out in different ways *in place*. Furthermore, the apple, as a fruit is necessarily dynamic, in a continuous process of becoming. In exploring the multiplicities of apples found in Hackney, and their dynamic states of becoming, a range of practices and logics are found to unfold and interrelate. Situating the study in place, in Hackney, enables exploration of the multiplicity, interrelationality and dynamic nature of practices. However, this thesis further takes note of Marsden and Franklin’s (2013:639) suggestion that agri-food researchers need to be aware not only of the ‘local’ trap but also the avoidance of “focusing only on the inevitable and infinitesimal heterogeneity, embeddedness and hybridity of alternative re-localised food movements”. Rather, they suggest “...what we might be seeing with these expressions are the beginnings of an antidote to neoliberal orthodoxies” (*ibid*). Whilst recognising the heterogeneity of the spaces, natures and relations of the practices of the apple within a borough such as Hackney, it is recognised that there is a logic driving or indeed influencing and informing many of these practices as they scale-up or scale-out. Corporate or community-led agro-ecological practices are informed and guided by underpinning principles or logics. These logics resultantly inform the practices and thus spaces, natures and relations of agri-food systems.

Using a political ecology framework informed by relational geography, this thesis has focused upon the practices of two different logics and their implications in terms of the city-region agri-food system. The logics informing and guiding practice however are recognised as permeable and, in some cases, pervasive. As the range of archetypal forms imply, particularly in the case of the unstable archetypes of the wholesaler Pink Lady®, neither the corporate logic nor agro-ecological logic are unified categories. Rather, they are found to be capable of transformation, co-optation and senescence. Drawing upon

political ecology, consideration of the distribution of power is recognised as critical. The state is considered particularly instrumental in determining the extent and potential of power of these logics through policy, planning and regulation around the distribution of physical, economic and political space and the practices enacted within. This is particularly relevant when considering the implications of these logics in terms of the city-region agri-food system.

3.2. What natures are being nurtured?

According to Selfa and Qazi (2005:462) there is a need for analysis of “how food actors negotiate the material and symbolic substance of production and consumption”. Political ecology provides a lens through which we can explore how practices are shaping natures and cultures (Kosek 2011:653), as well as space. Political ecology encourages attending to the locus and agency of power determining how these practices unfold.

Regimes of Practice

The multiple retail apple is recognised as an outcome of corporate logic based upon securing global, standardised, increasingly privatised regimes of production, distribution and consumption. As explored in Chapter three, the commodity apple that currently dominates the global apple economy is predominantly grown on semi-dwarfing rootstock in large-scale intensively organo-chemically managed monocultural plantations, an increasing proportion of which are patented cultivars or ‘club brands’. The pursuit of productivity, profit and brand identity that underpins the corporate logic have profoundly reconfigured the natures and cultures of the apple, the apple tree, orchards and the landscapes and communities within which they grow and are traded. The compression of varieties is further demonstrative of the hegemonic forces at play in the global apple economy. Of the 2,300 apple varieties estimated to grow within the UK (Morgan, Richards and Dowle 2002), five varieties dominate the consuming landscape of the UK (IFR 2009). As Morgan, Richards and Dowle (2002:132) state, “the reduction in the number of apple varieties grown and the pursuit of the ideal ‘commercial’ apple has slowly and insidiously changed our perceptions of the fruit itself.”

In attending to practice, this thesis has explored how verticalisation, consolidation and privatisation of the apple via global corporate regimes of production and supply are

having a profound impact upon the natures of the apple. Multiple retailers are found to be increasingly involved in the cultivation and reproduction of apple *brands* and the promotion of *brand cultures*. Global regimes of production of the apple brand are transforming the breeding, production, distribution and consuming landscapes of the apple, diminishing agri-biodiversity whilst developing and defending privatised *brand ecologies*. In turn these brand ecologies are recognised as reinforcing the verticalisation of corporate power. The corporate logic that underpins the practices of production, reproduction and consumption of the multiple retail apple are further influencing ways of knowing as well as growing the apple, prioritising technically and normatively determined practices, whilst supporting brand-based forms of consumption. The case of the three wholesale Pink Lady® apples demonstrates the implications normatively determined standards begin to destabilise. The corporate logic emerges as based upon externalising such instabilities.

Communities of Practice

Growing Communities provide a case of community-led distribution based upon agro-ecological subsidiarity that supports *agri-biodiversity* and *place-based practice*. It is suggested in Chapter six that the agri-biodiverse, place-based, agro-ecological apple is fostered through mechanisms such as the farmers' market, box-scheme and patchwork-farming network that support connection with agro-ecological produce, practices and practitioners. The resilience of the Growing Communities case is recognised as based upon fostering ways of *knowing* as well as *growing*, through the development of sites of place-based *co-production*.

Currently, in the case of the Hackney apple, the locus of power is found to be located amongst a consolidating number of multiple retailers and retail consortiums. As explored in Chapters three and four, the multiple retailer is increasingly involved in the production, reproduction and trade of the Hackney apple. The nexus of corporate power nested within the global supply clouds of multiple retailers and consolidating multiple retail environment, is found to be intensifying the consolidation, verticalisation and privatisation of the apple, transforming the spaces, natures, relations and practices of the majority apple within Hackney and beyond.

Dynamic Practice

Relational geographers of food such as Whatmore (2002) and Roe (2006:109) encourage engagement with the spaces whereby things become food, through material processes and human practices. Political ecology encourages exploration of how the ‘object’ or imbroglio can uncover ideologies, assumptions, practices and norms (Peet, Robbins and Watts 2011). Political ecologists such as Bennett (2010) further acknowledge the ‘vibrant matter’ of non-human assemblages. Apples are implicated within a continuous process of ‘becoming’, from blossom, to fruit, through the process of senescence to decomposition. Apples are not passive objects animated by human agency but continuously evolving human–non-human working assemblages (Bennett 2010). As explored in Chapter four, the apple is a dynamic fruit. As the ripening process unfolds, it becomes increasingly precarious as a commodity. The multiple retailer emerge as developing strategies to minimise exposure to volatile natures. Globally harmonised, privately regulated written standard specifications and regimes of production enable the multiple retailer to emancipate the apple from the seasonal limitations and risks of production of a single orchard or locality. So too is the apple a dynamic fruit in terms of breeding. Multiple retailers are increasingly involved in the reproduction regimes of apples. In contrast, the agro-ecological logic explored in Chapter six hinges upon the support of resilient models of production and trade capable of withstanding potential instabilities of the apple (such as volumes, qualities or varieties of supply). Attending to the practices of becoming and the management and reproduction of the apple is recognised as a key means of exploring the underlying logic of the corporate and agro-ecologically traded apple and the power distributed through the enactment of these practices.

3.3. Communities of Practice

According to Massey (1991), it is *places* that “implicate us in our relations with others.” As Massey (2007:166) later notes “the global is as locally produced as the local is globally.” She adds, the local is “not necessarily the victim of the global. In many senses, it causes it” (*ibid*). Massey (2005:156) suggests “... a progressive sense of place would recognize that, without being threatened by it...what we need...is a global sense of the local, a global sense of place.” Attending to practices in place with a relational

methodological framework supports attending to the implications of these relationalities. More-than-words methods are recognised as critical in attending to these practices.

As discussed, the corporate logic hinges upon the disconnection, intensification and indeed outflanking of the potentially obdurate spaces, natures and relations of agri-food. The practices of the multiple retailer are found to be enhancing the *disconnection* of relations between producers and consumers; productive and consumptive spaces; and, consumers and socio-natures. The multiple retailer apple emerges as *placeless* and *timeless* via globalised, standardised, privately regulated regimes of supply of the commodity apple. Brands further enhance disconnection from place and time, through the development of brand identity as well as streamlined global regimes of supply. Through the development of the commodity and apple and the diversification of brand ecologies via the club and own brand apple, the corporate logic is ultimately based upon the intensification of consumption and the accumulation of profit.

In contrast, the agro-ecological logic and apple hinge upon the intensification of socio-ecological connections and relations in place. As considered in Chapter five, agro-ecological systems tend to be supported by direct forms of supply such as CSA, farmers' markets and box schemes that facilitate place-based agro-ecological practices and relations. Chapter six demonstrates how agro-ecological practices are supported by producer-led autonomy, flexibility and forms of co-commitment via community-led trade. It further demonstrates how community-led trade foster community *métis* through *ecological connection* with seasonality, agri-biodiversity and place-based practices and *social connection* between producers, consumers and co-producers. The distributed, decentralised multi-functional use of space in the model of community-led trade further facilitates density of connection within the community. In this work, Growing Communities are challenging the producer-consumer; urban-rural; food as commodity-food as nature binary that is found to dominate London corporate agri-food systems. Through connecting producers and consumers via community-led trade and in developing the patchwork-farming network, consumers become co-producers and city spaces become productive as well as consumptive terrains. Growing and trading practices are integrated into community and public space. The emergent co-producing communities nurtured by the community-led distribution mechanism are recognised as 'communities of practice' (Friedmann 2007). Whilst in place, the practices enacted are relationally determined, emergent and iteratively informed within and beyond the locality (Marsden 2008).

Whether distant or proximate, disconnected or integrated, private or public, spaces, natures and practices are ultimately determined by the distribution of power.

3.4. Scaling-Up, Scaling-Out

As discussed in Chapter one, there is a need to avoid falling into the ‘local trap’ whereby value is placed on an empty scalar notion (Born and Purcell 2006). Hinrichs (2000; 2003) further warns that we need to be wary of assuming that ‘local’ food necessarily equates with a sense of local economic embeddedness, whilst DuPuis and Goodman (2005) emphasise the need to ‘let go’ of the notion of “a local that fetishises emplacement as intrinsically more *just*”. As Sayer (2001:698) notes, associating scalar relations with social relations “can inadvertently produce an overly benign view of economic relations and processes.” Goodman, DuPuis and Goodman (2012:74) emphasise the need to avoid viewing the local “as a spatial configuration that is ontologically given.” Rather, power relations produce, reproduce and restructure the scale of the local (*ibid*). A focus therefore needs to be placed upon *practices* and *processes*.

Multiple retailers are found to be supporting the localisation of apple production within the UK, according to a corporate logic based upon the streamlining of British supplies into globalised, standardised and increasingly privatised supplies - as most explicitly demonstrated by the rise of club brands such as the Jazz™ apple. In contrast, Growing Communities demonstrate a form of agro-ecological subsidiarity that supports agro-ecological practices in place, yet connected beyond place as communities of practice. Both logics are recognised as connected through practices in place yet connected through communities of practice beyond place – enacted through the process of *scaling-up* via verticalisation, consolidation and privatisation (in the case of the corporate logic) or *scaling-out* via horizontal, distributed, place-based communities of practice (in the case of the agro-ecological logic).

Political ecology as a framework encourages attending to the locus of power and agency rather than ‘ontological givens’ of scale or value. This thesis claims that attending to practices *in place* can support such work. The thesis thus responds to the call of Goodman (2004) and a number of other agri-food scholars and relational geographers call for a turn to practices and the *relationalities* of practice in place and beyond place. It further emphasises the importance of considering temporal as well as spatial scales of agri-food

systems (as demonstrated in the case of the three Pink Lady® wholesale apples). Through attending to practices *in place* it is recognised as critical to consider the impact of the state at various scales and the agency it has in distributing and regulating power and, in doing, so fostering or frustrating practices.

3.5. Politics of Agri-food

Political ecology recognises that agri-food systems are ‘constitutive, imperfect, political processes’ which reside ‘alongside’ global forces (DuPuis and Goodman 2005:359). As a framework, political ecology emphasises the need to engage with the impact of the state on agri-food systems. International, national and local policy are implicated within the practices of becomings of the apple whether according to corporate and agro-ecological logic. A political ecology framework demands attention to the locus of power in these practices.

Privatising Practice

As discussed in Part one of this chapter, currently, the UK national government is recognised as supportive of the practices of sustainable intensification and forms of retail-led regulation and ‘market-led’ transformation (HM Government 2008). The corporate domination of agri-food systems is largely reinforced by national government policy and planning. UK farms are consolidating, farming populations are diminishing and employment terms are increasingly flexible (Food Ethics Council 2010). State subsidies based upon scale are further reinforcing the consolidation of production. National grants awarded for the exploration of sustainable intensification (House of Lords 2011) are further perpetuating economies of scale and the corporate logic. In the case of top-fruit production, multiple retailers are found to account for a significant proportion of UK agricultural production, particularly that which is sourced from large-scale orchards. Multiple retailers are further found to be increasingly involved in managing and determining the practices of production.

Agro-ecological Practice

The state has the potential to support the agro-ecological apple and indeed more regenerative agri-food systems through national, regional and local political frameworks. However, currently the UK national government is found to reinforce the power

asymmetries of a multiple-retail led agri-food system, endorsing the corporate logic, whilst marginalising the possibilities of scaling-out smaller-scale approaches to regenerative agri-culture.

Politics of Practice

A supportive political framework is recognised as essential for the scaling-out of regenerative agri-food systems, including agro-ecological practices (Altieri 2012). International, national and local and regional levels of policy and planning are considered critical in determining the spaces, natures and relations of agri-food systems. Marsden and Franklin (2013:639) encourage relational geographers working on agri-food to consider the possibilities of “creating more sustainable spaces of possibility.” The final section considers how regenerative agri-food systems, including agro-ecological practices, might be supported by the state in the context of the city-region.

3.6. Regenerative City-Regions and Communities of Practice

As this thesis has explored using the lens of political ecology and the apple as a case, there is a profound asymmetry of power within the current dominant agri-food system within the UK. This is permitted and indeed supported by the actions (and inactions) of the state. Marsden and Franklin (2013:639) encourage relational geographers working on agri-food to ask “how can governments and the way we organize economies ...give space and support to public and civic economies.” This final section suggests regenerative agri-food communities of practice could be supported by a multi-scalar, cross-sectoral and participatory political framework that aims to provide physical, economic and political space for regenerative agri-food systems.

Whilst Growing Communities offer a case of community-led agro-ecological trade in Hackney, they remain a small organisation accounting for a marginal proportion of food traded within the city of London. As a case, they demonstrate the possibilities as well as challenges of trading and producing agro-ecologically within the UK. Currently, the UK government does not provide an enabling political framework for agro-ecological practices. The challenge for the livelihood of small-scale agro-ecological growers in the UK is further intensifying as the cost of living and land rises at unprecedented rates whilst the income from agro-ecological horticultural production remains comparably low. This

is considered a particular challenge within urban environments such as Hackney and within ‘market-led’, multiple dominated consuming environments.

Politics of Practice

Cities are recognised as spaces where everyday practices can be constrained, enabled and normalised as a result of the socio-spatial configurations and political dimensions such as policies and planning. As Cohen (2015) states, cities and advocates can actively reshape perceptions of normal practice by illuminating the ‘uneven geographies of practice’ and the ‘impacts of unsustainable systems of practice.’ Cohen suggests there is a need for the city and its surroundings to attend to the asymmetrical geographies of practice (*ibid*). As he notes practices can drive and are driven by change. Cohen further notes that without a city-wide or borough-wide approach to practice-based politics, there is a risk that inequities and asymmetries can deepen. Within an urban environment such as London, the city-region is considered a potentially powerful site from which regenerative agri-food practices could be scaled-out.

Spaces of Possibility

Access to physical, economic and political space is recognised as key for regenerative agri-food systems. A political framework supporting the scaling-out of sustainable agri-food systems within the UK requires access to physical and economic space for growing and trading, as well as political space, whereby the support of sustainable agri-food systems is incorporated within the political framework. As URBACT (2015:69) state, “finding space for food in the city relates ultimately to the governance itself.” The city-region is considered an appropriate level of governance from which an integrated, multi-scalar political framework for regenerative agri-food systems may be situated.

-Physical Space

Access to affordable land and living for small-scale producers is recognised as essential in supporting regenerative agri-food practices. This is particularly key for entrant growers within urban and peri-urban environments. In the context of London, the development of a city-level and city-region policy for example could support small-scale growers, via the city-wide or regional protection of green-belts and Grade One agricultural land from development and land speculation, as well as promoting the green-belt as an area suitable for a proportion of small-scale, agro-ecological agriculture.

In Vancouver, a regional growth strategy created a greenbelt protecting 1.8 million acres of farmland in the Ontario region from urban development whilst promoting food production as well as supporting infrastructural improvements, irrigation infrastructure and protected agricultural land base (Blay-Palmer 2010:160). In Adelaide, Australia the city municipality have developed a city-region zero growth regenerative strategy whereby reclaimed waste-water and organic urban compost is used to fertilise 20,000 ha vineyards and orchards in the peri-urban and rural hinterlands of the city (Girardet 2015). Such strategies, at city-region level, can provide opportunities for integration of various other strands of sustainable policy as well as supporting regenerative agri-food practices.

In the ‘Cultivating the Capital’ (GLA 2010) report by the Planning and Housing Committee of the Greater London Authority (GLA) it was stated that the Mayor should “encourage and support thriving farming and land-based sectors in London, particularly in the Green Belt” (GLA 2010:66). The report also recommends that Local Development Plan documents should protect the “best and most versatile agricultural land in accordance with the national guideline and allow for appropriate projects of farm diversification and other measures to meet the needs of farming and rural business development” (GLA 2010:49). The report suggests that the Mayor integrates urban agriculture into waste, water and energy strategies, recognising the “significant opportunities and contributions urban agriculture can provide in terms of recycling compost and production of biogas and renewable energy” (*ibid*). A city-region approach to supporting farming and trading could support producers such as those connected to Growing Communities in overcoming some of the barriers they currently describe in terms of land prices, access and the challenges of living as well as growing on peri-urban land.

-Economic Space

As well as supporting access to secure, affordable space for production, economic space is recognised as critical in supporting regenerative agri-food systems in scaling-out within the context of the city-region. Those producing food require a living wage whilst consumers require accessible, affordable food. This is recognised as particularly critical for groups such as Growing Communities operating within urban environments where the costs of living are increasing at unprecedented rates.

The New York SNAP programme provides an example of the possible role of municipal government in *enabling change* in consuming practices of citizens of the city, through facilitating the use of federal Supplemental Nutrition Assistance Program (SNAP) benefits at New York City farmers' markets (Cohen and Ilieva 2015). In this case, the municipality are *actively* reconfiguring the possibilities of practices of food consumption whilst supporting the possibilities of sustainable agri-food systems through *enabling* the reconfiguration of practices, focussing on those citizens most in need of healthy, nourishing and affordable food.

Publication of the London Food Strategy '*Healthy and Sustainable Food for London*' (LDA 2006) outlines a city-wide objective to make London's food healthier and more sustainable and makes a call for the support of organic food production in the London city-region as well as recommending local authority and city-wide support of various forms of trading including farmers' markets and support of urban food growing. Growing Communities provide a case of an expanding economic space for sustainable agri-food within and beyond Hackney, supported of the local authority in terms of access to affordable, relatively secure land for growing and distributing. Growing Communities aims to support a living wage for those employed whilst it also aims to support the provision of accessible and affordable food for residents, through a distributed model of trade and via accepting NHS Healthy Start²¹ vouchers for the box-scheme. However, in the case of the Healthy Start vouchers, one of the co-ordinators, Kerry reflects that uptake is low and that there is little local authority support or promotion of the scheme.

Political space is recognised as critical not only in enabling access to economic space but also in fostering processes of change and transformations in practice. This is particularly critical in an urban environment where the multiple retailer is found to be the dominant, often default - and currently potentially more accessible and affordable - site in terms of accessing food. The case of the SNAP vouchers in NYC is demonstrative of the spaces of possibilities for municipalities and local government in terms of activating and fostering healthy, ecological and equitable agri-food practices.

²¹ Healthy Start vouchers are means tested vouchers to support mothers with children under four years of age and pregnant women to buy some basic foods including fresh fruit and vegetables, milk and infant milk formula (NHS 2015b).

-Political Space

A supportive political framework is recognised as key for the scaling-out of regenerative agri-food practices. Policy and planning, research and development frameworks and institutions themselves all have the potential to foster or frustrate regenerative agri-food systems. Morgan and Sonnino (2010) suggest that public procurement, planning and the support of public-private partnerships are particularly powerful mechanisms by which local authorities and municipalities may support sustainable agri-food systems in the provision of economic and physical space as well as political space.

Brighton and Hove City Council are demonstrative of a local authority which has made a city-wide commitment to sustainable food and pro-actively uses the planning system to support food growing within the city and the amount of land available within the city on which to grow food. Through a civil society and city government partnership, the local authority has integrated food growing and trading into development plans, core strategy and a number of other planning documents (Brighton & Hove City Council 2011). The aim of the food partnership is to “to develop an integrated, cross-sectoral approach to food policy, which links initiatives within public health, environmental sustainability, community development, education, agriculture, cultural and economic development, waste management, urban planning/land use, and tourism” (Brighton & Hove City Council 2006:4).

However, as the Bristol Blue Finger case in Bristol demonstrates, there is a need for multi-level integration of policy (Bristol Blue Finger Alliance 2015). National planning can stand in the way of local policy, even within a city such as Bristol, championed as a ‘Sustainable Food City’ (Sustainable Food Cities 2014) with a Good Food Charter and Good Food Plan. In this case, the development of a Park and Ride initiative to meet the requirements of a national government sustainable transport bill overruled a city-wide campaign to protect Grade One agricultural land. Not only the substance, but forms of cross-sector integration across and between political landscapes are recognised as key in the provision of supportive political frameworks for sustainable and regenerative agri-food systems. In the context of the UK, supportive political frameworks for sustainable and regenerative agri-food systems need to be recognised and integrated at national as well as local political level.

According to Jennings et al. (2015:58), “with notable exceptions, appropriate structures most often do not exist – globally, nationally, regionally or locally – that allow for multi-dimensional food systems planning and facilitating the realisation of policies that promote the diverse and interlocking public goods.” Food policy tends to “lack cross-sectoral mandate” and governance is not often devolved to a level considered effective for delivering actions or combining rural and urban policy (Jennings et al. 2015:58). Jennings et al., (2015:34) suggest “few examples...integrate food provisioning for local and regional markets, ecosystem health, biodiversity protection and diversification of landscapes across the urban and rural continuum.” Overcoming the tensions between different sectors and levels of government and policies is thus recognised as a key challenge for creating more integrated political frameworks for city-region approaches to regenerative agri-food systems. Policy needs to not only be *supportive* but also *integrated* across departments and scales to avoid the risk of events such as that of the Bristol Blue Finger whereby various strands of sustainable planning and policy become antagonising rather than mutually supportive. Jennings et al. (2015) suggests a more comprehensive territorial governing system at city-region level could complement a multi-scalar approach to governance. This would necessitate *cross-sectoral* considerations whereby economic, social and environmental policies can be integrated as well as *democratic participatory systems (ibid)*.

Participatory Politics

As Morgan and Moragues-Faus (2015:26) note, there is a need for “genuinely participative structures that voice the concerns about food, overcoming the impediments of public institutional structures, as well as effectively reshaping the current flows of power and exclusion that characterise current uneven urban foodscapes.” ‘*Spaces of deliberation*’ (Moragues-Faus and Morgan 2015) such as food policy councils, food boards, food strategies and food secretariats that bring together civil society, private actors and local governments are considered supportive of ‘democratic deliberation’ rather than “the deadly duo of corporate power and pusillanimous planning” (Morgan, 2015:11).

Organisations such as the London Food Board, Sustain and London Food Link are recognised as critical civic society organisations giving groups like Growing Communities political voice and space at various scales, through promoting the integration of sustainable agri-food approaches to city-region policies and strategies. The

'*Good Food for London*' annual Sustain publication provides a London wide analysis of the activities of boroughs. This encourages councils to take initiative and learn from other innovative cases of public partnerships and council initiatives. It also provides council with a sense of where they are and where they might want to head, as a 'dashboard' of good practice. For example, in terms of growing food, councils are recommended to make a pledge to providing growing spaces and to write the provision of growing space in to local development plans. This is accompanied with the Capital Growth initiative, providing food-growing support to community groups and local authorities. The '*Cultivating the Capital*' report (GLA 2010) providing recommendations for the Mayor's London Plan, are indicative of the city-scale work of entities such as London Food Board and Greater London Authority (GLA) committees which are capable of mobilising change at city-level.

According to Kerry, the '*Cultivating the Capital*' report (GLA 2010), the Capital Growth initiative (London's food growing network, managed by Sustain) and the '*Good Food for London*' Reports²² (Sustain 2014) made for 'fertile ground' when Growing Communities approached Dagenham Council with their proposal for the *Starter Farm* since the council had signed up for objectives to increase food growing within the borough. Within the context of a city-region, various CSOs and local authorities can share, collaborate and learn as well as invoke change at a wider-scale.

Whilst political space is key, Kerry emphasises that Growing Communities are keen to remain autonomous as a group and remain financially self-sufficient rather than grant-reliant. She emphasises their desire to remain autonomous as an independent organisation promoting a form of 'radical retail' offering a "different way of trading". Ultimately, Kerry says they are trying to change the food system by changing the way they trade. Being viable as an enterprise is thus key to their work. However, as outlined, being viable is currently challenge in a political environment whereby agro-ecological practices are located within a disabling environment. Participatory political structures need to be enabling not only in providing *space for deliberation* but also in enabling *space for practice* that is place-based, autonomous and community-led. As well as the provision of

²² An annual London borough league table and series of good food maps "shine light on which boroughs are demonstrating strong leadership and which are lagging behind" (Sustain 2014)

physical, economic and political space, there is recognition of the need for transformation within the *architecture* of the political framework.

Co-productive Politics

Jégou and Bonneau (2014) emphasise the need for *co-productive* as well as participatory forms of governance with communities and between stakeholders. In this sense, the local authorities is “less directive and more participative and co-produces with stakeholders and communities” (Jégou and Bonneau 2014:26). According to URBACT (2015:37), multi-stakeholder partnerships requires not only physical space but “also in legal terms to enlarge the understanding of public authorities’ role and administrative culture.”

If knowledge is understood to reflect “power relations and world views”, much of agri-food has been dominated by top-down, corporate controlled research agendas (Pimbert 2006:9). This is permitted by a hollowed-out state that has progressively deregulated agriculture and privatised forms of regulation, research, agricultural extension and quality control. As a result, local forms of knowledge, institutions, organisations and priorities have been neglected (Pimbert 2006; Altieri 2012; Koohafkan and Altieri 2010; Holt-Giménez et al. 2012).

Yet sustainable agri-food practices such as agro-ecology are recognised as knowledge intensive as well as place-based (Altieri and Nicholls 2012). In the case of agro-ecology, growers are considered central to determining the shape of the research (including agenda, method and design as well as response to the research findings (in terms of adaptations and innovations). According to Pimbert (2006:1), the agro-ecological system hinges upon “autonomous and participatory ways of knowing.” These ways of knowing are based upon participatory and endogenous forms of knowledge creation. Supporting agro-ecological agri-food systems requires not only the support of place-based agri-food practices but also the physical, economic and political support of place-based knowledge systems. This could include open source networks, farmer-to-farmer learning networks, farmer field days and farmer schools as well as the development of networks communities of practice sharing not only techniques and tools but frameworks and policies (URBACT 2015; Urgenci 2015).

Such place-based communities of practice can be further supported through sharing practice beyond place. According to Blay-Palmer, Sonnino and Custot (2015:1) such scale-out communities of practice could “...support and reinforce global networks of sustainable community food systems, foster knowledge co-creation and ultimately cement collective action to global pressures. In turn these networks could enhance the sustainability and resilience of community food systems and facilitate wide scale food system transformation.”

Community-based forms of agro-ecological food systems depend upon the nurturing of social relationships and community empowerment (Silici 2014). But they also require political space in which these forms of learning can be scaled-out, as well as deepened and integrated at a number of levels and scales. Regenerative agri-food systems and the practices they support, such as agro-ecology, are recognised as necessarily transformational to the current agri-food status quo not only in terms of *ways* of growing but also in terms of *ways* of knowing. Supporting these ways of knowing requires physical space and land in which to grow, trade and also learn.

The city-region could support innovative and dynamic systems of growing, trading, learning and sharing in an effort to forge more sustainable agri-food systems. As Cohen and Ilieva (2015) demonstrate in the case of NYC SNAP uptake at farmers' market, political frameworks can activate radical changes in practice. Through considering the corporate and agro-ecological logic, this thesis suggests that the support of sustainable and regenerative agri-food systems requires not only physical, economic and political space for growing, trading and distributing but also political space for nurturing communities of practice that are capable of co-producing the structures within which they operate. According to Altieri and Toledo (2011:6), agro-ecology is “socially activating as it requires community participation and horizontal methods of knowledge exchange to work.” The city-region thus offers a ‘space of possibility’ for ‘communities of practice’ to create, activate and scale-up sustainable and regenerative agri-food systems in participatory and horizontal ways.

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Appendix

2.1. Ethical Statement

Ethical and professional research is defined by the Economic and Science Research Council (ESRC) as:

“The ethical principles of integrity, honesty, confidentiality, voluntary participation, impartiality and the avoidance of personal risk to individuals or social groups characterise social science research that is conducted in a professional and ethical manner.” ESRC Research Ethics Framework

In pursuit of my research project, I will endeavour to follow the ethical standards of equity, integrity and confidentiality as required of all professional academic social science research, using the ESRC, the British Sociological Association (BSA) guidelines and the Cardiff University and school ethical research guidelines for further guidance.

Following the British Sociological Association (BSA) guidelines, as a researcher, I am aware that I am responsible for upholding the *integrity* of social research. This includes both seeking to publish the research as a valuable resource for the community and wider society, but also remaining considerate of potential implications of data storage dissemination and publication.

I am responsible for seeking to ensure that the physical, social and psychological well being of the research participants is not adversely affected by the research. The rights, interests, sensitivities and privacy of all individuals should be protected whilst recognising the possibility of conflicting interests. I am therefore responsible to record and report in a sensitive, accurate and truthful manner whilst remaining sensitive and reflexive to potential conflicting interests and any potential harm that may be caused by accurate reporting. I will endeavour to keep research visible and open to suggestion from others and will seek to clarify and discuss descriptions and points of views before publishing. I also need to be mindful of the requirements of data dissemination and storage, publication, rights of research subjects and sponsors. Pseudonyms will be used to ensure anonymity. Data will be stored according to the Data Protection Act 1998.

I also need to be aware of the need to protect the identity and interests of the participants

involved in the research and the need to respect the cultural beliefs of respondents in a just and equitable manner. I therefore need to be reflexive of power dynamics and mindful that misinterpretations can occur. When conducting research I therefore seek to be as transparent and clear as possible, acting with trust and integrity and respect, whilst also remaining aware or at least reflexive of my own assumptions and positionality. There is not a realistic risk of any participants experiencing either physical or psychological distress or discomfort to my knowledge. Personally, I should also be mindful of potential risks both social and physical when conducting research and ensure that people are aware of my whereabouts and interviews or fieldwork is held in public space.

Ethical approval from the school ethics committee was sought.

3.11. Wholesaler Interview Guide

Wholesaler Background

1. How long have you been working at New Spitalfields Market?
2. How would you describe your job title?
3. What did you do before working in New Spitalfields? (if applicable)

Wholesale Sphere

4. What fruits and veg do you sell? Does this vary through the year?

Apples

5. What apples do you sell? Does this vary through the year?
6. Would you say there is a time in the year when apples are more popular?
7. Would you say that apple demand (in terms of volume and variety) has changed over the years? (If so, how?)
8. Who would you say are your major clients? Would you say your clients are consistent or very changeable? Has this changed over the years?
9. How would you define a quality apple?
10. What would you say determines whether you will sell your apples or not?

Journey

11. How would you map out the apple journey from tree to wholesale? Does this change through the year?

3.1. Integrated Pest Management Practices

Varietal selection

- Selection of pest and disease resistant varieties;
- Seasonal extension of varieties.

Cultural and Biological practices

- The identification of pests, the monitoring and recording of pest populations and the development of thresholds for each pest;
- Support of natural predators and parasites;
- Introduction of biological controls;
- Removal of dead and diseased wood;
- Fertility and irrigation management;
- Pheromone disruptors, lures blockers and traps.

Chemical practices

- If pesticides are necessary, use only the most benign, avoiding broad spectrum where possible;
- Apply pesticides with a targeted and informed approach, ensuring only the necessary levels are applied;
- Apply pesticides as early in the crop growth cycle as possible to achieve the earliest possible control of a pest or disease and allow the maximum period for degradation of pesticide residues. eg. post-harvest and before flowering;
- Adopt optimum pesticide application techniques, e.g. choice of nozzles;
- Temperature and moisture sensors provide guidance in assessing risk and determining if/when to spray;
- Decision support systems to support appropriate timing of application for optimum control. eg. pheromone trapping monitor insect levels to determine spray thresholds and determine timings (such as codling moth egg laying periods).

Post-harvest practices

- Selective picking to reduce rot and storage disorders;
- Mulching of trees to avoid exposure to fungal diseases;
- Limit fruit exposure to soil;
- Assess rot risk assessment for long-term storage.

Adapted from (Pennell 2006).

4.1. Archetype One: Gala

New Zealand; raised c.1934 by J.Hutton Kidd Greytown, Wairapa Valley. Kidd's Orange Red X Golden Delicious. Select named 1965 by Dr. W.M. McKenzie, DSIR, Havelock North.

Rich, honeyed, juicy with some of perfumed quality of Kidd's Orange Red. Grown New Zealand and all major apple regions; France, Italy, Germany, Spain, Australia, South Africa, South America, Canada, also grown UK. Usually more highly coloured sports, such as Royal Gala are planted.

Royal Gala named by McKenzie following visit by Queen Elizabeth II, who was so impressed by box of Gala that she requested more.

Bright orange red flesh. Red stripes over gold. Inconspicuous fine russet dots. Medium size, oblong. Pick early October. Store Oct- Jan/March.

(Morgan, Richards, and Dowle 2002:215)

4.2. Archetype Two: Braeburn

New Zealand. Grown commercially 1952 by William Bros, Braeburn Orchards. Believed Lady Hamilton seedling; first known by this name in 1970s, two forms of Braeburn recognised in New Zealand, one maturing earlier than other; NFC has later form; commercial plants now are of earlier form.

Refreshing, crisp, firm flesh; can be perfumed. In England, often fails to mature.

Grown commercially New Zealand and all warm apple regions: Australia, South Africa, South America, France, Germany, Italy, Canada, US. Heavy cropper. Pick late October. Store January-March.

(Morgan, Richards, and Dowle 2002:194)

4.3. Archetype Three: The Pink Lady

Australia; raised Western Australia Dept Ag.

Golden Delicious X Lady Williams.

Select 1979 by J. Cripps. Introduced 1989, syn Cripps Pink.

Prettily flushed. Firm solid apple; crackling cream flesh; sweet, quite honeyed. Late season.

Grown Australia, New Zealand; increasingly planted in warmer apple regions: South Africa, France, US, Italy; imported to UK. English climate unsuitable to grow this variety. Cultivation and marketing carefully controlled; only best fruit sold as Pink Lady, less perfect apples marketed as Cripps Pink.

(Morgan, Richards, and Dowle 2002:252)

4.4. Archetype Four: Jazz

The Jazz apple was developed in the 1980s by Horticulture and Food Research Institute of New Zealand.

Braeburn x Gala.

Jazz is a trademark, and the true cultivar name is Scifresh. It was developed in conjunction with a marketing agency Enzafruit which controls planting and marketing internationally.

A late season variety.

Jazz inherits many of its distinctive qualities from Cox's Orange Pippin.

The butter-yellow flesh is juicy, crisp and dense.

Jazz is grown in New Zealand, France, and Washington state in the USA, with most commercial plantings starting in 2000.

(Orange Pippin 2015c)

5.1. Soil Association Organic Standards

To meet Soil Association standards (one of the key certifying bodies in the UK), a number of regulations must be followed within orchards. These include:

- The use of resistant, organic varieties and rootstocks where possible (or trees will require a derogation period of three years).
- Maintenance of a balanced supply of plant nutrients within the soil via application of organic compost, manure and green manure as well as seaweed, potash and other recognised substances where necessary.
- The creation of a diverse ecosystem within and around the crop to encourage natural predators by:
 - a) companion planting, under sowing and mixed cropping;
 - b) leaving uncultivated field margins, hedges, windbreaks and wildlife corridors.
- Weed control via green manures and intercropping.
- Strategic planting dates.
- Good husbandry and hygiene practices.
- No herbicides.

(Soil Association 2013).

6.1. Archetype One: The Discovery Apple

UK. Raised c.1949 by Mr. Drummer in Blacksmith's Corner, Essex. Worcester Pearmain X possibly Beauty of Bath. Named Thurston August renamed Discovery 1962.

Well-ripened on the tree, bright red with crisp, juicy, often pink stained flesh and hint of strawberry flavour.

Dummer, workman on Essex fruit farm, had raised a number of seedlings from Worcester Pearmain pips and decided to plant the best one in front garden.

Main early commercial variety by early 1980s, widely grown in gardens.

Col: bright red flush; greenish yellow/yellow background; flecked fine dots pale russet.

Size: medium. Shape: round slightly flattened.

Resistant to scab, mildew.

Crop: good, slow to bear.

Pick mid-late August. Store: mid-late Aug-Sept.

(Morgan, Richards, and Dowle 2002:206)

6.2. Archetype Two: Egremont Russet

UK; probably arose England. Recorded 1872 by nurseryman J. Scott, Somerset. Exhibited Sherborne Castle, Dorset. RHS AGM 1993.

Very distinctive flavour; often described as nutty; Morton Shand said it recalled scent of crushed ferns. Almost smoky, tannic quality develops after keeping and flesh becomes drier.

Name suggests it arose on estate of Lord Egremont, Petworth, Sussex. Gardens were famed for fruit particularly in early 1800s, when number of new varieties were raised but none bearing this name. Nevertheless, head gardener, Fred Streeter always maintained it was raised at Petworth. Popularity came early 1900s, after nurseryman George Bunyard praised it. Commercially season clashed with Cox, but following demand for 'Russet' apples in 1960s it was planted to small extent and 'Russet' now seen on sale.

Frt. Col ochre russet, slightly orange flush; gold ground colour.

Size: medium.

Shape: flat-round.

Basin, broad. Large eye, open; sepals, broad based; quite downy. Cavity narrow, shallow; lined russet.

Stalk very short, quite thin. Flesh cream.

Upright, hardy, resistant to scab, prone to bitter pit.

Crop: good.

Pick: late September/early October. Store October-December.

(Morgan, Richards, and Dowle 2002:209-210)