Allotments and alternative food networks: the case of Plymouth, UK

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Abstract

Alternative food networks (AFNs) are the focus of an 'explosive growth' of research in Europe (Goodman 2004), and the term covers a wide range of activities, from food banks, community gardens, and farmers' markets, to community supported or organic agriculture. However, there is an impasse in differing positions over whether AFNs represent an exclusionary place-based 'quality turn' (Ilbery and Kneafsey 2000), or whether they contribute to inclusive local communities, sustainability and food security (Tregear 2011, Kirwan and Maye 2013). This research aimed to clarify these debates, through exploration of UK allotments as a benchmark for AFNs, using the case of Plymouth, SW England. A political ecology perspective of social-ecological systems (Ostrom 2008) was used to investigate the activities, relations and governance involved in allotments and AFNs, organised through the concepts of multidimensional capital assets (Bebbington 1999).

This research demonstrates how activities on allotments involve human, social, cultural, natural and political capital assets, encompassing both basic food security and a quality turn towards 'good food' (Sage 2003). Taking the long view, it is seen that the relative importance of the different asset dimensions are contingent on wider socio-political settings. Relations on allotments illustrate the building of social capital, which extends to wider communities of interest, practice and place (Harrington *et al*. 2008), and which involves values of social justice that can be explained as diverse or care economies (Gibson-Graham 2008, Dowler *et al.* 2010). However, the politics and governance of allotments are largely influenced by neoliberal policies that favour oligopolistic and transnational food systems and restrict urban land allocations for place-based food initiatives. Present-day urban population densities are at levels far higher than envisaged for the original garden cities. Nevertheless, alliances at neighbourhood, city, regional, national and transnational scales are coalescing around the values represented in the original setting up of the UK allotment system: of self-reliance, human-scale settlements and the restorative value of the natural environment. Any realization of the potential contribution of allotments and AFNs to the sustainability and resilience of food supplies for urban populations (Armitage *et al.* 2008, Folke *et al.* 2010) ultimately depends on multilevel responses to a large range of challenges. Finally, the thesis contends that, in the present day, evidence is building up around the potential of allotments and many other AFN activities, or place-based food systems, to meet multiple policy objectives through aligned values.

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Wendy Miller, December 2013

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Glossary

AFN	Alternative Food Network
ARI	Allotment Regeneration Initiative
B0A	Board of Agriculture
BTCV	British Trust for Conservation Volunteers
CAP	Common Agricultural Policy
CFS	Committee on World Food Security
CIL	Community Infrastructure Levy
CRF	Campaign for Real Farming
CSA	Community Supported Agriculture
DCFA	Devon and Cornwall Food Association (foodbank)
DFN	Different or Diverse Food Networks
DORA	Defence of the Realm Act 1914
FAO	Food and Agriculture Organization
FCFCG	Federation of City Farms and Community Gardens
FN	Field Notebook (ddmmyy)
GATT	General Agreement on Tariffs and Trade
GFN	Globalised Food Network
Ha	Hectare
IMD	Index of Multiple Deprivation
l.a.	Last accessed dates for websites (ddmmyy)
LA	Local Authority
LFN	Local Food Network
MSM	Mainstream Media
NALU	National Agricultural Labourers Union
NFU	National Farmers Union
NGO	Non-Governmental Organisation (non-profit)
NSALG	National Society of Allotment and Leisure Gardeners
NTQ	Notice to Quit
PCC	Plymouth City Council
PHDU	Public Health Development Unit (Plymouth)
PWDRO	Plymouth and West Devon Records Office
RHS	Royal Horticultural Society
RL	Research Log (ddmmyy)

SES	Social-ecological Systems
SWDRO	South West Devon Records Office
WTO	World Trade Organization
WW1	World War One
WW2	World War Two

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Author's declaration

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Word count of main body of thesis: 80,169 excluding references and appendixes

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1. Introduction

1.1. Background to this thesis

Alternative food networks are the focus of an 'explosive growth' of research in Europe (D Goodman 2004: 6). Different activities are variously covered in investigations (organic agriculture, farmers markets, community gardens, foodbanks and community supported agriculture) with often a key focus on place, agroecology and pluriactivity or post-productivism (Wilson 2007, van der Ploeg 2008, Morgan 2010). Sonnino and Marsden (2006: 181), state that alternative food networks are:

> "Variously and loosely defined in terms of 'quality', 'transparency', and 'locality' … (somewhat contentiously) signalling a shift away from the industrialized and conventional food sector, towards a re-localized food and farming regime".

Amongst the claims made for alternative food networks (AFNs) in comparison to conventional food systems are representations of a 'quality turn' (Ilbery and Kneafsey 2000), an 'ethics of care' (Sage 2003, Dowler *et al.* 2010), and 're-connecting producers and consumers' (Kneafsey *et al.* 2008). In relation to wider contexts, AFNs have been suggested to contribute to food security, rural/regional development (Sonnino and Marsden 2006), and resilience or sustainability (Eriksen 2008a, Morgan and Sonnino 2010). Conversely, there is a growing body of knowledge that challenges claimed benefits for AFNs, and suggests instead that the focus on 'local' may maintain social inequalities

(D Goodman 2004) and does not necessarily provide ecological advantages (Edward-Jones *et al.* 2008). Tregear (2011) calls for future work on AFNs to break the impasse between these positions, and identifies key features to be overcome as including inconsistent use of concepts, conflation of spatial/structural characteristics of AFNs with outcomes, and a continued lack of a consumer perspective. D Goodman (2004) further contends that analysis does little more than illustrate potentials as AFNs are so broadly defined. This position is supported by van der Ploeg (2000) who instead describes the heterogeneity of European farming practices, and by Venn *et al.* (2006) who suggest that the term 'alternative' can in fact be seen as pejorative.

Whilst allotments are familiar to most of the UK population, they have not received much attention in AFN literature. The notable recent exception is Wiltshire and Geoghegan (2012), who compare community and (individual) allotment gardening on differences in levels and extent of participation. Venn *et al.* (2006), describe AFNs as 'novel' responses to industrialised agriculture. Yet, rather than being a new response, allotments developed alongside industrial agriculture, have national legislation to protect them, and have existed throughout the UK for around 200 years (Wiltshire and Azuma 2000). It is problematic therefore to incorporate them as one aspect of AFN activities. Instead, this thesis suggests that they provide a benchmark, on the basis of their longevity and ubiquity, as a comparator for claims made for different AFNs. As a

result, 'allotments' and 'AFNs' are not conflated in this text, but are kept separate in recognition of distinct differences that are explored.

Three main theoretical strands of research into AFNs, of political economy, rural sociology, and governance/network analyses are identified by Tregear (2011), who suggests that future research which draws on more than one theoretical perspective is likely to offer richer, more balanced analyses. She also recommends that explicit recognition of values ascribed to phenomena can help to address problems of conceptual conflation (e.g. of localism with desirable outcomes). This thesis contends that a focus on UK allotments, using an overarching theoretical framework of political ecology (e.g. Zimmerer and Bassett 2003, Ostrom 2008), from a Gramscian, critical realist and pragmatic perspective (Robson 2002, Wainwright 2010), can contribute to the debates in literature on AFNs described above (e.g. on sustainability and inequality). The research uses the case study of Plymouth, SW England (see Chapter 3), to explore how the UK allotment system compares to, and so can contribute to knowledge on, alternative food networks. The next section gives an introduction to the settings for this research (1.2). This is followed by an overview of the key concepts in literature to date on AFNs and allotments (1.3), and of the gaps in knowledge (1.4) that form the basis for the aims and objectives of this thesis (1.5). The chapter conclusion (1.6) outlines the structure of the thesis.

1.2. The wider settings of allotments and AFNs

This section introduces the wider settings for research into allotments and AFNs, key features of which are concerns for food security, resilience/ sustainability, and food sovereignty. Secure sources of food, as the most basic need for human life alongside water, are central to how and where people live. According to the Committee on World Food Security (CFS), the UN forum set up in 1974 under the aegis of the FAO,

> "Food security exists when all people, at all times, have physical, social and economic access to sufficient, safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life. The four pillars of food security are availability, access, utilization and stability." (CFS 2012: 4)

The UK allotment system was initiated amongst waves of concern for food security for low income households in the 1700s and 1800s, within the context of transformations in the mode of food provisioning that involved increasing trading of food out of its areas of production. Land enclosures and industrialization in the UK had funnelled people into urban areas and there were periodic and widespread social protests and political debates over food affordability and access (Stevenson 1992). Allotments in the UK were eventually legislated for (see Appendix 1), to provide food security for households who did not have access to either land or monetary income and in the context of rising unemployment and falling wages. In 1887, local authorities

were given the legal duty to provide households with land 'at an affordable rent' on which to grow food. With very few exceptions, demand for allotment land was consistently higher than its availability throughout the UK from the 1800s until the 1950s (Crouch and Ward 1997, Burchardt 2002).

During wartimes (World War 1 and World War 2, abbreviated to WW1 and WW2), with legislation and incentives to increase national food production, the numbers of allotments rose to over a million, resulting in an estimated 10 per cent of food grown in the UK being produced from allotments and gardens by 1944 (Kemp 1977). After the end of World War 2, demand for allotments fell significantly alongside the wide availability of ever-cheaper, increasingly processed, food (Steel 2008), falling unemployment and a secure welfare system for low-income households. Two major government enquiries, by the Ministry of Land and Natural Resources (MLNR 1969, known as the Thorpe Report), and by the Department of Environment, Transport and the Regions (DETR 1998), were held to investigate the future of the allotment system. They both documented the return of allotment land to owners after the end of national wartime initiatives, the pressure for building development in urban areas, and the greatly reduced number of allotments available after the 1940s (*ibid.*), as illustrated in Figure 1.2.

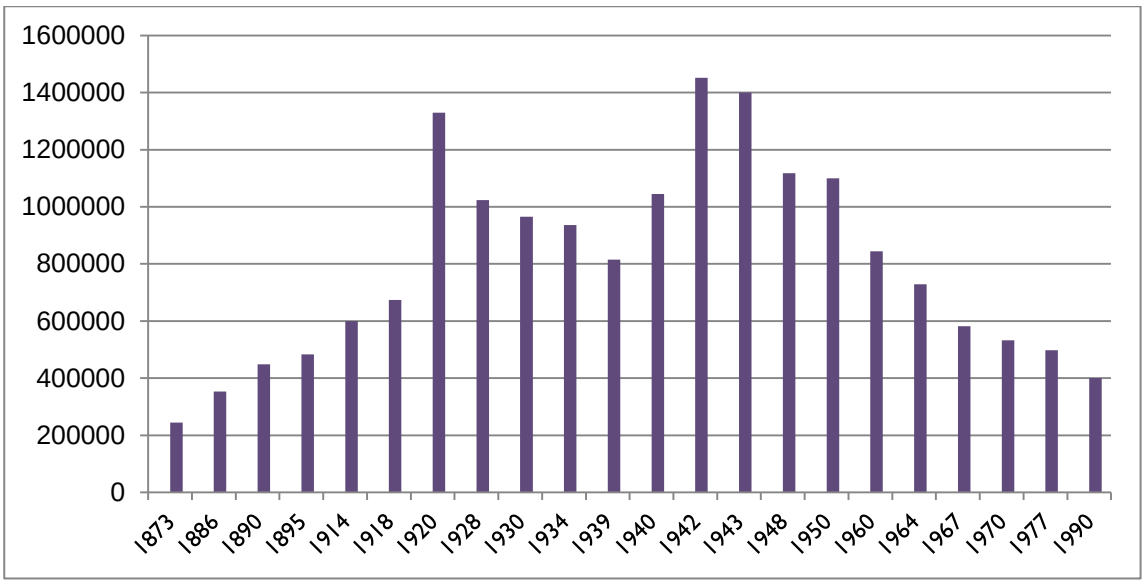


Figure 1.1 UK allotment numbers *(Source: compiled from MLNR 1969 and Poole 2006)*
N.B. Data is not available at regular intervals, but is given here for years where estimates exist. See MLNR (1969:40) for discussion of data inadequacies.

As suggested in Figure 1.1, apart from during wartimes, food security in the twentieth century was assured for urban populations, and allotments were no longer an issue for policy agendas. However, from the 1960s onward, concerns for the sustainability of industrialised agriculture were raised, notably by Carson's (1962) *Silent Spring*, and by reports from the Club of Rome (Meadows *et al.* 1976) and the Bruntland Commission (1987). These factors combined with campaigns by Friends of the Earth and TV programmes such as *The Good Life*, to increase demand for allotments again, with an estimated 1600 per cent rise in waiting lists in the 1970s (Riley 1979 cited in Crouch and Ward 1997: 13), albeit with no accompanying policy action.

Food security surfaced again at policy level in the early twenty-first century in the context of concerns for sustainability and resilience of (mainly urban)

populations, indicated by the title of reports such as *The Perfect Storm* (Chatham House 2008a, 2008b), and EU and UK Foresight reports on the future of land use and of food and farming (EC 2009, GOS 2011). Vulnerability for urban populations especially was suggested in reports such as *Nine Meals to Anarchy* (NEF 2008), which built on memories of the truck drivers' strike and empty supermarket shelves in 2000. Assessments by the UK Department for Environment, Food and Rural Affairs (Defra 2010a, b, c) identified vulnerabilities from environmental, socio-economic, technical and political factors, as depicted in Table 1.1.

Table 1.1 Typology of possible threats and challenges to UK food security
(Source: Defra 2010b: 5, Fig 1)

	Types of threats and challenges (illustrative)			
Scorecard themes	**Political**	**Technical**	**Demographic and economic**	**Environmental**
Global availability	Wars Export restrictions Bilateral land deals Bio-fuel policies	Yield growth Investment and skills	World population growth Incomes growth	Floods, droughts Plants / animal disease Changing climate
Global resource sustainability	Wars Institutional and policy failures	Farming practices	World population growth Farming intensification	Water scarcities Desertification Soil erosion Climate change Ecosystems breakdown
UK availability and access	Trade embargoes Breakdown in international trade Breakdown in EU trade EU regulations	Decline in non-renewable energy Port closures	Importance of fruit and veg consumption and imports Sharp decline in UK competitiveness	Animal disease Coastal flooding of ports Water scarcities Bio-diversity risks
UK food chain resilience	Strikes / protests Regulation	Radioactive fallouts IT corruption Contingency planning Just-in-time	Oil shocks Absenteeism due to pandemic flu	Extreme weather events
Household affordability and access	Planning restrictions	Lack of transport	Poverty. Food inflation. Currency devaluations. Unemployment	Extreme weather events
Safety and confidence	Malicious activity Regulatory failure	Contamination	Increasing demand for complex processed products. Longer supply chains	Pests and diseases

Amongst the factors identified above (Table 1.1; see Appendix 2 for indicators), the issues of affordability and sustainability of access to food supplies for UK populations are a key theme in this thesis in order to investigate claims for AFNs and allotments. The challenge to affordability for UK populations comes from factors of both supply and demand: rising food prices, and unemployment, falling (real) wages or welfare benefit cuts. Rising food prices are contended to have been a contributing factor to riots in over twenty countries in 2008 (Patel and McMichael 2009), echoing the situation that led to the setting up of the UK allotment system. Whilst households in the UK spend a very small proportion of their incomes on food relative to those in the 1800s, or those currently living in countries where the 2008 riots took place, charitable food assistance in the UK increased by an estimated 100 per cent in 2011-2012[1]. This is in the context of around 13 million people, including 3 million children, who live below the poverty line (60% of median UK household income, or £195 per week for a lone parent and two children in 2013[2]). Projections by the Resolution Foundation (2012) suggest that incomes of the lowest quintile of UK populations are likely to see their incomes fall by a further 12 per cent by 2020.

Accompanying the above developments, the National Allotment Society estimates the provision of around 330,000 allotment plots in 2012 in the UK

[1] http://www.trusselltrust.org/ l.a. 130313
[2] http://www.family-action.org.uk/section.aspx?id=691 l.a. 130313

(NAS 2012), with a rise in the number of people on waiting lists of 20 per cent over 2011/2012 to a total of 180,000.[3] (No data are collected nationally that can verify these figures.) Parallel to the rising demand for allotments since the 1970s, AFN activities have increased in the UK, evidenced by the number of farmers markets (from just one in Bath in 1997, to over 800 throughout the UK by 2013[4]), community gardens (over 1,000)[5] and community supported agriculture (CSA) schemes (over 80)[6]. Other activities included in literature on AFNs range from 'guerrilla gardening', whereby people start cultivating unused (mostly marginal urban) spaces, growing both food and flowers (Reynolds B 2009), to organic agriculture which occupies 3.9 per cent of the total agricultural land area in England (Brown *et al.* 2009). Research on these different AFNs demonstrate activities with multiple stated aims besides providing 'local food supplies for local people', including health and wellbeing, opportunities for neighbourhood regeneration, and strengthening local economies (Seyfang 2006, Sherriff 2009, Morgan 2010, Saltmarsh *et al.* 2011). While some aspects of AFNs (e.g. farmers markets and organic agriculture) are discussed as entrenching inequalities (D Goodman 2004), others (e.g. community gardens) make claims for enhancing food security for low-income households (Levkoe

[3] http://www.telegraph.co.uk/gardening/7631631/Allotment-waiting-list-jumps-20pc.html [l.a. 130313]
[4] http://www.farmersguardian.com/home/rural-life/country-view/farmers%E2%80%99-markets-%E2%80%93-21st-century-solution-to-local-sustainability?/31329.article [l.a. 300313]
[5] For example, the UK-wide Federation of City Farms and Community Gardens (FCFCG) now represents around 60 city farms, around 1,000 community gardens, and more than 70 school farms. An estimated half a million people in the UK participate in these, with around 3 million visits each year. [www.farmgarden.co.uk l.a. 300313]. This compares to an estimated 14.5 million private domestic gardens.
[6] Community Supported Agriculture (CSA) directly connects producers and consumers, e.g. with consumers buying a share in a harvest, with many different membership or subscriber arrangements. The number of these in the UK grew from none in the 1990s, to over 80 in 2013, including 50 new CSAs starting in the three years to November 2011 (Soil Association 2011)

2006, Sherriff 2009, Choo 2011), as documented for allotments (Poole 2006, Crouch and Ward 1997, Way 2008).

Many activities within UK AFNs have been supported by national initiatives or grant-funding schemes such as the Big Lottery programmes of £10 million on 'Making Local Food Work', £17 million for the Food for Life partnership, and £60 million for the Local Food Fund. Social movements, or non-profit organisations, that support other AFN activities include the Soil Association, Campaign for the Protection of Rural England (CPRE), Friends of the Earth, National Trust, Sustain, and, more recently, the Transition Town Network (Hopkins 2008). Other social groups that call for more fundamental changes to systems of agriculture and food include Reclaim the Fields, Occupy our Food Supply, or Via Campesina. These latter contend than 'food sovereignty' is a preferable goal to food security, as it also incorporates concepts of social and ecological justice. The above factors give the wider setting for this research, which is further motivated by the present-day situation whereby globally around one billion people are overfed (many obese), whilst another one billion people are underfed (hungry and malnourished, if not starving) (Hayter 1981, Hertz 2002, Lang and Heasman 2004, Patel 2010).

1.3. Conceptualising allotments and AFNs: social-ecological systems of pluriactivity and economies of care

This section introduces the organising concepts and themes in literature on allotments and AFNs that are explored further in Chapter 2. The definition of AFNs and allotments as social-ecological systems and a political ecology perspective enables an organising framework that helps to clarify debates identified by Tregear (2011), for example, on sustainability and social inequalities. Many 'readings' of political ecology exist, each taking different 'entry points' or standpoints. Thus, in a study of fair trade, M Goodman (2004) focuses attention on the narratives that lie between the social and the ecological, following traditions of 'boundary science' (Jasanoff 1987, Latour 2005, Wynne 2010). Ostrom's (2008) framework focuses instead on praxes and institutions that determine outcomes on resource access and management. This thesis incorporates these approaches with that of the capital-assets framework (see Section 2.3) by using three key framings: activities, relations and governance.

The multilevel activities, relations and governance in allotments and AFNs are on different dimensions which are discussed in literature as capitals, assets or capacities and capabilities, and for which different categorisations have been developed (Bourdieu 1986, Bebbington 1999, Sen 2005), and variously include human, social, economic, financial, cultural, symbolic, political and natural. As

Scoones (2009) suggests, although this framework has lent itself to 'input-output' economic type analyses and 'checklist' approach, it has potential to be re-energised through a more central place for considerations of power, values and political change:

> "…The themes of knowledge, scale, politics and dynamics, I argue, offer an exciting and challenging agenda of research and practice …" (*ibid*: 191).

This thesis includes consideration of these themes (knowledge, scale, politics and dynamics) in the different dimensions of capital assets at play within allotment and AFN praxes in the case study area. It also uses these themes to re-frame different categorisations found in related literature.

In their seminal study, Crouch and Ward (1997: viii-xi) discuss allotments through the five symbolic categories of compost heap (sustainability), home freezer (food security), shed (refuge), shovel (connection with place and earth) and seed (new values and new groupings of people). They explain the appeal of allotments through images of urban greening compared with contemporary rural landscapes empty of people, as explored by Halfacree's (1993, 2006) discussions of counter-urbanisation and representations of rurality. In tracing the history of allotments, Crouch and Ward (*ibid*.) document the links of allotments with smallholding and discuss how allotments have acted as a rung on the farming ladder in some areas of England until recently, but also how they are valued for recreational opportunities. This reading links with literature on capitals and livelihoods (Scoones 2009), post-productivist agriculture (Wilson 2007), and pluriactivity (van der Ploeg 2008). It also resonates with the claims

for new norms, or economies of care (Dowler *et al.* 2010), social-ecological embeddedness (Morris and Kirwan 2011), and economic development (Marsden 2010) as made for AFNs.

In their consideration of domestic urban gardening, Bhatti and Church (2001) and Brook (2003) represent the activities and relations involved as connecting with place and nature, and of personal satisfaction. These factors are frequently discussed in literature on allotments (Crouch 1989, Buckingham 2005, Wiltshire and Geoghegan 2012), and Kneafsey *et al.* (2008) discuss these same factors within AFNs: those of reconnecting producer and consumer in shorter supply chains. However, missing from all these analyses is consideration of the wider settings of economic factors and dominant narratives (governance/politics). Applying the political ecology framework thus enables more detailed discussion of these issues, in terms of AFN/allotment contributions to capital assets located within the wider context of social-ecological justice, resilience and sustainability (Levkoe 2006, Forsyth 2008, Kovel 2008).

1.4. Gaps in knowledge

This section considers the gaps in knowledge and understandings of allotment and AFN praxes on which further research has been called for. They are approached through the framework of activities, relations and governance and the concept of capital assets within (multi-scalar) social-ecological settings.

Activities of food and 'non-food' production on allotments have received little systematic attention, as is enabled by the capital assets framework. For example, not much research on either allotments or AFNs explores the levels and range of food produced, even though knowledge of these could help to evaluate claims for food security and health benefits ('human capital') (Ilbery and Kneafsey 2000, Pothukuchi 2004, Kirwan and Maye 2013, Tregear 2011). The other health benefits claimed for allotment cultivation have long been documented e.g. from the 'restorative natural setting' (Burchardt 1997) or from exercise (DETR 1998), but this literature is not drawn on in discussions of AFNs. However, both AFNs and allotments are recognised as outlets for 'non-food production' activities with implications for other capital assets, including cultural (learning and hobbies), social (leisure and recreation) and natural (biodiversity, habitats). Urban gardening involves green spaces that can act as biodiverse wildlife refuges (Hope and Ellis 2009), and some (contested) literature suggests that allotments and AFNs are likely to contribute to wider

environmental and sustainability agendas (e.g. biodiversity) especially in urban contexts (e.g. Altieri 1999, Pretty *et al.* 2005a, Viljoen 2005, Born and Purcell 2006, Edward-Jones *et al.* 2008, Connelly *et al.* 2011). Further research from the multidimensional capital assets perspective (Bebbington 1999, Wilson 2007, Scoones 2009) into the food and non-food production activities on allotments can help to clarify these uncertainties around AFNs. It also helps to inform theoretical framings in literature of overcoming a 'metabolic rift' (McClintock 2010), and of culture-nature binaries (Castree 2005).

Relations within AFNs are suggested to represent new norms, as discussed for diverse or care economies (Gibson-Graham 2008, Dowler 2008). These relational characteristics can be framed as social and economic capital assets, and include co-operation and reciprocity (e.g. Armstrong 2000, Sherriff 2009), and gifting or non-monetised exchanges, as documented for allotments (Ellen and Platten 2011). Yet urban allotments as sites of tension, with competitive and anti-social behaviour, have also been documented (Mougeot 2005). Most literature on AFNs discusses the positive side of cooperation and cohesion (e.g. Wakefield *et al.* 2007, Cox *et al.* 2008, Seyfang and Paavola 2008), with little focus on any potential tensions (though see Kirwan 2003 on farmers markets). The balance of these behaviours (cooperation and competition, building or depleting social capital), and the means for coping with behaviours outside social norms or ethics (Ostrom 2008) within allotment and AFN communities of practice and place (Harrington *et al.* 2008) remain to be detailed.

Relations within AFNs are suggested to 'reconnect producers and consumers' through short supply chains (Kneafsey *et al*. 2008), as well as to hold potential for urban and regional regeneration and development (Marsden 2010, USDA 2010, Choo 2011). These social and economic relations have yet to be compared to 'back-to-the land' migrations (Halfacree 2006, 2007), or the continuum of allotments and smallholdings that historically existed (Crouch and Ward 1997). The potential of AFNs to create livelihoods and incomes, or 'good food for everyone forever' (Tudge 2011a), within wider settings of neoliberal relations of production and commodification (e.g. Kovel 2007), can be clarified through the capital assets framework, and accompanying concept of convertibility between their different dimensions.

The governance of AFNs has also received little academic attention, although characteristics of participation and (sometimes exclusionary) citizenship have been explored for some UK and US community food initiatives (e.g. Seyfang 2006, Staeheli 2008, Sherriff 2009). Whilst some aspects of AFNs (local or 'terroire' and organic foods) have been suggested to cater for the privileged (D Goodman 2004), others (urban community gardens) are aligned with ethics of food and social justice (Wekerle 2004). Providing another contrast, demographies of allotment tenants appear to defy stereotypes and attract participants from a wide socio-economic spectrum (e.g. Wiltshire and Geoghegan 2012). However, there has been little detailed attention to the

factors affecting how individuals access and participate in present-day allotments (though see DeSilvey 2003). Allotments were historically taken to subdue political activity despite their roots in trade union movements (Burchardt 2002), and in the present-day, AFNs are suggested to lead to enhanced 'citizenship' (Seyfang 2008). These contrasts are explored in this thesis through perspectives of the interactions of agency and structure, involving access to multi-dimensional resources (George 1998, Barbosa *et al.* 2007), or 'political capital'. It thus considers issues of spatial justice and social movements (Escobar 1998, Chaplin 2010, Soja 2008), as well as the process of creating new narratives, or new conceptions of the world (Wainwright 2010). Through further research into the politics of participation and place within allotment and AFN praxes, greater clarity can be gained on the acting out of (food) power relations (e.g. Tansey and Worsley 1995, Lockie and Kitto 2000, Becher 2010), on the narratives involved (Halfacree 1993, Crouch and Ward 1997, M Goodman 2004, Yarwood 2005), and the conflation of 'local' with positive outcomes (D Goodman 2004).

As Tregear identifies (2011), there is an impasse in research on the contribution of AFNs to sustainability (Morgan and Sonnino 2010) but this thesis suggests that detailed exploration of the activities, relations and governance within AFNs and allotments through a political ecology framework clarifies their present-day impacts, as well as any potential to move from niche to mainstream given certain contingent factors (e.g. fiscal incentives). Key 'system' characteristics for resilience and sustainability are proposed to be linking and learning, as well as

diversity and adaptation (Armitage *et al.* 2008, Folke *et al.* 2010). Contested claims that AFNs and allotments contribute to the sustainability of food supplies for urban populations (Morgan 2009), and their resilience to changing social and/or ecological conditions (Wilson 2012), can thus be investigated through concepts of multilevel polycentric social-ecological systems, or communities of interest, practice and place (Cash *et al.* 2006, Harrington *et al.* 2008, Ostrom 2010). Use of these concepts can help to clarify the (actual and potential) extent of allotments and AFNs as place-based food systems that can contribute to the resilience and sustainability of urban populations, and the requirements (contingent factors) for their material, psychological and social functions.

1.5. The aims and objectives of this research

In light of the above gaps in knowledge, the aim of this research is to advance theoretical and conceptual understanding of allotments and AFNs from a political ecology perspective. In the process, it will add to empirical knowledge on allotments and AFNs, illustrated with the case of Plymouth in South West England (Figure 1.2).

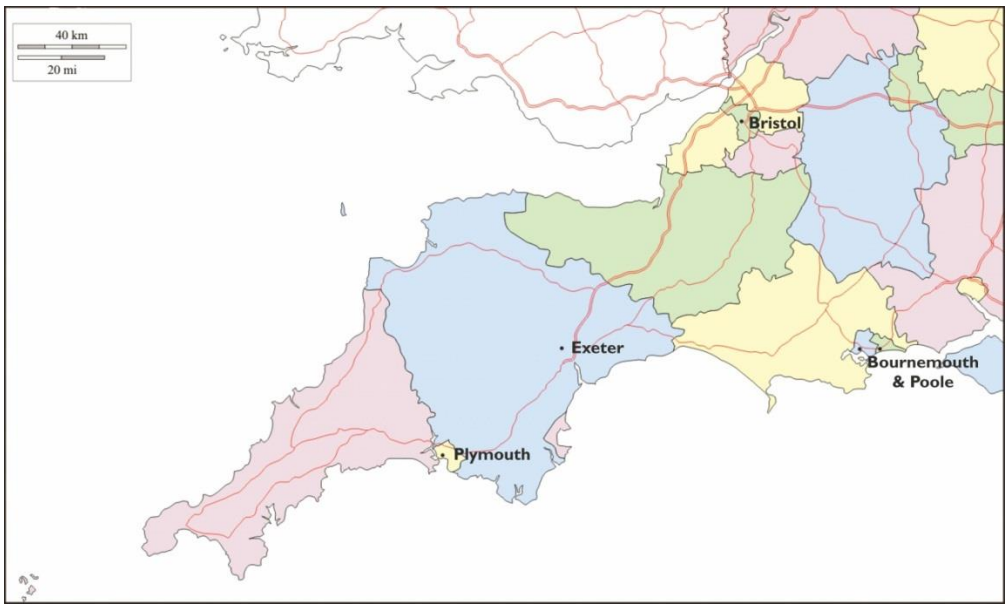


Figure1.2 Plymouth location *(Source: derived from www.d-maps.com)*

Plymouth is the third largest city in the South West of England (after Bristol and Bournemouth/Poole), with a population of around 264,000. Although situated within a rich and diverse agricultural area, the city population has lower than national and South-West regional GDP per capita and its neighbourhoods include several amongst the most disadvantaged in the UK (PCC 2011) (see also Chapter 3 for discussion of case study selection). The focus on allotment sites and AFNs within Plymouth is designed to address the key gaps in knowledge as outlined in 1.2 to 1.4 above which led to the objectives for this research:

1) To identify the activities and outputs on allotments in Plymouth, including food, wellbeing, cultures and natures
2) To determine the social relations involved in Plymouth allotment praxis, and how these can be conceptualised as diverse economies

3) To identify the politics and governance of allotments in Plymouth, and the extent of participation, new groupings and new narratives created, and
4) To determine how allotments and AFNs represent emerging social-ecological food systems with characteristics of linking, learning and diversity, and their potential to contribute towards resilience and sustainability for urban populations.

In order to achieve these objectives, a mixed-method approach was used (see Chapter 3). Analysis was undertaken of existing datasets and secondary sources including archived records, census data and household panel surveys. New data were created through interviews and participatory research activities. The research was pursued through a pragmatic, critical realist approach. My positionality or standpoint comes from nearly twenty years of working within universities in communications and research administration (Plymouth and the Institute of Development Studies at Sussex), which has given a broad view of disciplinary perspectives and research related to food, livelihoods and sustainability (Miller 1996). I have experienced much of the scope of this research, as an allotment tenant for twenty years in London and in Plymouth, as well as growing (some) fruit and vegetables for ten years in a domestic suburban garden in Sussex. During the time of this research, I was active in local groups on urban greenspace and allotments and within FoodPlymouth. I also stood as a Green Party candidate in the 2010 general election, which entailed a steep learning curve in the many relevant policy arenas. Several other allotment

tenants during this research expressed interest in the joint purchase of woodland and other ground on the city outskirts for larger-scale cropping. In the event, I am now joint owner with my partner of 8.5 hectares (21 acres) of fields and woodland 17 miles from the city centre, with plans for orchard, wood-fuel, and food-growing co-operatives as well as cropping of wholesale medicinal herbs. Through this research, I have encountered or strengthened links with wider social groupings, including The Land is Ours and the Campaign for Real Farming, which have given further insight into academic, political and personal implications of this research.

1.6. Thesis structure

Given the objectives of this research, the thesis has the following structure. Chapter 2 considers literature on the themes introduced above, and concludes by considering the gaps in existing research and so the arising rationale for this programme of work. Chapter 3 discusses the methodology used, including the theoretical and conceptual approaches taken. Chapter 4 gives an account of allotments and AFNs in Plymouth, and explores geographical and demographic characteristics of the study area.

The following four chapters discuss findings from the research that address the aims and objectives outlined above. Chapter 5 assesses the food and non-food

production activities in Plymouth allotments, how these compare with other current and historical documented evidence, and how they can be conceptualised as multidimensional capitals/assets. Chapter 6 investigates the non-monetized relations on allotments, and how these relate to concepts of diverse or care economies. Chapter 7 then discusses the political factors within allotment praxes, involving participatory governance, social movements and new narratives. Chapter 8 synthesises the findings from the previous chapters to explore conceptual and material links between allotments and AFNs and the implications for the resilience and sustainability of urban populations, drawing on the framing of open social-ecological systems with material, social and psychological functions. Chapter 9 then concludes with an overview of the main findings, of avenues for future research, and of suggested policy options. Finally, the appendices presented and referred to in the thesis are offered as supporting evidence for the research and with the intention of providing a resource for future researchers in this area.

2. Review of the literature

2.1. Structure and overview

The many 'turns' in geographical and social science research over the decades provide a rich heritage of different ontologies and epistemologies which can inform the research questions defined above (Section 1.6). As outlined by Tregear (2011), analysis of AFNs has been approached from theoretical understandings of political economy, rural (regional) development, and governance/networks. Section 2.2 discusses how the framework of political ecology allows a pragmatic and critical realist approach to participatory action research (Robson 2002) . The challenges of grounding theory in the real world are addressed in Section 2.3, using the capital assets framework (Scoones 2009) to organise these different understandings. Section 2.4 then reviews how themes in research on allotments and gardening (Crouch and Ward 1997, Bhatti and Church 2001) relate to literature on AFNs. The following sections (2.5 to 2.8) discuss the key concepts identified, organised through the framework summarised in Table 2.1.

Table 2.1 Concept grouping for this research *(Source: author)*

	2.5 [Chapter 5]	**2.6 [Chapter 6]**	**2.7 [Chapter 7]**	**2.8 [Chapter 8]**
Realm	**Activities of production**	**Relations in diverse economies**	**Narratives and governance**	**Social-ecological systems**
Organising concepts and theories	Multidimensional and multifunctional production	Diverse, heterodox, community and moral economies	Access to resources/assets, Distributed power	Political ecology
	Capital assets, capacities, capabilities	Communities of practice and place Social capital	Spatial justice Political capital	Resilience and sustainability
Issues and themes	Food, health and wellbeing	Gifts and non-monetized exchanges, work and transactions	Hierarchies and networks	Learning and linking
	Social interaction	Weak and strong ties, trust, cooperation and competition, altruism and self-interest	Decision-making, participation and agenda-setting	Flexibility, diversity, and adaptation
	Natures and cultures	Organizational forms: rules, norms and sanctions	Framings and social representations, narratives and storylines	Evolving, emerging and self-organizing
Explanatory concepts	Continuum of meeting human needs to quality turn	Social and ecological embeddedness	Hegemonies, agency and structure	Material function
	Metabolic rift of socio-natures	Commodification Exchange values livelihoods	Food democracy, new social movements and eco-citizenship	Psychological function
	Place attachment	Strategies and sustainable behaviours	Wider socio-political settings	Social function

Table 2.1 provides the framework used to address the research objectives of this study reviewed in the sections: on the activities (2.5), relations (2.6) governance (2.7) and systems (2.8) at play within allotments and AFNs. The chapter concludes (2.9) by re-stating the research objectives that aim to fill gaps in current knowledge and understandings.

2.2. Theorising AFNs and allotments: pragmatic critical realism meets participatory political ecology

This section discusses the pragmatic critical realist perspective of this research (Jones 2008, Robson 2002). It considers how these ontologies help to organise theoretical understandings of allotment and AFN praxes, and lays the basis for the epistemologies discussed in Chapter 3.

The layered ontology of critical realism (CR) outlines the distinction between the real, the actual and the observed as depicted in Figure 2.1.

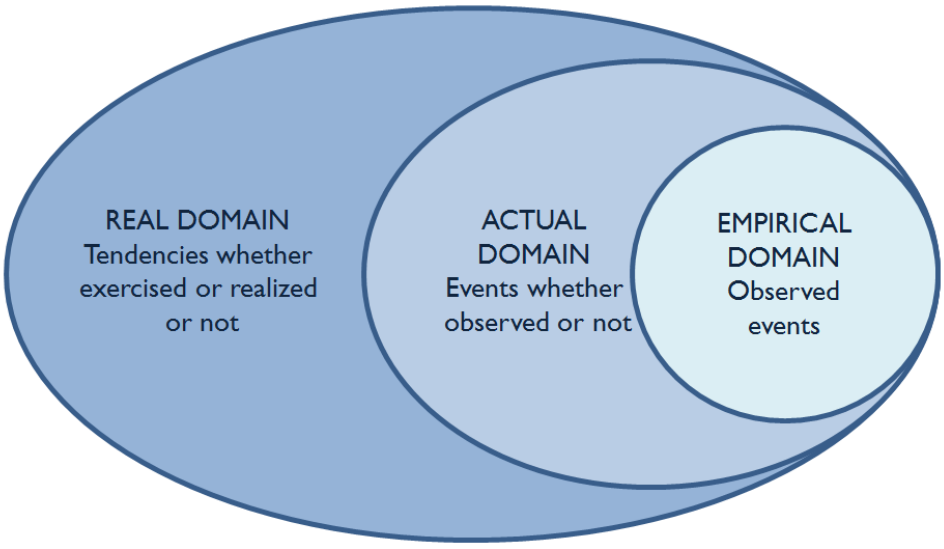


Figure 2.1 Three overlapping domains of reality in the critical realist ontology
(Source: Partngton 2000: 98)

According to Bhaskar (2010), and as Figure 2.1 suggests, underlying structures and mechanisms exist which create tendencies and capacities (domain of the

real), only some of which are manifested (the *actual*). These distinctions are overlooked or conflated in many research traditions, but can be illustrated by the analogy of *labour power* and *labour* (Sayer 2000). Within any research, only a subset of the actual can be observed (the *empirical*). Sayer (*ibid*.) suggests that CR acknowledges the (spatial/temporal) contingency of any situation, yet also rejects the viewpoint that the absence of certainty, regularity and closure means that claims of reliable knowledge must be rejected. It thus accounts for the (Popperian) provisional state of knowledge (Skolimowski 1994), and so the need for caution in, but not avoidance of, generalising from the particular. Sayer (*ibid*.) further discusses how social systems evolve rather than equilibrate, not least because people have the capacity to learn and change their behaviour, with potential for new groupings of people and new conceptions arising that change long-held norms (Joseph 2002, Wainwright 2010).

As indicated by the term, critical realism aims to accommodate different perspectives not revisited in depth here, on: the relative importance of structure or agency; essentialist and non-essentialist standpoints (positivist/constructivist); and changes over time (stochastic features) (Sayer 2000, Robson 2002, Bhaskar 2010). Robson (*ibid*: 42) suggests that critical realism seeks to achieve a détente between different paradigms, through a pragmatic approach of using the philosophical or methodological approach that 'works best' for a particular research problem. As discussed by Hassanein (2003:17), in relation to food democracy, pragmatism involves individuals and

organisations working on a daily basis in political and social contexts to "accomplish what is presently possible given existing opportunities and barriers." As Allen (2008) suggests, pragmatism also acknowledges the contingency and temporality of situations, and the transformative capacity of human action, described by Cutchin (2008) as a sense of inquiry into continually changing life experiences with complex contingency. Duram (2013) describes how pragmatism sees human beings as having multiple-motivations, and represents a systems approach rather than a linear investigation that seeks one resultant 'truth'. In this thesis, a pragmatic critical realism combined with a political ecology systems approach is used to organise the three theoretical perspectives identified by Tregear (2011), viz. political economy, regional development and governance.

Political ecology has developed as a transdisciplinary attempt to integrate system dynamics, scale, and cross-scale interactions in both human and natural systems. Peterson (2000: 324) defines it as:

> "an approach that combines the concerns of ecology and political economy to represent an ever-changing dynamic tension between ecological and human change, and between diverse groups within society at scales from the local individual to the Earth as a whole"

Zimmerer and Bassett (2003: 17) contend that political ecology helps to 'fuse' the social and biogeophysical sciences and involves a tight interweaving of its root disciplines of anthropology, sociology, history, political science and studies of technology and science. It is a bridging approach that "seeks to further a

theoretically informed perspective that joins the twin geographic themes of nature-society interaction and the political ecology of scale" (*ibid.*). The conceptual separation of society and nature, or human versus non-human, is suggested to have facilitated widespread environmental degradation and has been termed a metabolic rift (Foster 1999, Moore 2000, Kovel 2007, Schneider and McMichael 2010). This duality is derived from a particular and partial worldview or ontology, is relatively recent in the history of human thinking (Smith 2006), and it is also critiqued in a growing geographical literature (e.g. Whatmore 2002, Castree 2005, Bakker 2010). This metabolic rift is problematized, through unpicking the dynamics of nature and culture interactions, in food systems literature (e.g. Sundkvist *et al.* 2005, Fraser 2006, Eriksen 2008b) and discussions of AFNs (e.g. Goodman D 1999). Social studies of science (Jasanoff 1987, Yearley 1991, Smith and Stirling 2008, Wynne 2010) also highlight the role of narratives, as depicted in Figure 2.2.

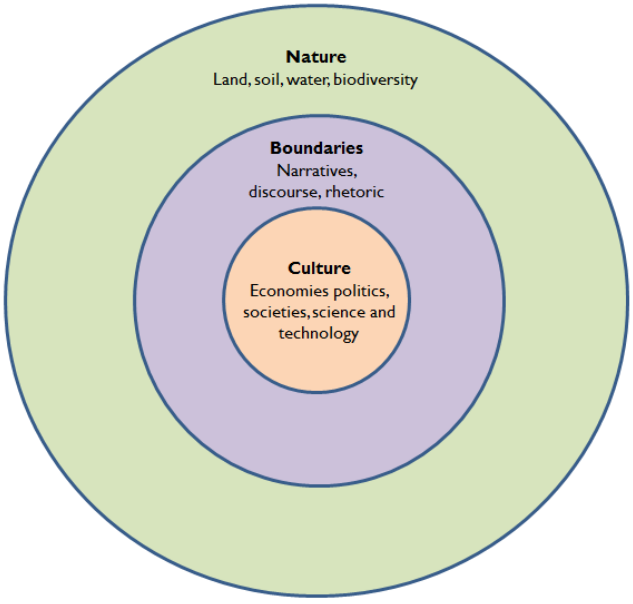


Figure 2.2 Linked socio-ecological systems *(Source: after Jasanoff 1987)*

Figure 2.2 above conceptualises how narratives mediate flows between nature and culture. Literature within political ecology variously prioritises these different domains, according to disciplinary location. For example, M Goodman's (2004) 'cultural political ecology' lays primary emphasis on narratives in representations of fair trade, whereas Ostrom's (2008) conceptualisation derives from political analysis on natural resource management, as in Figure 2.3.

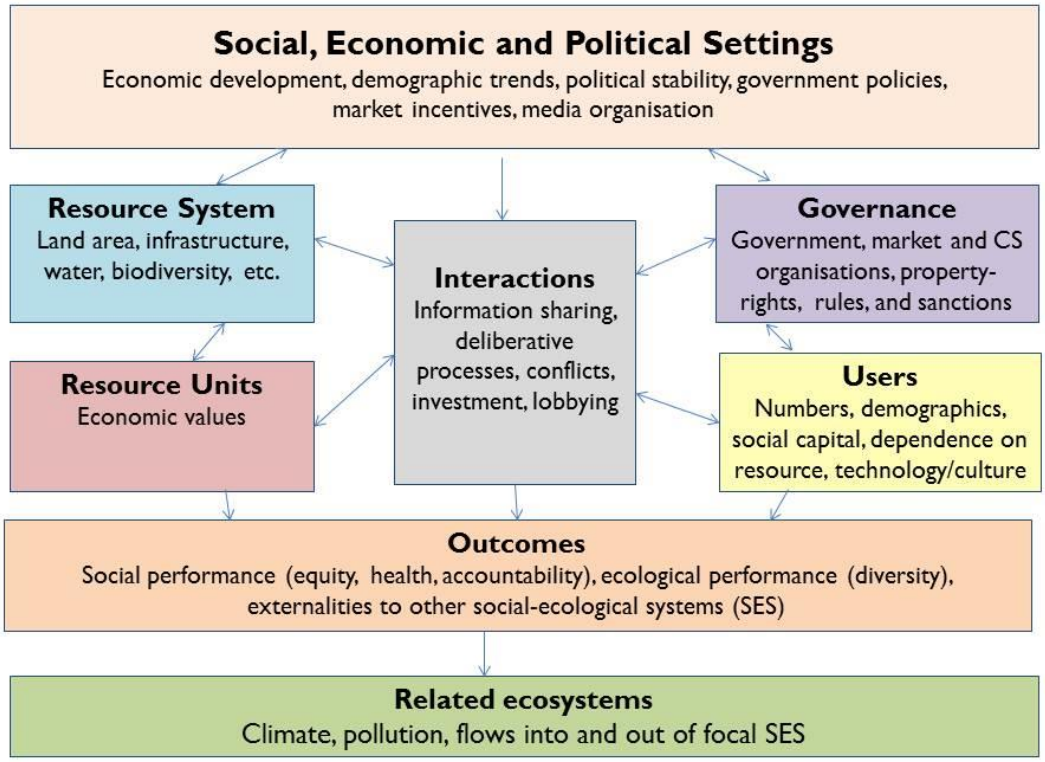


Figure 2.3 Political ecology framework for social-ecological systems
(Source: simplified from Ostrom 2008)

Whilst Ostrom's framework (Figure 2.3) extends to finer granularity of detail (than Figure 2.2), it does still not incorporate all the links involved, e.g. feedback from outcomes to social-economic and political settings. The complexity

resulting from attempts to include these is demonstrated by the Government Foresight modelling for UK land use (Appendix 3).

In countering the criticism that some researchers in the field of political ecology have not engaged with the policy or real-world implications of their work, Walker (2006: 392/3) contends the need to clearly articulate the commonalities between different approaches. Batterbury (cited in Walker 2006: 392) further suggests that "... lack of unity allows analytical perspectives with narrower methods to dominate policymaking: environmental economics, ecological science." In the process of addressing the research objectives, this thesis also aims to meet the challenge of balancing 'narrow analytical perspectives' that focus on materialities, with broader imaginaries of allotments and AFNs. Through drawing on these two frameworks (Figures 2.2 and 2.3 above), and the many different analyses under the rubric of 'political ecology' (e.g. of structure/agency, materialities and imaginaries, multilevel scales and spaces, and the historical perspective)[7], this thesis draws on a tripartite organizing framework of activities, relations and governance to encompass the elements in Ostrom's (2008) and Jasanoff's (1987) frameworks.

[7] Detailed analysis of literature drawn on is precluded by space constraints, but key papers included: Greenberg and Park 1994, Lowe and Rudig 1986, Escobar 1998, Peterson 2000, Zimmerer and Bassett 2003, Bryant and Goodman 2004, Wainwright 2005, Walker 2005, Heynan 2006, Walker 2006, Smith 2006, Castree 2007, Walker 2007, Bryant and Goodman 2008, Forsyth 2008, Hinchcliffe 2008, Nygren and Rikoon 2008, Robbins and Monroe Bishop 2008, Rocheleau 2008, Holifield 2009, Mann 2009, Neumann 2009a, 2009b, Jarosz 2011, Roy 2011, Lawhon and Murphy 2012.

As indicated in Chapter 1, my positionality led to the normative stance of participatory action research, to contribute to beneficial outcomes for the researched situation. In order to effect change, Walker (2006) suggests that new stories, or counter-narratives, need to be created. Further, the diverse economies literature calls for the creation of new information (Gibson-Graham 2008) in construction and framing of problems, in their measurement and proposed solutions. Such new information can help to identify the interplay of structures and agencies, and can help people to participate in shaping future knowledge (Forsyth 2008). The next section discusses how this research aims to ground the theoretical approaches discussed above through exploration of allotment and AFN praxes in the case study area.

2.3. Conceptual groundings for allotments and AFNs: the capital assets framework as a temporal/spatial window

Research on any aspect of the 'real-world' encounters a multitude of variables and impacts in the many social and ecological domains and 'sub-domains' involved (Wilson and Howarth 2002, Irwin and Ranganathan 2007, Ostrom 2008, Nelson *et al*. 2009). Inevitably, some of these have to be 'black-boxed'; the challenge is to identify which to foreground. For this investigation into allotment and AFN praxes, these potentially complex assessments are

approached through the capital/assets framework (Bebbington 1999, Scoones 2009). Rather than complex modelling or scenario building as in the Foresight modelling (Appendix 3), this research explores allotments and AFNs through grounding the rubric of social-ecological systems with the capital assets framework.

Possible categories of these capital assets to investigate are derived from understandings of multifunctional or multidimensional agrifood production (Wilson 2007, Pearson 2010, Zasada 2011). Morgan and Ziglio (2007) use the definition from the WHO European Office for Investment for Health Development, of an asset as:

> "… any factor (or resource), which enhances the ability of individuals, groups, communities, populations, social systems and/or institutions to maintain and sustain health and well-being and to help to reduce health inequities."

Morgan and Ziglio (*ibid*.) further suggest that assets can operate at individual, group, community, and/or population levels to protect and provide a buffer against 'life's stresses'. As Bourdieu (1986: 241) contended,

> "It is in fact impossible to account for the structure and functioning of the social world unless one reintroduces capital in all its forms and not solely in the one form recognized by economic theory".

The livelihoods approach (Scoones 2009) aims to reintroduce these different forms through a framing of four assets or capitals (natural, economic/financial, human and social), whilst debates of post-productivist, multifunctional agriculture and community resilience draw on a trifold scheme of social, economic and environmental (Wilson 2007, 2013). Other formulations include

categories of intellectual, cultural, symbolic and political capital as defined by Bourdieu (1989). Extensive discussions in literature on framings and terminology are not revisited here (see for example Meadows *et al.* 2004, Morse 2004). The formulation in this thesis closely follows Crouch and Ward's (1997) analysis (see Section 1.3 above), grouping capital assets into six categories: (i) human; (ii) social; (ii) economic; (iv) natural; (v) cultural; and (vi) political. These are depicted in Figure 2.4.

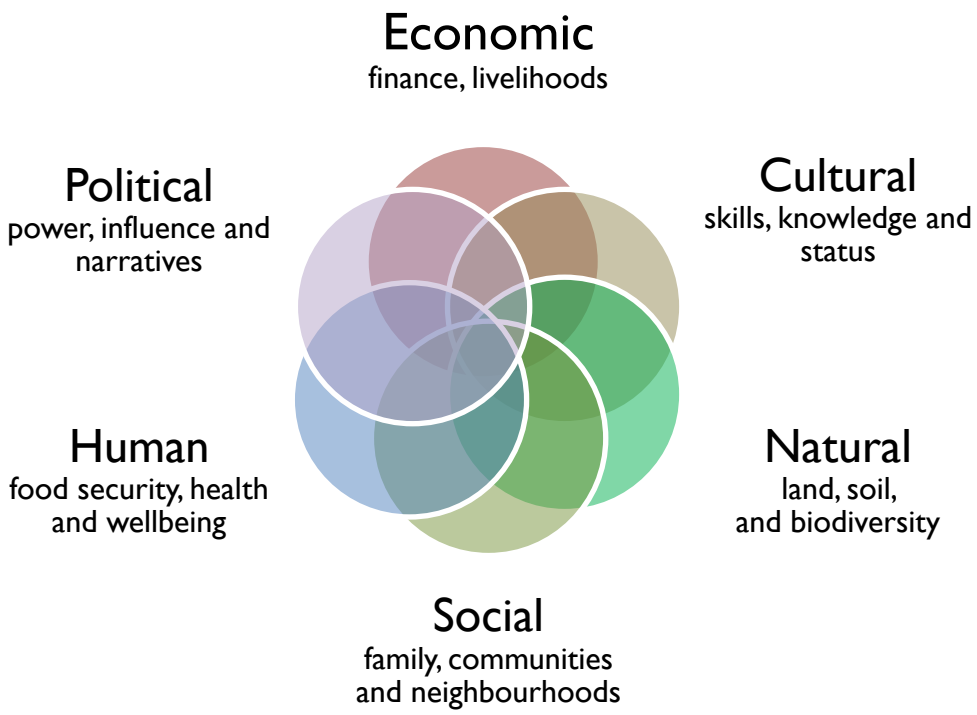


Figure 2.4 The capital assets model used in this research *(Source: author adapted from various)*

The category in Crouch and Ward's (1997) analysis of allotments of food security and refuge is encompassed by human capital, that of sustainability within natural capital. Their descriptions of place/earth connections and skills are included within cultural capital, while those of new values are included within

social capital. Finally, the 'new groups of people' discussed are included in consideration of political capital. Bhatti and Church's (2001) analysis of domestic gardening encompasses human, natural, social and cultural capitals, through a focus on connection with place and nature, and on personal satisfaction and 'space'. The three-fold model of rural space by Halfacree (2006, 2007), of everyday lives, spatial practices, and representations (narratives), and the experiments termed as the radical rural can also be aligned with categories of predominantly economic, social and political capitals/assets. Further, the concepts of the quality turn (Ilbery and Kneafsey 2000) and metabolic rift, or nature-culture binary (Castree 2005, McClintock 2010) are also represented in this research as political, economic, social and natural capital assets.

This multidimensional approach is supported by survey findings of multiple motivations for involvement in allotments and AFNs, for example, that over half of allotment holders chose to rent a plot for financial reasons, with one third also wanting to be in control of pesticides on food, and another third wanting to show their children where food comes from (LV 2009). Academic literature also documents a wide range of reasons for and effects of engaging in growing food (e.g. Seyfang 2006, Clayton 2007, Pudup 2008, Sherriff 2009). Participants in allotments and community gardens describe motivations of exercise, mental health benefits, enjoyment of nature and open space, a good family activity, a food source for low income households and, for some, an income supplement from the sale of foods grown (Crouch and Ward 1997, Armstrong 2000).

Combined with the social-ecological systems of political ecology, the capital assets framework can be applied at different (spatial/temporal) scales (Zimmerer and Bassett 2003). Whilst developed in the context of low-income countries, Smith (2006) points to the international scope of political ecology case studies; literature on AFNs and urban agriculture (e.g. Bakker *et al.* 2001, Mougeot 2005) also draws on cases worldwide. This helps to address the debates over conflation of 'local' with 'beneficial' as contended by some (Winter 2003a, DuPuis and Goodman 2005, Born and Purcell 2006), and explore narratives such as 'think global, act local' *(cf.* Morgan 2009).

Zimmerer and Bassett (2003: 278) also suggest the potential for political ecology to contribute to spatial/temporal framings of linked urban-rural environments in meso-level analysis. Thus,

> "[whilst the] persistent conservationist tendency of cleaving countryside and city is a powerful legacy of romanticism ... analytical framing of this environmental continuum is a promising future direction for the formulation of geographic models and ideas" (*ibid*: 280).

The linking of rural and urban through shorter food-supply chains is also a theme in work on AFNs (e.g. Hinrichs 2000, Allen *et al.* 2003, D Goodman 2004, USDA 2010). Similarly, as Halfacree (2006) suggests, desire for 'rurality' in its many representations can help to explain trends of present-day counter-urbanisation and back-to-the-land migrations, and also characterised radical social movements over the past 400 years. Zimmerer and Bassett (*ibid*: 10) also contend that concepts of political ecology "need to be tested in the most

produced nature of all, and that means the city"; the UK allotment system has its roots in rural areas but exists largely, today, in urban areas although is suggested to illustrate imaginaries of the 'garden city' or a perceived rurality (Crouch and Ward 1997). This thesis uses the capital assets framework from the perspective of social-ecological systems to investigate these spatial and temporal aspects of allotments and AFNs in order to address debates in the literature. The historical and current settings for allotments and AFNs are reviewed in the next section to provide a basis for the research.

2.4. UK allotments: populist, academic and policy perspectives

Allotments have a longstanding role in individual and household wellbeing (notably related to food security), as well as in the culture, economy, and politics of the UK (Crouch and Ward 1997). This section considers the wider spatial and temporal settings for UK allotments that can help to inform debates on AFNs.

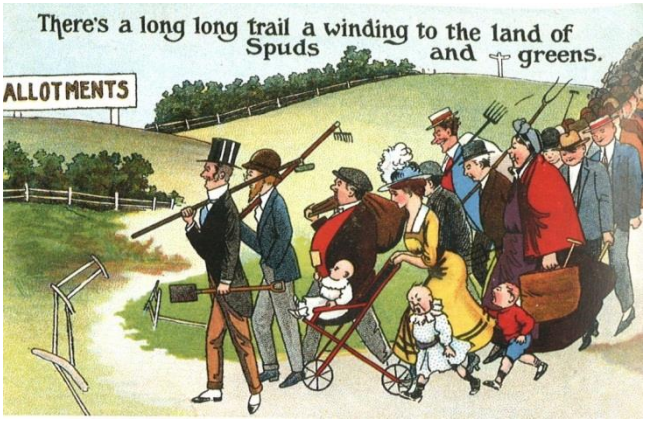
The political economy perspective of class, labour and land is taken by Archer (1997) who discusses how, although the arguments for allotments were widely accepted by the 1850s, there was a scarcity of landowners, tenant farmers or parish authorities that were willing to make adequate levels of land available to workers who wanted plots. Although rents were set far higher than market

rates per farm acreage, research indicates a range of reasons for reluctance to make land available. Moselle (1995) and Burchardt (1997) suggest a fear that autonomy of workers would lead to refusal of low wages and poor working conditions, and that production from allotments would pose a direct threat to farmers' enterprises. Conversely, supporting the provision of allotments was the desire to avoid social unrest and reduce Poor Relief rates (Moselle *ibid*., Way 2008). As described above (Section 1.2), widespread protests over food availability and affordability culminated in the 1830s, having surfaced regularly throughout the 1700s as well as in earlier centuries (Stevenson 1992). The provision of allotments was seen as one means to dampen down the demands of urban populations for food at low prices. They were also seen as a means of keeping men 'from the alehouses' (*ibid*.) or fomenting political unrest through social movements such as the Spenceans and Chartists (Chase 1988) that challenged 'class interests'. The level of debate was such that nationwide council elections in the late 1880s were dubbed 'the allotment elections' (Way 2008:12).

Similarly to the earliest debates over provision of land for waged and un-(der)employed labourers, present-day debates on cuts to welfare benefits and the relative roles of UK foodbanks, community gardens (AFNs) and allotments in welfare provision remain to be viewed from a political economy approach that covers access to land as well as 'labour' ((un)employment). The availability and relative affordability of food in the UK through global food networks

appears a long way from household food security attained through urban agriculture in some cities, as documented by Bakker *et al.* (2001). For example, in Sofia (Bulgaria), an estimated 14% of households attain self-sufficiency in food, and around 50% of all households are involved in food production (Yoveva *et al.* 2001). Nevertheless, the subsistence food baseline gives a context to the debates on whether food provisioned through allotments or AFNs is a 'quality turn' (Ilbery and Kneafsey 2000) with implications for inequalities or sustainability.

In the face of national legislation from the 1830s onwards (Appendix 1), the number of allotments rose, from under 200,000 in 1850 to over 1,400,000 by 1943 (see Figure 1.2), boosted by concerns for national food security during wartimes. Scarce academic literature can be found on either campaigns of 'Every man (*sic.*) a gardener' during World War 1 or 'Dig for Victory in World War Two (though see Ginn 2012 for the latter). However, Way (2008) discusses how widespread information campaigns, combined with incentives (e.g. prizes at vegetable shows), successfully enrolled many of the population in food cultivation. This was to the point that, echoing the national prominence of allotment debates in the late nineteenth century, widespread popularity of 'the plot' existed, called 'allotmentitis' (Poole 2006). Illustrations from the inter-war years and from the Dig for Victory campaign are depicted in Figure 2.5.



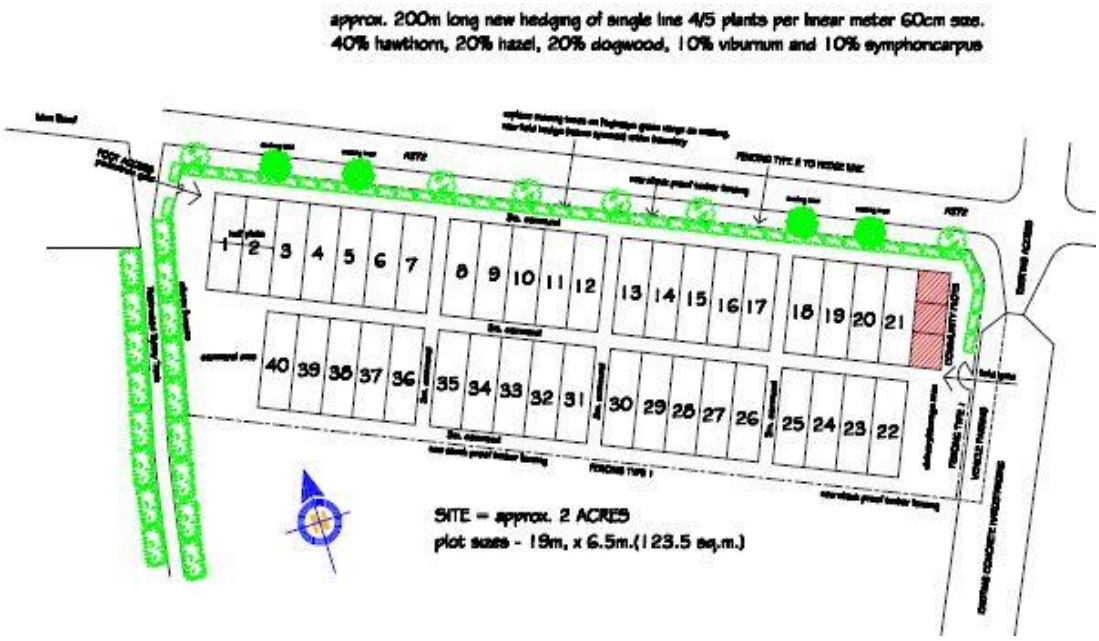
(a) ***Postcards from early twentieth century by artist Donald McGill*** *(Source: courtesy Way 2008 with permission from Amoret Tanner the Donald McGill Archives and the Collection of the Garden Museum)*

(b) WW2 Dig for Victory campaigns *(Source: with permission of the Imperial War Museum (Art.IWM PST 8105)*)

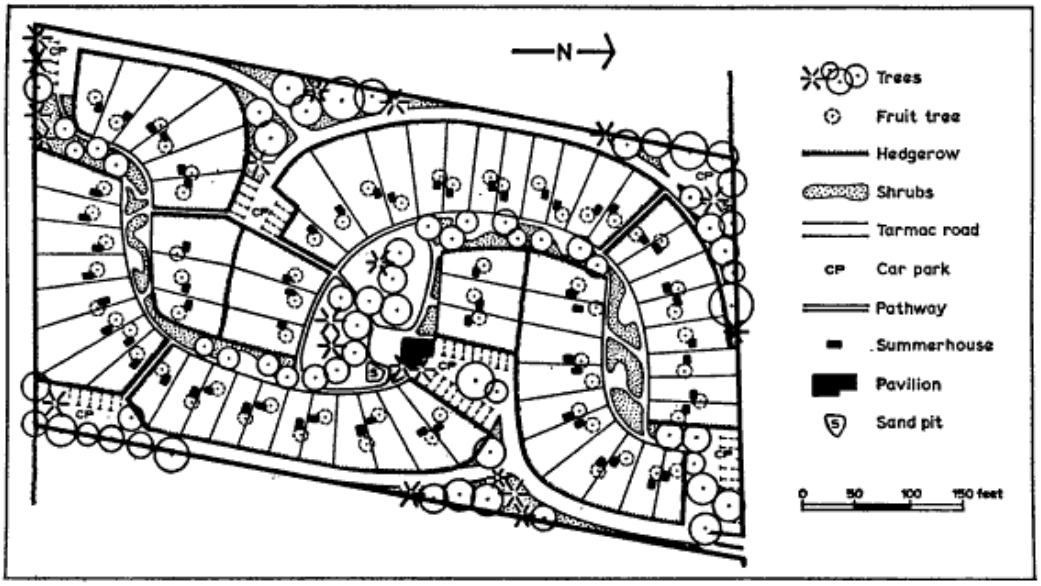
Figure 2.5 Representations of allotments in the twentieth century

As Figure 2.5 hints, the inter-war years indicated a widespread 'grass-roots' interest in allotments from all classes. However, the WW2's Dig for Victory campaign carried more serious implications and represented a top-down approach. These differences in support for allotment provision exemplify issues of distributed power and participation (Section 2.7), as well as those of social capital and food security from land-based activities (Sections 2.5 and 2.6 below).

Land was temporarily made available for allotments under wartime measures, and tenants were evicted when sites were returned to landowners at the end of each war (Crouch and Ward 1997). Government policy post-war was geared to decline in demand and availability of allotments and accompanied the wider social-economic setting of feminism and convenience foods (Steel 2008). The suggestion of the Thorpe Report (MLNR 1969) to promote their leisure aspects, as widespread on the European continent, was an attempt to address neglected sites through revised site layouts that moved focus away from food security as shown in Figure 2.6.



(a) Traditional site layout *(Source: http://www.wzags.btck.co.uk/SiteLayout [l.a. 130112])*



(b) ***Suggested new layout Westwood Heath leisure garden, Coventry***
(Source: Thorpe 1975: 182, Fig 7)

Figure 2.6 The Thorpe Report's suggested change to layout to allotment sites

Figure 2.6 illustrates the changing emphasis in UK governance and policy on allotments in the UK during the 1970s, away from food security towards leisure. This was supported by the 1998 Department of the Environment, Transport and Regions (DETR) Select Committee report, which recognized the potential for health benefits from allotments beyond those from leisure activities *per se*. This echoed historical parliamentary debates, in which allotments were promoted as providing opportunities to experience the 'restorative natural setting'. In a further echoing of historical debates, Wiltshire and Geoghegan (2012) suggest that allotments give the capacity to generate a high rate of independence at household level. The next sections investigate these themes further, through literature that informs the research objectives, i.e. defining the activities, relations and politics involved in allotment praxes.

2.5. Food and non-food production activities on allotments

The first objective of this research, to define food and non-food production activities on UK allotments, illustrated with the case study of Plymouth, aims to clarify claims around food security and of a quality turn in AFNs. This section considers what is known about the multidimensional production activities in terms of capital assets (Figure 2.6). Information available to assess the capital assets is sparse and consists mainly of number of sites and allotment holders held at local authority level, yet possible categories of production that can be

documented include: food, flowers, fuel, health, wellbeing, leisure, cultures, learning, and 'natures' (e.g. Armstrong 2000, Crouch and Parker 2003, DeSilvey 2003). Little attention has been paid in literature to the current levels and nature of different food and non-food production, or the activities involved and their effects on human, cultural, social and ecological capital assets (though see Bonny (2010) for a study of allotments in Hornchurch and Cook (2006) for research into allotments and smallholdings in Wales).

Food security, as a key aspect of human capital, is a major focus of historical debates on allotments (Burchardt 2002), yet information on types and levels of food produced on allotments is only provided in a few texts (e.g. Archer 1997, Burchardt 2002, Cook 2006). Recent academic attention has focused mainly on social, cultural or political aspects of allotment holding (Wiltshire and Azuma 2000, Crouch and Parker 2003, DeSilvey 2003, Buckingham 2005). The levels, diversity and quality of food produced from allotments are largely unrecorded aside from during wartimes, when records were kept at national level due to concerns over food supplies (Cook 2006). However, over the years, cropping from UK allotments is contended to have increased in diversity (Burchardt 2002), from the predominant crops of potatoes and corn (the historic generic term for any grain: wheat, rye, barley, oats, etc.), to a much wider variety in the present day that includes, for example, courgettes, garlic and salad crops (Cook *ibid.*). The studies that have attempted to calculate current overall production levels from UK allotments have varied widely in conclusions. Generalising from

specific cases, Garnett (2001) estimated that London allotments produced 7,450 tonnes of fruit and vegetables with productivity levels of 10.7 tons per hectare, and thus that they had potential to provide for 18 per cent of vegetable intakes for the city's population. However, a survey for the National Society of Allotment and Leisure Gardeners (Stokes 2010), with just 20 plotholders from across the country, estimated a productivity level of 30 tons per hectare (from an average of around 0.75 tons per 250m^2 (0.025 hectares) plot). The study by Cook (2006) in Wales, documented productivity levels for individual crops but gave little indication of overall production or cropping regimes. Even with these different estimates of productivity, aggregated weights give little indication of actual crop variations within and between individual plots, sites and locations throughout the country. These potentials are also the subject of AFN reports, such as on mapping local food webs (CPRE 2012) but, as Kirwan and Maye (2013) contend, there is little information on current levels of production through AFNs. Nevertheless, such projections are relevant to many fields of literature and policy, such as biodiversity and soil carbon sequestration, as well as food security (EC 2009, GOS 2011, Quan 2011). In an "at best, back of an A4 envelope" national-level calculation for seven different scenarios according to different production regimes, Fairlie (2007/8: 26) concludes by suggesting that "the subject requires studying in greater depth by university researchers". This research adds to knowledge of the potential contribution to food security for urban populations from allotments and AFNs through further detailing food production activities in the study area and their potential for expansion.

Besides levels and diversity of food production, the quality of the produce is cited as a common reason for allotment-holding (DeSilvey 2003), both for taste (organoleptic) and nutritional value. Research on different AFNs also suggests that demand for 'fresh' and 'tasty' food is a prime motivator (Sherriff 2009, CPRE 2012). While the relative nutritional content of produce from different cropping regimes is contested (Oliveira *et al,* 2013), government initiatives are consistently aimed at increasing intakes of unprocessed fruit and vegetables (the '5 a day'), in order to improve the health of UK populations (Parkin and Boyd 2011). Participants in urban food gardening have demonstrated higher intakes of fruit and vegetables compared to non-participants. For example, Alaimo *et al.* (2008) found in a survey of 766 adults in Michigan, US, that participants in a community garden were 3.5 times more likely than non-participants to consume fruits and vegetables at least five times daily. These findings suggest that urban food growing, whether within allotments or AFNs, may help to address health inequalities through greater likelihood of meeting the 5-a-day target for low-income households, whose consumption of fruit and vegetables is reported to have fallen by 30 per cent between 2006 and 2010 (Harvey and Jowit 2012). Further clarification on whether these effects of vegetable growing apply to allotment gardeners in the UK will complement the existing studies from the US (Alaimo *et al.* 2008) and the Netherlands (van den Berg 2010).

Beyond mainstream dietary recommendations, research also suggests health gains from Mediterranean diets as being due to '15-a-day' (Trichopoulou *et a*l. 2000), or benefits attributed to intakes of micronutrients through a diversity of 'wild' foods. The blurred boundary between intake of micronutrients in food and the medicinal action of plants is suggested through ethnobotanic research which documents the global traditions of reliance on plants for medicine ('phytomedicine', see e.g. the contents of *the Journal of Ethnopharmacology*). Common culinary herbs such as thyme, sage, rosemary, parsley, and mint have been consistently included in *materia medica* over millennia (De Vos 2010), but also included have been herbs such as nettle and dandelion, which though prevalent in UK allotments, fields and gardens are perceived as weeds (described by Mabey (2010) as 'outlaw' or 'vagabond' plants'). These and many other plants commonly found on UK allotments and in urban areas are still in widespread use as medicines in other countries, including continental Europe. However, the extent of current-day cultivation of plants for medicine within UK allotments or AFNs has received little attention as a potential source of (free) healthcare that could reduce pressure on NHS budgets. Investigation of attitudes of allotment tenants to use of plants as medicines will contribute to assessment of the potential contribution of AFNs and allotments to health, or 'human capital'.

Alongside food supplies and plant medicines, impacts on other 'human assets' of health and wellbeing are documented for allotment activities (e.g. Hope and Ellis

2009) and on AFNs more generally (Armstrong 2000). These include physiological (e.g. outdoor physical exercise) as well as psychological and emotional factors (e.g. stress relief and self-reliance; see Wiltshire and Geoghegan 2012). Similar to other leisure activities such as walking or field sports, allotment cultivation (and domestic gardening) involves outdoor physical exercise, and both physiological and psychological benefits are recognised in government recommendations for 2.5 hours of moderate intensity exercise every week for adults and at least 60 minutes a day for children and young people (5-18 years).[8] The health benefits obtained from seeing (green) plants has also been reported from research (e.g. Nielsen and Hansen 2007, Burls 2008, Kingsley *et al.* 2009), with effects observed including reduced levels of stress from being in a 'restorative natural setting', as claimed historically for allotments (Burchardt 2002). These impacts are also supported by research evidencing the links between outdoor exercise, natural environments and health (Pretty *et al.* 2005b, SDC 2007). However, despite these strong links suggested, academic research that details the perceived health impacts of cultivating allotments in the UK is sparse, though documented for AFN activities such as community gardens (see Armstrong 2000 and Kortright and Wakefield 2011 for the US).

'Social horticulture' and horticultural therapy has a rich collection of case histories and evaluations to demonstrate the health benefits of people participating with others in food growing activities (Bellows *et al.* 2003, Elings

[8] https://www.gov.uk/government/publications/uk-physical-activity-guidelines [la130313]

2006, Pudup 2008, Sherriff 2009). Recreational and leisure opportunities have been acknowledged as key factors in the popularity of detached gardens and allotments in urban areas since their inception (Way 2008, Thornes 2011). They were recognised to be places where families, who were otherwise living and working in cramped conditions, could spend ('quality') leisure-time and benefit from play and exercise in the open air (Burchardt 2002), as recognized also for privately-owned ('attached') domestic gardens (Bhatti and Church 2001). Yet government propaganda during wartimes which 'drilled in' the idea of a sense of community that could be gained from gardening with others to 'dig for victory' for the nation(-state), was not always welcomed (Poole 2006, Gillespie *et al.* 2008, Ginn 2012). Similarly, much research focuses on the interactions within allotments and AFNs as a positive feature (Crouch and Parker 2003, Buckingham 2005, Hope and Ellis 2009). However, Wiltshire and Geoghegan (2012) draw attention to the finding that, whilst some plotholders may seek company, others look forward to 'getting away from it all' and 'find pleasure in solitude', as found for urban home gardening by Bhatti and Church (2001). This research aims to define further the balance of seeking solitude or community within allotment and AFN praxes and so also add to understanding of potential contributions to public health targets on 'reducing social isolation'.

The concept of cultural capital (Bourdieu 1986) is represented here as learning and status gained from allotment and AFN activities. It is taken to include learning skills of gardening, growing and using food (e.g. Hope and Ellis 2009,

Sherriff 2009, Platten 2011), as well as the subsequent status achieved from crops and plot cultivation and meals prepared. It is beyond the scope of this research to investigate the numerous theoretical strands and perspectives on learning. However, both its emancipatory or oppressive potential is established in the writings of Freire (1970) and others (e.g. Escobar 1998, Gaventa and Cornwall 2006). Although learning activities on allotments are referred to in literature (DeSilvey 2003, Buckingham 2005, Hope and Ellis 2009), this research seeks to add to this through providing further insight into everyday practices of learning and status-building within Plymouth allotments and AFNs, from the perspective of building cultural capital.

Gardening is an increasingly popular hobby and expression of individual creativity amongst UK adults (Bhatti and Church 2001), and although variable through the life course, an estimated 50 per cent of adults enjoy gardening (*ibid*.). Crouch (1989) and others have explored the creative individual expression, both in structures, clutter and in ways of gardening on allotments. Van den Berg and van Winsum-Westra (2010) further describe the preference for tidy or unkempt garden appearance as being variable between individuals according to the importance of 'sense of control'. Both domestic gardening and allotment cultivation are suggested to create place attachment (Crouch and Ward 1997, Brook 2003) through emotion or affect, and provide an example of the culture-nature interactions discussed in literature (Whatmore 2002, M Goodman 2004, McCarthy 2005, Castree 2005, Bakker 2010). In their analyses

of domestic gardening, Bhatti and Church (2001: 380) call for further research that: "may provide important and distinct insights into contemporary human-nature relations." Cummins *et al. (*2007: 1825) also propose "a mutually reinforcing and reciprocal relationship between people and place," and investigation of the cultivation activities on allotments will help to clarify how this relationship is created and maintained.

Allotments are discussed by Hope and Ellis (2009) as (at least potentially) sites of enhanced biodiversity within urban areas, where 'natural capital' is 'produced'. Although referred to, little detailed attention has been paid to the balance on allotments between utilitarian activities for food production and cultivating for other-than-human natures. As Bhatti and Church (2001: 370) state, "in the garden individuals face considerable ecological dilemmas, ambiguities and opportunities in terms of how they engage with plants, insects and animals, that is, a particular form of nature." The impasse on whether AFNs provide beneficial outcomes for local environments (see Section 1.1 above) is investigated on Plymouth allotments through the concepts of land-sparing (intense cropping with separate areas set aside for wildlife) or land-sharing (agro-ecological cultivation techniques) for biodiversity (Tilman *et al.* 2011) and gardening style preferences (Van den Berg and van Winsum-Westra 2010). Exploring the attitudes of Plymouth allotment gardeners to nature, will add to literature in this area, and can help to further interrogate the concept of bridging a metabolic rift (a 'rupture' of the human/nature metabolic exchange)

that is contended to be the key to resilience for urban populations (McClintock 2010, Schneider and McMichael 2010).

This research aims to give breadth as well as depth on praxes within allotments in order to illustrate the claims for AFNs, according to the aims of a transdisciplinary political ecology perspective (rather than, for example, a focus on a single capital asset, such as habitat surveys). Thus, to define the multidimensional activities within allotments and assess implications for the different capital assets, data on each of these are generated and then triangulated with existing data (see Chapter 3).

2.6. Allotment relations: non-monetary exchanges (en)counter neoliberal constructs

2.6.1 Introduction

The second objective of this research is to determine the social relations on allotments (denoted by the stage of 'interactions' in the political ecology framework in Figure 2.3 above). The aim is to clarify debates on whether AFNs representing new 'economies of care' for social-ecological justice (Dowler 2008, Howard 2010) and contribute to regional development

(Cummins *et al.* 2007, Sunley 2008, Berry 2008, Marsden and Sonnino 2009), or alternatively strengthen inequalities in a 'defensive localism' (D Goodman 2004). The central concepts of social capital, and of convertibility between the different capitals (notably social and economic), are organized through the concepts of diverse and heterodox economies (Gibson-Graham 2008).

2.6.2 Diverse economies and social capital

Gibson-Graham (2008) describes economies through the categories of transactions, labour, and organizational forms, as illustrated in Table 2.2.

Table 2.2 Examples of diverse economies activities *(Source: Gibson-Graham 2008: 39)*

Transactions	**Labour**	**Organizational form**
Market	**Wage**	**Capitalist**
Alternative market Local trading systems. Alternative currencies. Black market	**Alternative paid** Co-operative. Self-employed. Indentured	**Alternative capitalist** Environmental ethic. Social ethic
Nonmarket Barter. Household flows. Gifts	**Unpaid** Volunteer. Housework. Family care.	**Non-capitalist** Communal. Independent. Feudal. Slave

As Table 2.2 above suggests, relations involving labour and transactions within different organizational forms exist in nonmarket, alternative market, or market approaches. Non-monetised flows and exchanges involving relations of reciprocity and trust are considered in academic literatures (Fajans 1988, Ferguson 1988, Merlan 1995, Perugini *et al.* 2003), and often in terms of social

capital (Granovetter 1973, 1985, Portes 1998, Smart 1993). These relations take place within 'communities of practice' (*cf*. Wenger 1999) with distinct rules, norms and sanctions (e.g. Harrington *et al.* 2008, Ostrom 2008), described as 'habitus', or everyday routines and practices (Pratt 2000, Thrift 2000, Mutch 2003). Social capital, as variously defined (Bourdieu 1986, Portes 1998, Forrest and Kearns 2001, Putnam 2002, Mohan and Mohan 2002, Clarke 2008), is analysed through concepts of weak and strong ties that have bonding, bridging or linking functions (e.g. Prell 2009). These non-monetary relations on allotments are also discussed in terms of social capital (Ellen and Platten 2011, Wiltshire and Geoghehan 2012).

The concept of (relational) social capital has become ubiquitous in social science literature and policy language. As Mohan and Mohan (2002: 191-3) contend, it "has a seductive simplicity in explaining a wide variety of social, political and economic outcomes" and is "alleged to have beneficial effects on individuals (health, interaction) and communities, generating norms of 'generalized reciprocity' and templates for future cooperation". It is suggested to create disposition towards trust through social interactions, and to be enhanced through use (unlike economic capital), but decreased through disuse or misuse. Mohan and Mohan (*ibid*: 202) suggest that:

> "... the interest in social capital results from a critique of overdetermined theorization of links between structural forces and individual experiences, a recognition that contexts matter to the outcomes of social processes, and, in particular, a critique of the excesses of free-market capitalism and failures of state intervention."

However, an extensive literature in turn critiques the concept of social capital, its application and implications as well as its accompanying methodologies (see e.g. Smart 1993, Woolcock 1998, Wilson 1997, Cattell 2001, Cohen and Prusak 2001, Kilpatrick *et al.* 2003, Pelling and High 2005). For example, its use has been suggested to be as a result of the desire by governments to seek 'costless policies,' through turning attention to civil society, and to process rather than outcome (Perrons and Skyers 2003), as suggested by the categories in Table 2.3.

Table 2.3 Examples of different forms of network ties: bonding, bridging and linking, strong and weak *(Source: Ferlander 2007: 118, Table 2)*

Level of strength and diversity	***Strong ties***	***Weak ties***
Bonding (horizontal) ties	Close friends of immediate family with similar social characteristics e.g. social class or religion	Members with similar interests or social characteristics within voluntary associations
Bridging (horizontal) ties	Close friends or immediate family with different social characteristics e.g. age, gender or ethnicity	Acquaintances and members with different social characteristics within voluntary associations
Linking (vertical) ties	Close work colleagues with different hierarchical positions	Distant colleagues with different hierarchical positions and ties between citizens and civil servants

This research uses these distinctions of bonding, bridging and linking capital (Table 2.3 above) to explore human relations within allotments and AFNs at micro, meso and macro levels. However, as Mohan and Mohan (*ibid*: 197) contend, there are difficulties in operationalizing such a fluid, relational concept, with data on many of its dimensions not being captured through sources such as the census. As a result, other direct or indirect measurements are needed:

> "It remains to be seen how social capital can be mobilized as a counter-narrative of solidarity and more radical social movements ... we are concerned about the ways in which social capital has come to be privileged over material inequalities (between people and places) in a way which may be both analytically weak and practically disabling" (*ibid*: 204)

Through exploring the relation of social capital to the other dimensions of capital assets (Figure 2.6), this enquiry aims to address this concern. Conversely, it aims to interrogate the suggestion that Bourdieu privileges economic capital instead of social capital, illustrated by his statement that:

> "… it has to be posited simultaneously that economic capital is at the root of all the other types of capital and that these transformed, disguised forms of economic capital, never entirely reducible to that definition, produce their most specific effects only to the extent that they conceal (not least from their possessors) the fact that economic capital is at the root … of their effects" (Bourdieu 1986: 24)

This concern is also voiced by Mohan and Mohan (*ibid*.) who question whether 'semiologism,' which reduces social exchanges to the realm of communication, ignores material inequalities. Applying the capital assets approach to relations within allotments and AFNs, with consideration of convertibility ('fungibility'), between the different dimensions, will add to understandings on their potentials as 'economies of care' (Dowler *et al.* 2010).

2.6.3 Building social capital through gifting time

Wiltshire and Geoghegan (2012) suggest that allocation of time to allotment cultivation can be related to giving time to unpaid work, or volunteering. Such activities, represented as social capital, depend on multiple variables that include income, age, gender or educational levels, and depend on both self-interest and philanthropy (Wilson and Musick 1997, Thoits and Hewitt 2001, Bornstein 2009). Salamon *et al.* (2011) estimated that 'volunteerland', if a country, would have the second largest adult population of any country globally (at 971 million people) and would be the world's seventh largest economy (with GDP of US$1,348 bn). However, data uncertainties exist, and estimated levels of volunteering within the UK population have ranged from 74 per cent in 1997, to 10 per cent in 2009 and back to 52 per cent in 2010 (*ibid*: 219/220).[9]

Historically, a result of allotment cultivation for households was described to be self-reliance (Moselle 1995, Burchardt 1997), a central concept in parliamentary debates during the eighteenth and nineteenth centuries, as well as during (peri-) war years in the first half of the twentieth century. This aspect of allotment cultivation was downplayed post-war (see Section 2.4 above), but has received more attention since the 2008 economic downturn. Research among local authorities (LV 2009) found that 56 per cent of allotment holders chose to rent

[9] See International Labour Organisation (ILO), (2011) Manual on the Measurement of Volunteer Work [www.ccss.jhu.edu l.a. 300513]

a plot for financial reasons, with an average estimate of around £950 per year saved on food budgets. A survey in 2010 for the NSALG (Horrocks 2011) found the average amount of time spent to be 203 hours per year and the net average value of produce to be £1,362 (£1,564 gross with costs of £202 per year), "plus the inestimable personal satisfaction of growing your own and getting valuable exercise into the bargain". Given that the labour/time 'cost' at the (then) minimum wage rate of £5.80 per hour could amount to £1,170 a year. Horrocks (*ibid*.) concluded that, "there is no net profit in having an allotment, just a vast amount of satisfaction and pleasure in the results and the achieving thereof." However, in a similar vein to historical debates on impacts of allotments amongst the under- and unemployed (Burchardt 1997), such calculations assume that waged work is otherwise available.

Food gardening has been described in anthropological literature as 'socially necessary' labour. For example, amongst the Baining in Papua New Guinea, human sweat from gardening work is needed to transform individuals into 'human beings', distinguishing people from nonhuman creatures, or "'natural' beings who do not prepare gardens but who frequently steal from them"(Fajans 1988: 158). Thus, the time committed to allotment cultivation can be viewed as increased self-reliance as well as building social capital, and compared to findings in research on AFNs that documents unpaid time given to, for example, community gardens (Milbourne 2012). This study aims to add to empirical

knowledge in this area, through investigating the factors that affect committing of unpaid time to allotment cultivation.

2.6.4 Gender and family relations on allotments

Besides individual time commitments to allotment cultivation, as for other activities, the household and family relations involved are often on the basis of gender (Gibson-Graham 2008). The split of household 'duties' over cooking and shopping for food is well documented, with analysis by Washbrook (2007) of the UK Time Use Survey illustrating that (though of course with many exceptions) women on average spend 70 per cent more hours than men in 'domestic production' (i.e. housework, caring, etc.). Whilst data on details of daily food decisions and actions is difficult to elicit (McIntosh and Zey 1989), Buckingham (2005) suggests that women find allotments a place to 'escape' from traditional gender roles. However, Allen and Sachs (2007) report how local food initiatives in the US, such as farmers markets and CSAs, can add to women's workload in food procurement and preparation and suggest that much literature fails to acknowledge that time pressures for women, who are the traditional preparers of food, have tightened:

> "Sometimes a source of power, more often one of subordination, the fact remains that we need to understand much more about gender relations in the food system. We need to know much more about who women food activists are, their motivations, and their visions for the food system." (*ibid*: 14-16)

The importance of gender relations is also highlighted by McIntyre and Rondeau (2011: 122), also from US research, who state that, although cost considerations have been explored in local food movements in academic and popular literature,

> "… there has been less discussion of modifications to women's workload and the gendered distribution of additional tasks that would be required for the implementation of an alternative agrifood movement, i.e. one that encourages home production ..."

They point to a 'romantic yearning' for traditional food and agricultural practices that typically underpins calls for community and home gardening, and to a need for a 'frank debate' on the implications for household workloads. Bianchi *et al.* (2012) suggest that equality among married couples diminishes when they become families, a transition that solidifies women's responsibility for household work and men's for wage work. To date, academic literature has paid little attention to relative time spent on gardening and cooking of food within UK allotments or AFNs (e.g. McIntosh and Zey 1989, Bentley 1996).

2.6.5 Habitus, cooperation and norms in allotment praxes

Beyond the household or direct family, human relations within allotment praxis can be characterised as involving higher levels of non-monetized flows than those within conventional food networks. Gifting beyond tenants' immediate families to wider social networks is documented as common practice on UK allotments (Platten 2011), and was found amongst 40 per cent of gardeners in

one US study on community gardens (Armstrong 2000). Further detailing of the characteristics and extent of these relations within Plymouth allotments and AFNs in this thesis will help to further clarify concepts of bonding and bridging social capital with strong and weak ties (see Table 2.3 above). The playing out of these relations and flows are described in common property literature as being contingent on the embedded values, or habitus, that are signified by 'norms, rules and sanctions' of the communities of practice involved (Ostrom 2007, 2008). The contingent factors of trust and goodwill, and means of conflict resolution are addressed in anthropological literature (e.g. Thomas 1992) as well as research on the 'tragedy of the commons' that investigates free rider behaviour (e.g. Ostrom 2007, Manner and Gowdy 2010). All these considerations contribute to understandings on how relations are performed within communities, yet whilst pilfering and theft has been recorded on allotments and in urban agriculture (*cf*. Mougeot 2005), no research to date details this aspect of relations on UK allotments. This study aims to clarify The ways in which social capital is built or depleted, as well as the norms, rules and sanctions involved.

Guiding these non-monetised relations involving social capital are the (contingent) characteristics of cooperative and competitive behaviour. Literature on the dynamics between cooperation and competition in natural and social systems indicates the deep-rooted role of these two relational tendencies (see for example Kropotkin 1902/2009, Schumacher 1973, McBurney 1990,

Nowak and Sigmund 2000). Competitive tendencies were encouraged on allotments in order to increase food production levels through vegetable shows during wartimes (Poole 2006). Further back, the reluctance of farmers to release land for allotments was explained through fear of economic competition. However, research on allotments and AFNs (for example, in community supported agriculture) in the present day suggests potentially greater levels of co-operative than competitive behaviour compared to conventional food systems (e.g. Sage 2003), and of a wider concern for social and ecological justice (Morgan 2010) as distinguishing characteristics.[10] These are the different (alternative and non-market) working relations and ethics described for diverse economies (Gibson-Graham 2008) and for food justice movements (Levkoe 2006). Further investigation of these relations in current allotment praxis will help to clarify these claims in AFN literature (e.g. Birchall and Ketilson 2009[11], Pearson *et al.* 2010).

2.6.6 Moving into the monetary economy

Allotments have historically been linked to income-generating opportunities and seen on a continuum with smallholdings (Crouch and Ward 1997), with the

[10] In contrast, GFNs have been characterised as 'fiercely competitive' (Seyfang and Paavola 2008), and Marsden (2010) also describes the highly competitive nature of relations between AFNs and GFNs. However, the history of supermarkets has been traced to 19th century cooperative markets (Grassroots Action on Food and Farming [www.gaff.org.uk la 310312]).

[11] Supported by an FAO programme in the 2012 International Year of Cooperatives: FAO, 2012, Cooperatives central to hunger fight, 24 January [www.fao.org/news/story/en/item/120774/icode/ l.a. 210312].

difference characterised as cultivation by spade on allotments and by plough on smallholdings (Moran 1990). The distinction was later formalized in UK legislation by the 1907 Smallholding and Allotment Act, whereby allotments were restricted to a maximum size (of an acre) and sale of produce was prohibited. Archer (1997) discusses how levels of productivity on allotments and smallholdings were often higher than those of commercial food production. This historical conclusion potentially endorses claims for present day small scale urban agriculture that considers their potential for income-generation (IAASTD 2008, McClintock 2010, Zezza and Tasciotti 2010, Maxey *et al.* 2011). However, and as prohibited by legislation, only a very few urban allotment-holders continued to earn any income from their plots in the second half of the twentieth century (Crouch and Ward 1997). Nevertheless, a potential reverse trend is seen in the increasing number of people seeking land- and food- based livelihoods (Holloway 2000, Maxey *et al. ibid.*) and a rural rather than urban life (Halfacree 2006). This perspective also resonates with the historically documented jealousy of farmers over their status within society as food producers which they perceived allotment- and small- holders were also aiming for, and which contributed to restrictions on land available (Archer 1997). Despite the perceived current low status of farming as a career, this sense of status still exists, evidenced by the fact that there are very few farmers who want a different occupation (Butler and Lobley 2008). This research investigates whether there exists remaining tension and latent demand amongst present day allotment tenants for land-based income-earning opportunities (whether

marginal, supplementary or main), and so the potential contribution to regional (peri-urban) development as suggested for AFNs (Marsden 2010).

The concept of 'Eight steps back to the land' is described by Tudge (2011b), whereby food-growing can range in scale and commitment, from a windowsill to full-time farming. These eight steps are: (1) A new generation of farming wannabes, (2) the concerned observer, (3) the allotmenteer, (4) 'horticulture-plus', (5) livestock, (6) from allotmenteer to informal farmer, (7) the committed part-timer, and (8) the full-time farmer. Tudge's (*ibid*.) Campaign for Real Farming suggests a target of ten to twenty percent of the population involved in 'producing good food for everyone for ever' (i.e. sustainable and resilient food supplies). This supports analyses by Newby (1980), Crouch and Ward (1997) and Halfacree (2007), that question present-day representations of rurality and depopulated landscapes, the reality of which had shocked Cobbett (1830/1912) on his return to England from the US. The potential for income or livelihoods and economic development from allotments and AFNs addressed in this research is aided by the perspective of diverse economies (incorporating non-monetized and monetized relations) and concepts of multifunctionality among rural food producers in post-productivist agriculture (Wilson 2007, Barbieri and Mahoney 2009, Marsden and Sonnino 2009).

2.6.7 Diverse, alternative and conventional food networks

The relations within AFNs are suggested alternatively to represent economies of care, but also of exclusion (D Goodman 2004, Dowler *et al.* 2010) and seen in the valuation of artisan and territory (place)-based foods, for example, as sold in present day farmers markets (Kirwan 2003, 2006). However, food products within conventional networks also increasingly market products on the basis of social and ecological embeddedness as their 'Unique Selling Points' (USP). These are the same kinds of commodities that are suggested to bring benefits to regional economies (USDA 2010), but despite shortening food supply chains (re-connecting producers and consumers), still consist of monetized exchanges and inequalities. This brings into focus the governance of economic and political capital assets, explored next.

2.7. Allotment politics: participation, governance and narratives

2.7.1 Introduction

This section explores what is known about the socio-political contexts of activities (Section 2.5) and relations (Section 2.6) within allotments and AFNs,

and how these affect outcomes and resource allocations. Its aim is to provide the basis from which to address the third research objective, of defining the politics at play in these praxes (Chapter 7). These considerations represent the governance thread of analysis (Tregear 2011), and the social-ecological-political (SEP) settings identified in the political ecology framework (see Figure 2.3 above).

2.7.2 Gaining access to an allotment: process and outcomes

Gaining access to allotments involves both processes and outcomes of resource allocations, or the intersection of structure and agency (e.g. Perrons and Skyers 2003, Guarneros-Meza and Geddes 2010). In addition to this framework, the dynamic and stochastic concept of communities of learning, or epistemic communities discussed by Wenger (1999) links with concepts of participation in governance networks (Burns 2000, Davies 2002, Moe 2005, Ekers and Loftus 2012, Fincher and Iveson 2012), and helps to unpick the dynamics of power and influence involved in allotment and AFN praxes. The typology of communities that Harrington *et al.* (2008) present in the context of natural resource management gives a sense of the polycentric multilevel intersections that can be found: (i) community of locality (political, social or physically defined boundaries); (ii) affected community; (iii) transcendent community of interest (special interest / single issue groups and general interest groups); (iv) communities of practice (common practice, e.g. organic agriculture); and (v)

communities of identity (common identities). These distinctions are drawn on in this thesis to enable a more nuanced consideration of the different 'communities' that are often conflated in literature (Gaventa and Cornwall 2006).

Demand (effective and latent) for UK allotments ('land to rent at a reasonable rate') has exceeded supply since the 1700s apart from during the post-war decades (1950s-1970s). Due to factors discussed above (Section 1.2), the latter half of the 1970s resulted in an estimated 1600 per cent rise in waiting lists (Riley 1979 cited in Crouch and Ward 1997: 13). The processes that can contribute to inequality in access to resources (allotment tenancies) include socio-economic and cultural factors (Moe 2005). Considerations of how people gain access to the limited allotment land involves investigation of the interactions between individuals and the 'structures' of local government (Crouch and Parker 2003) or those who have influence over access to land. Historically, tenants were 'vetted' for their suitability, for example with requirements of being a regular church-goer (Archer 1997). In the present day, allotment tenancies are reported in popular media as a 'postcode lottery' based on locations[12]. Soja (2008) describes the variance between neighbourhoods of access to public space, framed as environmental justice by Mitchell and Norman (2012) and the impact of public administration and bureaucracies is documented by others (Kearns 1995, Davies 2002). These factors are investigated in this research through the demographic characteristics and geographical variation of

[12] Waiting lists in Plymouth averaged over the last 12 months at around 1,000 (PCC 2012).

allotments and tenants in the study area in order to further help assess claims of social-ecological justice within allotment and AFN praxes (Seyfang and Paavola 2008, Boyle 2012).

2.7.3 Participating in site hierarchies and management

Allotments are described as places where demographic (ethnic) variations creatively mix, or integrate (Buckingham 2005). They may therefore provide an exemplar of how issues of legitimacy and levels of participation can be attained in other more researched situations of neighbourhood regeneration (Kearns 1995, Michels and de Graaf 2010).

The extent of active participation, represented on allotments by involvement of tenants in allotment associations or site management, can be explored through the processes of negotiating acceptance into different communities through norms, rules and reification (Wenger 1999). These processes involve both hierarchies (Burns 2000), and narratives (Wainwright 2010), although Michels and de Graaf (*ibid*: 489) suggest that, for a healthy democracy, the most important aspect appears to be the "development of civic skills, the increase of public engagement, and the opportunity to meet and discuss neighbourhood issues and problems," rather than any real power or a say in decision-making. As Burns (2000: 971) suggests:

> "The more that people are actively participating in their communities and interacting in society at large, the more likely that the outcomes will reflect the general good."

Developing these civic skills is described in literature (e.g. Kearns 1995, Burns 2000), and Becher (2010) suggests that the durability of participatory regimes depends on participants 'remaining convincing' in both roles: of government and their community. Becher (*ibid.*) further identifies the role of these 'intermediaries' as either representative, gatekeeper or coordinator, with the latter form of 'brokerage' more likely to maintain legitimacy, through ability to move between roles, as depicted in Figure 2.7.

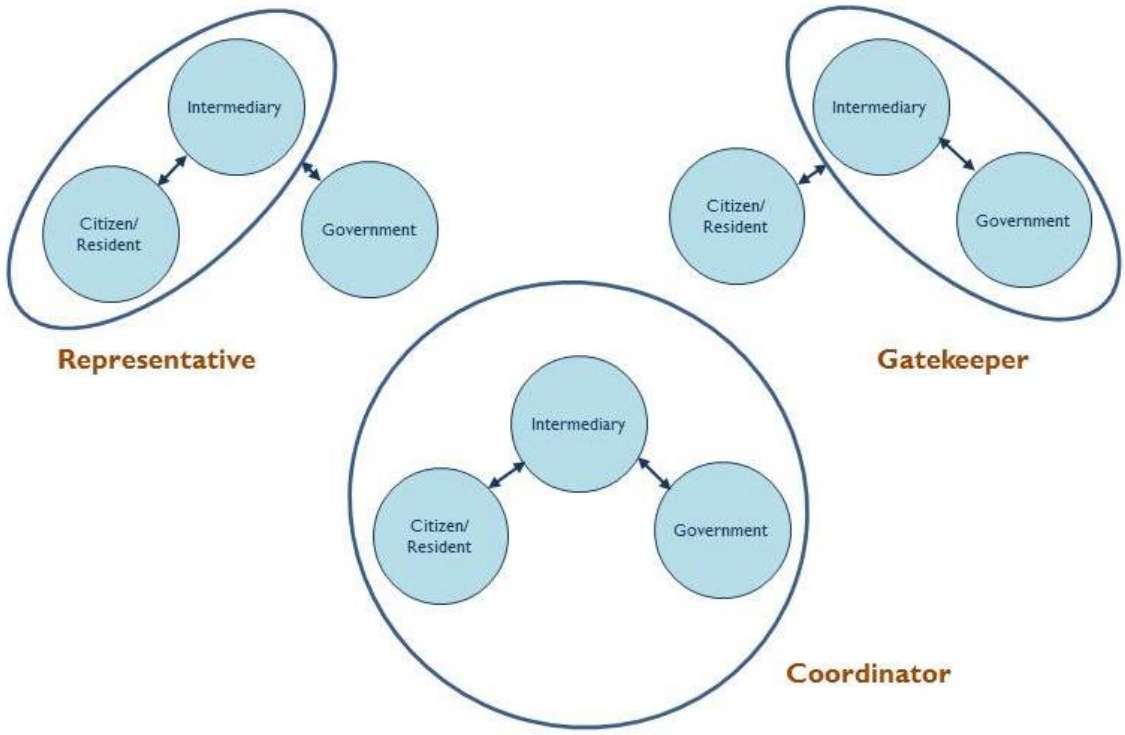


Figure 2.7 Communication Models *(Source: redrawn from Figure 1 in Becher 2010: 498)*

As Figure 2.7 illustrates, the potential exists for tenants to move between representing the interests of allotment tenants, as acting as a gatekeeper to local authority, or as coordinating between both 'poles'." This research explores the participation of allotment tenants in their associations, site management, and in relation to local authority decision-making to add to literature on whether AFN activities and relations enhance social and environmental justice, or alternatively represent the working-out of self-interests of (elite) groups (Winter 2002, D Goodman 2004).

Literature on collaborative management, or co-management, describes the sharing of power and responsibility between government and local resource users (Carlsson and Berkes 2003). However, Collins and Ison (2009) suggest that the conventional view, exemplified by Arnstein's ladder of participation, is restrictive and needs to be replaced with concepts of social learning. As Prell *et al.* (2009: 506) describe, homophily is well-documented in social networks, whereby similar actors choose to interact with each other, enabling mutual understanding, communication and learning. Centralization of networks, where one or a few individuals hold the majority of social ties, is suggested to be helpful for initial phases of forming groups, but longer-term goals require a more decentralized structure, with more actors and stakeholder categories (*ibid*. 504), as illustrated in Table 2.4.

Table 2.4 Network concepts for natural resource management
(Source: Prell et al 2009: 504, Table 1)

Network concept	Effect on resource management
Strong ties	+ Good for communicating about and working with complex information + Hold and maintain trust between actors + Actors more likely to influence one another's thoughts, views, and behaviours + Encourage creation and maintenance of norms of trust and reciprocity - Encourage the likelihood that actors sharing strong tie hold redundant information - Actors less likely to be exposed to new ideas and thus may be less innovative - Can constrain actors
Weak ties	+ Tend to bridge across diverse actors and groups + Connect otherwise disconnected segments of the network together + Good for communicating about and working with simple tasks + New information tends to flow through these ties - Not ideal for complex tasks/information - Actors sharing weak ties are less likely to trust one another - Can break more easily
Homophily	+ Shared attributes among social actors reduces conflict, and provides the basis for the transference of tacit, complex information - Can also result in redundant information, i.e. actors have similar backgrounds and therefore similar sources of knowledge
Centrality	*Degree centrality:* + Actors with contacts to many others can be targeted for motivating the network and diffusing information fast through the network, i.e. these are the focal actors in a centralized network - These actors do not necessarily bring together diverse segments of the network - Because of their many ties to others, these ties are often weak ones, thus decreasing influence over others *Betweenness centrality:* + Actors that link across disconnected segments of the network have the most holistic view of the problem + As with degree centrality, they can mobilize and diffuse information to the larger network - They can feel constrained or torn between two (or more) positions
Centralization	+ As only a few actors hold the majority of ties linking the network together, only need reach these well-connected few to reach entire network - Reliance on only a few is not the optimal structure for purposes of resilience and long-term problem-solving

Exploration of these network characteristics (Table 2.4) in allotment and AFN praxes in Plymouth will add to understandings on whether and how the 'local' perpetuates or overcomes inequalities (DuPuis and Goodman 2005).

2.7.4 Levering resources for allotments: city and translocal settings

The power and influence that leads to agenda-setting is identified as key to both processes as well as outcomes (Moe 2005) with considerations of multilevel policies, media and corporate interests, all of which contribute to the social-political 'zeitgeist' or settings (e.g. Barbaras and Jerit 2009). Little attention has been paid to the priority-setting and policy-making processes related to allotment provision in local authorities, but detailing these further can help clarify how commitments are arrived at amongst the UK cities that have a formal policy on allotments, for example, of making links to other agendas, and specifically for physical and social inclusion (see Figure 2.8 below).

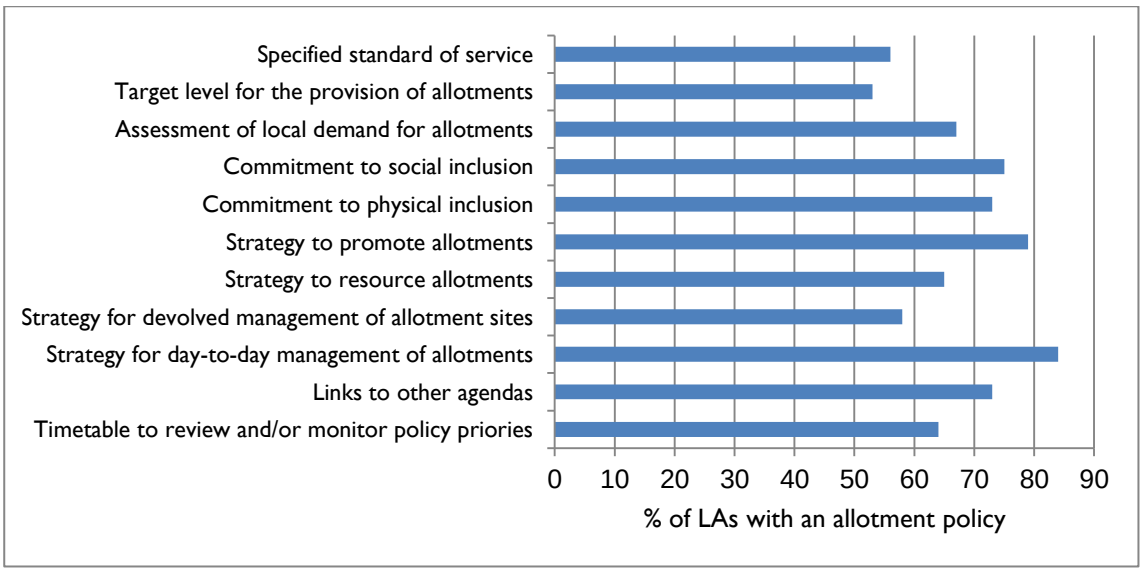


Figure 2.8 Elements included in Local Authority allotment policies *(Source: DCLG 2006, Chart 1, p3)*

While the goals of inclusion are strongly featured, a target for the level of provision of allotments is the least cited element of a policy (Figure 2.8). Providing new allotment sites involves resource allocations, flows of which are situated within wider contexts of national and international policies. As Joseph (2002) contends, these flows result from hegemonic and private interests, as well as from inequalities in access (lobbying) to the policy-making process (Tansey and Worsley 1995). This situation is described by Heynen *et al.* (2006: 6) as where the "material conditions that comprise urban environments are controlled, manipulated and serve the interests of the elite at the expense of marginalised populations". Further, as Raco (2009: 442) contends, however ambitious a policy may be,

> "even when plans appear to encourage a wider public good, such as in the creation of healthy cities and living environments, in reality the design and planning of such spaces is often poorly managed, relies too heavily on market investments …"

The prevalent strategies of (trans)national stakeholders in conventional food and agriculture systems are contended by Lang *et al.* (2009) to exhibit globalising tendencies in comparison to the localising tendencies documented within AFNs (Morgan 2010). Key stakeholders include the World Trade Organization (WTO), the UN's Food and Agriculture Organization (FAO) and the UK's National Farmers Union (NFU), which all have wide policy reach (Allen and Cochrane 2010), and comprise the translocal factors (McFarlane 2012) affecting allotments and AFNs. Their power and influence is conveyed through narratives and resource flows that include the CAP and taxation regimes, and their impact is investigated in this research.

2.7.5 New social groupings and narratives

The challenges for potential allotment and smallholding tenants in gaining access to urban and peri-urban land (Halfacree 2007, Maxey *et al.* 2011), are exacerbated by the context of high 'real estate' values and speculative portfolios of land banks (Zasada 2011). These settings result from interplays of individuals and organizations (agency and structure) which also act as sites for formation of social movements (Leach and Scoones 2007, Ruggiero and Montagna 2008, Ekers and Loftus 2012), or new groupings (Crouch and Ward 1997). These new groupings create new storylines and information that enable different

imaginaries and challenge hegemonies (defined as alliances of prevailing interests; see Joseph 2002). Narratives involved in AFN groupings include concepts of food justice and spatial justice, in terms of access to public space, food sovereignty, agro-ecology, and the commons (Martin and Marsden 1999, McCarthy 2005, Seyfang and Paavola 2008, Soja 2008, Reynolds B 2009, Altieri and Toledo 2011, Milbourne 2012). They are seen in a wider context in calls for 'ecological democracy' (Dryzek 1997) or social-ecological justice, and the same narratives are also seen in policy agendas and legislation on allotments (Wiltshire and Azuma 2000, Burchardt 2002).

Groupings that aim to promote allotment interests in the UK include the National Society for Allotment and Leisure Gardeners (NSALG), and the Allotment Regeneration Initiative (ARI). Those that more generally promote ecological / small-scale household food provisioning praxis include the Campaign for Real Farming (CPRE), Sustain, Friends of the Earth, Soil Association, and Garden Organic. Other groupings exist that question allocations of access to the natural environment, or 'the commons', for example The Land is Ours and Reclaim the Fields who link transnationally with agro-ecological movements of MST and Via Campesina. Geographical literature on community gardens in the UK (Milbourne 2012) and parks in the US (Mitchell 1995) frame these issues in terms of accessing and changing use of urban public space. However, these different narratives have not yet been related to the allotment system in

academic literature on UK AFNs in terms of the economic and political capital assets involved.

The social movements (e.g. Via Campesina) that are creating new conceptions of the world (Wainwright 2010) within AFNs, have gained legitimacy as a result of large-scale enclosures (land grabs), and subsequent redistribution (land reforms) by social democratic governments in Latin America (Klein 2007, Chaplin *et al*. 2010). These movements echo those that were active around the time when the UK allotment system was formed in the 1800s, and which included the Spenceans, and the Chartists who both built on understandings of land as 'the People's Farm as also held by the Levellers and in earlier centuries. These argued that land to rent at a reasonable rate was an insignificant compensation for large-scale land enclosures (Chase 1988). They contended that land was 'the womb of wealth' and, as a 'non-portable asset', could not have the same economic laws applied to it. Similarly, the present day movement of the 'landless peasants' in Latin America, Movimento dos Trabalhadores Rurais Sem Terra (MST), state their desire for a different way of farming, and one that

> "ensures an ecological equilibrium and also guarantees that land is not seen as private property – i.e. the transformation of nature as an accumulation strategy." (Stedile 2002:100)

MST challenges core societal concepts through strategies of alliance building, with the aim of 'remaking of nature-society relations through agro-ecological practices' (Karriem 2009: 324). As Mackenzie (2006: 595-596) states in relation to land redistribution as achieved in present-day Scotland, the debate "... is not

about a retreat into exclusivity or essentialism through an entrapment in the past." She suggests that land, as place, "is not 'defended' as such, rather, its political possibilities form the basis for thinking creatively about socially just and sustainable futures." Whilst literature discusses the extent that 'localism' found within AFNs is either defensive or reflexive (Winter 2003a, D Goodman 2004), the oppositional or creative thinking about access to land for allotments or AFNs from wider social movements has received little attention in academic research and is explored in this thesis to add to understandings of the alliances that are being formed in the present day.

2.7.6 Whose knowledge counts?

Walker (2006: 384/5) suggests that (creative) compelling counter-narratives are needed to those of, for example, 'the tragedy of the commons'. He contends that discourses succeed if they effectively employ good storytelling skills to communicate powerful ideas in a simple way. This success is suggested to be attained by disrupting the flow of old, comfortable and convenient stories that circulate, and "... replacing them with counter-narratives which better fit the claims of a different set of stakeholders, preferably with equally attractive slogans and labels" (Leach and Mearns 1996: 33 cited in Walker 2006: 386).

Buijs *et al.* (2011) discuss how framings of particular issues at micro and meso level succeed according to their alignment with culturally-accepted social representations (see also Halfacree 1993). These framings are unpacked by Joseph (2002), who describes the multiplicity of scales and interests involved in any context. Findings from social analyses of science (Jasanoff 1987, Wynne 2010, see Figure 2.2 above) suggest that economics and biology dominate policy debates because they strip away complex social realities. Debates on allotments are often situated within these economic framings: in the present day they are talked of as 'subsidies' for tenants through provision of urban land and, historically, support for them came from evidence of reduced poor relief rates in parishes where they were provided (Way 2008).

Crouch and Parker (2003) describe politics on allotments as consisting of three forms: contesting loss of sites, negotiating over use of sites, and negotiating 'with oneself', developing values and relationships. They also suggest (*ibid*: 406) the need for further research to help

> "understand how exhortations and examples of practice are performed for political amplification or how practice influences or activates the political consciousness of the agent … this requires attention to 'work done' in micro-political practice and discourse as well as dominant politics in repositioning and refiguring processes."

Whilst they suggest that allotment holders are becoming more radical in their land claims, existing literature does not detail the processes involved in land access within allotment and AFN praxes.

Gibson-Graham (2008*)* suggests the need to document activities in order to strengthen new social norms and so enable policy to translate into practice. The present study has the aim of documenting the multidimensional capitals involved in allotment praxes, and through this to strengthen (raise the visibility of) the norms involved. However, as reaction to Stern's (2006) report demonstrated, the tenor of (climate change) policy debates is changed through applying economic calculations. For AFNs and allotments, some possible calculations include 'the true cost of food' (Pretty *et al.* 2005a), data on agricultural subsidies, and the added value to houses of adjacent greenspace. However, there are many confounding factors (complex social realities) to such economic calculations, some of which are unsurprising. For example, Perez-Vasquez *et al.* (2005) found that allotment holders on two UK sites and local residents with higher household income were prepared to pay more to avoid losing the sites. Other valuation methodologies include the Social Return on Investment (SROI; see e.g. Rotheroe and Richards 2007, Ryan and Lyne 2008), or Local Multiplier effects (LM1 and LM2; see NEF 2012), as used by the Duchy of Cornwall for its Newquay Growth Area Food Strategy, which prioritises local food activities (Sustain/ESD 2007). More popularly and widely, impact assessments are attempted through ecofootprint analyses, a methodology developed as part of a PhD, and now employed by World Wildlife Fund,[13] and the UK's Stepping Forward.[14]

[13] The ecofootprint methodology was developed by Mathis Wackernagel, at the University of Bern in Switzerland. See www.footprintnetwork.org [l.a. 300513]
[14] http://www.steppingforward.org.uk/ef/otherregions.htm [l.a. 300513]

In the UK, Defra, the Audit Commission, and now the Natural Capital Committee, produce economic, social and environmental indicators to feed into such assessments, consisting of complex economic valuation calculations as well as simple 'traffic light' indicators. Yet academic literature critiques these on the grounds that they are unable to provide a comprehensive or accurate, unbiased assessment of systems and are:

> "… set in the context of power, variable social rights and biased interpretations of experience …the indicators that are not presented may be the most important since these would otherwise have come from disempowered groups and interests who are not in a position to alleviate them; identification of these indicators is crucial for any process." (O'Riordan and Voisey 1998: 51)

As Gaventa and Cornwall (2006) suggest, changes in demographies of who participates in knowledge-creation and 'whose knowledge counts' can be emancipatory or restrictive. Given the reservations over soundness of data on which to make valid assumptions (Chapter 3), this research does not aim to make complex calculations for Plymouth allotments and AFNs in economic, human (health), social (wellbeing) or environmental units. Instead, data generated are referred to existing regional and national data in order to define more clearly the politics, and 'what is missing', from available indicators. This stage of generating knowledge is a first step in the process of social learning, as described for communities of practice and for evolving social-ecological systems (Ison *et al.* 2013).

2.8. Allotments and alternative food networks: interplays between multilevel social-ecological systems

Allotment and AFN praxes have been discussed above (Sections 2.5-2.7), through a political ecology perspective of activities, relations and governance using the capital assets framework (Figure 2.6). This section lays the grounding for the fourth objective of this research (Chapter 8), on how systems approaches help to define relations between allotments and AFNs, and so understandings of their respective impacts on resilience and sustainability for urban populations (e.g. Sonnino and Marsden 2006, Sherriff 2009).

'Systems thinking' (Emery 1969, Von Bertalanffy 1972, Capra 1996) has been suggested for research topics where the impossibility of controlling all variables is recognised (e.g. Skolimowski 1994, Meadows 2008; see also Chapter 3). A systems approach is taken in this research to broaden and clarify network approaches as it better enables the unpicking of the different dimensions (of capitals). The concept of linked social-ecological systems also lies at the root of much academic research on sustainability and resilience (Adger 2000, Folke 2006, Ostrom 2007, Wilson 2012; see Figure 2.3 above).

Although research on characteristics of social-ecological systems is widespread, not much attention has been given to defining their (multidimensional and

multilevel) boundaries in relation to AFNs or allotments. A definable social-ecological system is where new and emergent properties result from relations between constituent and nested systems ('holons'). The research focus is on the patterns of relations between system constituents rather than on objects, as in 'relational geographies' (e.g. Bodin and Crona 2009) and network/assemblages (Latour 2005). This focus on relations necessarily involves defining contexts and interfaces, as well as 'feedback and control' mechanisms. As described by Capra (1996: 6-7):

> "… seeing the world as an integrated whole rather than a dissociated collection of parts. It may also be called an ecological view, if the term 'ecological' is used in a much broader and deeper sense than usual. Deep ecological awareness recognizes the fundamental interdependence of all phenomena ..."

Thus, a multilevel system is where discernible (albeit fuzzy) boundaries exist to patterns of interdependent relations or diverse links between actants with shared norms (Lambin 2005). The resultant 'emergent' systems are suggested to be 'self-organizing' and evolving (Smith and Stirling 2008, Longstaff 2009).

The concepts of sustainability and resilience (see e.g. Pretty 1995, Folke 2006, Walker *et al.* 2012, Wilson 2012) are widespread in policy debates on food security (Defra 2010c; see Chapter 1), amongst 'transition towns' on post-fossil-fuel futures (Hopkins 2008), and in academic literature (Jansson and Polasky 2010). Urgency is expressed especially over future food security for urban populations, with Fiksel (2006:15) stating that:

> "The question of urban system resilience is particularly urgent. By 2030 over 60% of the world's population will live in cities. ... It is important to develop and implement policies for enhanced resilience, since trends suggest greatly increased complexity for future urban systems"

Carpenter and Brock (2008: 39) suggested that "resilience is a broad, multifaceted, and loosely organized cluster of concepts, each one related to some aspect of the interplay of transformation and persistence". Despite contention that the concepts of sustainability and resilience are hard to define, let alone measure (Tobin 1999), it is suggested here that the framework of social-ecological systems helps in understandings of the impacts of allotments and AFNs.

As with literature on sustainability (O'Riordan and Voisey 1998, Eriksen 2008a, 2008b), many different frameworks exist that elucidate features that contribute to the resilience of social-ecological systems (SES) in the face of change. According to Carpenter and Brock (2008: 40), resilience is taken to have three key characteristics:

> (1) the amount of change the system can undergo and still retain the same controls on function and structure, (2) the degree to which the system is capable of self-organization, and (3) the ability to build and increase the capacity for learning and adaptation.

Bristow (2010: 153) further suggests that "Resilience is defined as the region's ability to experience positive economic success that is socially inclusive, works within environmental limits and which can ride global economic punches."

Comparisons are made between homeostasis and allostasis; the latter being where a system adjusts its state in order to fit to new endogenous or exogenous circumstances (Forrester 2007*:* 40). Other literature describes features that affect resilience of social-ecological systems to include flexibility and diversity, as well as level of sensitivity and exposure to internal/external changes ('robustness') and the ability for rapid change, i.e. "the capacity to meet priorities and achieve goals in a timely manner" (McDaniels *et al.* 2008: 312). All these considerations can inform current understandings on allotments and AFNs, and claims that they provide niches that could expand to 'fill the gaps' if supplies through current food systems were disrupted (Fraser 2006, Renting and Wiskerke 2010).

Rockstrom *et al.* (2009) explore the amount of change a system can accommodate through the concept of 'planetary boundaries,' or 'distance to threshold'. The distances to several of these thresholds are seen to have reduced significantly since the 1950s, with some even breached (see Fig 2.9 below), again underlining the sentiment of urgency expressed by Fiksel (2006) above.

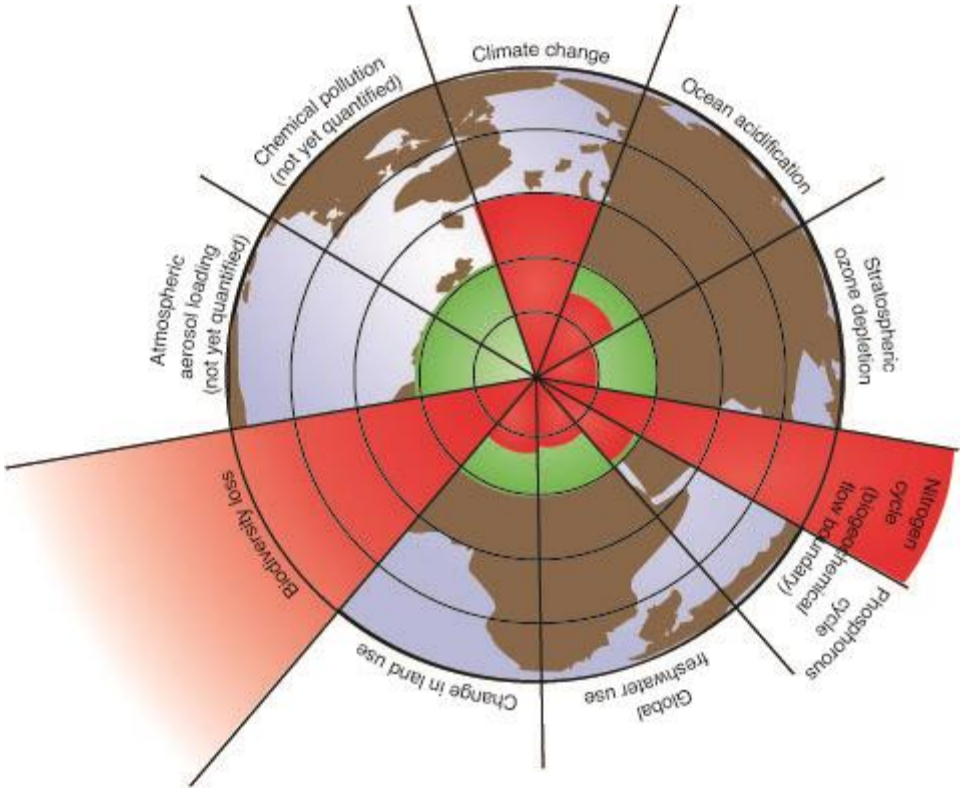


Figure 2.9 Planetary boundaries: A safe operating space for humanity
(Source: Rockstrom et al. 2009, courtesy Azote Images/Stockholm Resilience Centre, http://www.stockholmresilience.org/21/research/research-programmes/planetary-boundaries.html)

As Figure 2.9 shows, food supplies for humans are implicated in the boundaries calculated to be already 'breached', on the parameters of nitrogen and biodiversity. The other boundaries where 'distance to threshold' has decreased significantly since the 1950s are all areas in which human food provisioning is implicated: phosphorous, climate change, freshwater consumption, agricultural land use and ozone depletion[15]. Further, chemical pollution is a key parameter on which conventional agriculture is critiqued (e.g. Pretty *et al.* 2005), but is not

[15] Although not often associated with food production, Methyl Bromide is widely used as a fumigant and depletes stratospheric ozone at rates up to 8 times that of the CHCs which were regulated by the Montreal Protocol (see Miller 1996).

yet assessed in the planetary boundary model. However, there are many uncertainties due to human intent and actions that can deliberately avoid or engineer the crossing of actual and perceived thresholds, and these are informed by values and social context (Adger 2006).

The fourth objective of this research is then to assess potential impacts on the food security, resilience and sustainability of urban populations of allotments and AFNs in the study area by reference to the boundaries that are deemed to be already close or breached (e.g. biodiversity). It determines how these food networks represent social-ecological systems with characteristics of: (i) flexible and diverse links, and (ii) learning (feedback and evolutionary adaptations).

Hassanein (2003) proposes that community food security requires an integrated and coordinated approach which brings together public and private sector groups that otherwise do not collaborate. The levels, diversity and characteristics of the links between allotments and AFNs in urban areas (for example school and community gardens) remain to be detailed and can contribute to understandings of their combined potential impact on the resilience of urban populations.

The capacity for learning is enhanced through information and feedback. Meadows *et al.* (2004) contend that systems can be stabilised and sustained through recognising 'overshoot' and improving feedback. Thus, the production

and communication of information plays a key role in system resilience. Folke *et al.* (2005) suggests four important interacting aspects for 'adaptive governance', as being to: (a) build knowledge and understanding of resource and ecosystem dynamics; (b) feed ecological knowledge into adaptive management practices; (c) support flexible institutions and multilevel governance systems; and (d) deal with external perturbations, uncertainty and surprise. They conclude that:

> "Such governance connects individuals, organizations, agencies, and institutions at multiple organizational levels. Key persons provide leadership, trust, vision, meaning, and they help transform management organizations toward a learning environment." (*ibid*: 441)

Network actants with influence are suggested to be significant denominators in the ability to manage environmental challenges (Bodin and Crona 2009; and see 2.7 above), and organizational psychology research into leadership, team-building, and decision-making increasingly also draws on systems perspectives (e.g. Melville 2010). In Gladwell's (2000) terms, successful initiatives often result from 'super-connectors', or people with the ability to bring in others, and to attract resources.

Two main perspectives in future-oriented discussions of resilience and sustainability are those of active adaptive management and structured scenarios. Folke *et al.* (2002: 437) contend that adaptive co-management requires and facilitates

> "… a social context with flexible and open institutions and multi-level governance systems that allow for learning and increase adaptive capacity without foreclosing future development options."

Drawing on evolutionary concepts of variation, selection and heredity, Folke *et al.* (*ibid.*) contend the need for attention to slowly-changing fundamental variables that create memory, legacy, diversity and the capacity to innovate in both social and ecological aspects of systems. These variables are suggested to increase the range of surprises which the system can cope with and so helps to avoid problems of path-dependence or 'lock-in' (Grabher 2009).

Olsson *et al* (2007: 1) contend that the challenge lies in synchronising governance systems that are often fragmented and compartmentalized, and that

> "The ability to create the right links, at the right time, around the right issues in multilevel governance systems is crucial for fostering responses that build social-ecological resilience."

The capacity for fostering responses that build sustainability and resilience of urban populations (through allotment and AFN praxes) are suggested here to require capital assets (initial starting conditions) as enablers of material, social and psychological functions. The fourth objective of this research, to explore these interactions between AFNs and allotments, thus involves discussion of 'starting conditions' (assets) and 'potential' (capacities) of the material, social and psychological functions involved.

The material function of social-ecological systems represented by allotments and AFNs involves the 'starting conditions' of current levels of provision and

the ability to enrol further assets into the (allotment and AFN) system. Identifying patterns and levels of asset flows between allotments and AFNs can help to clarify their role in resilience and sustainability of food supplies for urban populations.

The psychological function of allotment and AFNs towards resilience of social-ecological systems (urban populations) is considered through the lenses of place attachment (e.g. Birkeland 2008), cohesion (Uzzell *et al*. 2002), and branding (Fainstein 2001, Higgins *et al*. 2008). The role that local food projects play in enhancing a sense of community has been documented (Seyfang 2006), and the role of allotment communities in creating social capital discussed in 2.5 above. Further exploration of the links between AFNs and allotments within their localities will help to identify the potential to impact social capital and place identity, with implications for resilience and sustainability of urban populations.

The social dimension of AFNs and allotments can be viewed through the literature on social movements, spatial justice and on communities of interest, variously formed and connected through the common concepts of ecological and social justice. Hence:

> "Social and environmental outcomes are produced as actors seek to speak on behalf of themselves or others and mobilize resources in and across boundaries … [they] … represent a form of networked or hybrid governance, an amalgam of neo-liberal and third way politics advocating individual rights, market mechanisms, collective responsibilities, civic co-operation and public engagement at scales ranging from local to global to address environment and sustainability problems." (Harrington *et al* 2008: 201)

The dominant actors in food systems speak through narratives of 'sustainable intensification', 'comparative advantage' and 'economies of scale', within the 'meta-discourses' of a Malthusian tragedy of the commons (see 2.2 above). Conversely, actants within new (AFN/food) and historical allotment social movements draw on narratives of an ethos of agro-ecological food production as well as social and/or environmental justice.

Literature on social movements (Escobar 1998, Ruggiero and Montagna 2008) highlights how people choose to engage in different ways, and that a variety of organisational arrangements can enable this. Seyfang (2008) proposes that initial intentions in engaging with AFN initiatives are transcended over time and result in a wider awareness of environmental issues. However, the relative commitments seen within allotments and AFNs to the principles of social justice (Hassanein 2003), and ecological justice (Kovel 2008), remain to be explored.

In summary, the literature on social-ecological systems suggests the need for links, learning and adaptive co-management that enable asset/capacity-building in material, psychological and social functions in order to enhance food security, resilience and sustainability for urban populations. Applying these understandings implies the need for a diverse range of means of access to food, and can be illustrated by allotments and other constituent systems of AFNs.

2.9. The need for this research

The above sections introduced the debates in the literature and identified gaps in knowledge on allotments and AFNs. There remain opposing claims over whether AFNs represent a privileged 'quality turn' (Ilbery and Kneafsey 2000) or whether they contribute to food security (affordability and availability of supplies) for urban populations (Bellows *et al.* 2003). These issues can be investigated using the example of food and non-food production activities on allotments. The questions of whether benefits of social inclusion and reconnecting producers and consumers in diverse economies of care are promoted through AFNs (Kneafsey *et al.* 2008, Gibson-Graham 2008, Dowler *et al.* 2010, Tregear 2011), or whether AFNs represent an exclusionary 'defensive localism' (Winter 2003a, Goodman D 2004, Wakefield *et al.* 2007) can be analysed through the relations involved in allotment cultivation and the interplay of cooperation and competition. The opposing contentions over whether AFNs promote social inclusion or are exclusionary can also be explored through the politics witnessed in allotment praxes. These praxes encompass both process and outcomes (Perrons and Skyers 2003, Becher 2010), and can be analysed through a focus on stakeholder power and influence, as well as the alliances and narratives involved. The issue of whether AFNs can contribute to the sustainability and resilience of urban populations (Eriksen 2008a), or alternatively can result in, for example, higher carbon emissions compared to

global food networks (Coley *et al.* 2009) is analysed through definition of the capital asset requirements or the contingent factors ('initial starting conditions') for maintaining material, psychological and social functions (see also Section 1.3). These themes thus form the focus of this study, whose objectives are re-stated here as being:

1) To identify the activities and outputs on allotments in Plymouth, including food, wellbeing, cultures and natures
2) To determine the social relations involved in Plymouth allotment praxis, and how these can be conceptualised as diverse economies
3) To identify the politics and governance of allotments in Plymouth, and the extent of active participation, social movements and new narratives created, and
4) To determine how allotments and AFNs represent emerging social-ecological food systems with characteristics of linking, learning and diversity, and their potential to contribute towards resilience and sustainability for urban populations.

The next chapter outlines the research design, methodology and techniques used to address these objectives.

3. Methodology

3.1. Introduction

This chapter describes the methodology used in this study to address the research objectives. Ultimately, the field of any programme of research will depend on the researcher(s)' perspective and standpoint (see 3.8.), their 'native' discipline(s), and the nature of the topic under investigation. This study uses the broader social science perspectives of pragmatic critical realism and political ecology (see Section 2.2). The provisional status of all knowledge (of the real, actual and observed) is recognised. Ontological debates of, for example, positivist/postmodernist, essentialist/constructivist, and structure/agency are not revisited in depth here (though see Section 2.1 above). However, food networks, as open systems, require a research approach that is able to take account of the impossibility of controlling variables (Yin 2003). This approach contrasts with research into closed systems, and implies a shift in ontologies and epistemologies away from positivism (Robson 2002) and 'the correspondence theory of truth', towards relational and participatory understandings (Skolimowski 1994). The perspective taken is that of constellations of structures and agencies within allotments and AFNs which interact over time at multiple scales and places. Epistemologically, a multi-method approach is employed to address these stochastic 'real-world' food networks, with their many

uncertainties and many unquantifiable dimensions. The next sections discuss the methodology of the critical realist (3.2) and participatory action research (3.3) stances. The research focus and case study approach that is used in this investigation are considered (3.4), followed by an overview of the research design and strategy employed (3.5). The individual methods used are then described (3.6), followed by discussion of how these methods were combined to address the research aim and objectives (3.7). The ethical issues that were considered and arose in this research, and the potential impacts of the research process and researcher positionality on the findings and the study area itself are then discussed (3.8). The final section (3.9) synthesises and summarises the considerations raised in this chapter.

3.2 Epistemology and methodology

As considered in Chapter 2, the layered ontology of critical realism outlines the distinction between the real (or potential), the actual and the observed and requires an epistemology (or methodology) that can encompass these aspects of the research objects (see Figure 2.1 above). The research process started by building up a picture and conceptualising alternative food networks and allotments from the academic literature, and following connections to these through fieldwork in and around Plymouth, in the process of 'retroduction' (Klein 2004, Mingers 2005) as depicted in Figure 3.1.

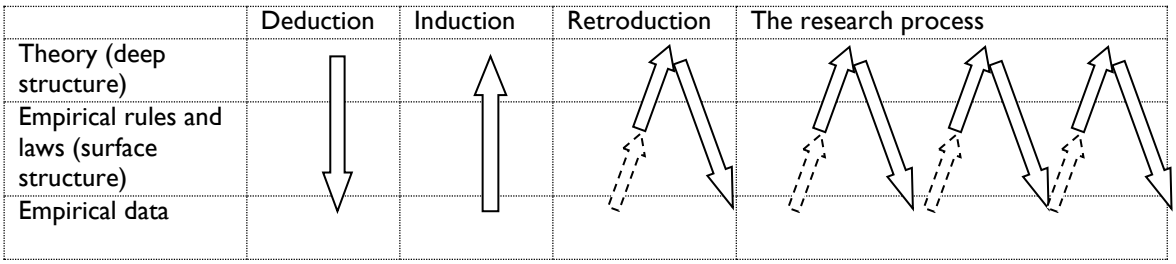


Figure 3.1. The research process *(Source: adapted from Holt-Jensen 1999: 67)*

Retroduction is the basis of Strauss and Corbin's (1990) approach to grounded theory. Sayer (2000) suggests that valid and reliable knowledge can be attained through a continual building-up of knowledge of the research objects (intransitive and transitive[16]), conceptualisations, and abstractions of mechanisms perceived. This process involves repeated movement between concrete and abstract, and between particular empirical cases and general theory. A generalised depiction of the process applied in this research to allotments, with a strategy that involves movements across and between all of the positions, is given in Table 3.1.

Table 3.1 Critical realism as applied to allotments in Plymouth *(Source: author)*

	Transitive	**Intransitive**
Observed/Empirical	Allotments visited during research study	Interactions between plotholders
Actual	All existing allotments in Plymouth	PR/webpages showing discourse
Real	Organisations, funding streams	Rhetoric: sustainable intensification, resilience, communities
Potential	Projections of capacities and capabilities (space, numbers, yields, etc.)	Academic, policy and grey literature

[16] Transitive objects are materialities, and intransitive aspects of the research objectives are praxes and theories.

As illustrated above (Table 3.1), the domain of 'potential' was added to the domains of observed, actual and real of Bhaskar's (2010) critical realist ontology for this study, Although arguably 'potential' could be placed within the domain of the real (see Section 2.2 above), it is included as a useful category to indicate future possible changes, and so the sense of 'becoming' as well as 'being' within the allotments and AFNs in focus.

3.3 The case study approach

A case study approach, or a focus on a specific situation at a specific location at a specific point in time, or 'case', enables a manageable 'segment' of the 'real world' to be obtained (Yin 2003). Allotments and AFNs represent open, multi-scalar social-ecological systems, and this section considers how using the specific situation in Plymouth helps to address the research gaps identified (Chapter 2), and so meet the research objectives and aim of contributing new knowledge (empirical, conceptual and theoretical).

As Yin (2003: *xi*) contends, case study research is appropriate where researchers need to:

a) Define research topics broadly and not narrowly;
b) Cover contextual or complex multivariate conditions and not just isolated variables; and
c) Rely on multiple and not singular sources of evidence.

As reviewed above, research into allotments and AFNs encompasses consideration of social-political settings and thus the research topic is necessarily broadly defined. The use of a case study, or of 'taking a temporal-spatial snapshot', can vary according to the purpose of research, as suggested in the typologies presented by Borne (2006), reproduced in Table 3.2.

Table 3.2 Case study matrix *(Source: adapted from Borne 2006: 123-4)*

Author	Type of case study		
Stake (1995)	Intrinsic	Instrumental	Collective
Yin (2003)	Exploratory	Descriptive	Explanatory
Hakim (1987)	Experimental	Descriptive	Selective

The most usual types of case studies included in Table 3.2 above are those as defined by Yin, whereby the purpose can be exploratory, explanatory and/or descriptive, according to the aims of the research (Yin 1993 cited in Tellis 1997). Hakim's (1987) typology also includes 'descriptive', but adds 'experimental', in which a situation is being probed for possible explanations, or 'selective', where there is no attempt to demonstrate that it is representative. Borne (*ibid*.) further describes the three types identified by Stake (1998) as: 'intrinsic' where the study is of a particular instance of a phenomenon because it is interesting in its own right; 'instrumental', where the study facilitates understanding of something else, whether it is theoretical debate or a social-ecological problem; and 'collective', whereby the study is one instance of a collection of similar case studies that together advance understandings. Finally, but not included in the above typology, is the concept of an illustrative case

study, which is an account of the main characteristics of a real world example in order to clarify an idea or reinforce an argument. This research has the intention of fulfilling the criteria for an illustrative case study, but also those for a case that is intrinsic, instrumental, exploratory, as well as experimental. In other words, this case study of Plymouth allotments and AFNs is on the basis of its intrinsic interest and ability to illustrate debates around AFNs more widely, but also for the exploratory purpose of 'experimenting' with understandings of AFNs and allotments.

The issue of how representative the findings of a case study are, or their generality and so applicability to other situations, locations or points in time, has been widely debated (e.g. Yin 1981a, 1981b, Eisenhardt 1989). The desirability of this depends to some extent on the nature of the case study. Rather than following replication logic, and given the impossibility of controlling relevant variables, it is suggested that dependable and trustworthy new knowledge comes from studying examples which encompass a range of factors, and which can be triangulated and agreed on. The greater number of factors that can be encompassed within the research case study, the greater the possible potential for a wider applicability of the findings to other areas will be. Thus typicality is not a necessary condition to be met in choice of case study (Tellis 1997). Even so, the case study selected needs to have exemplary instances of the phenomena being studied, or needs a group of phenomena that includes contrasting outcomes (Yin 2003). Tellis (*ibid*) further suggests that, in order to

maximize what can be learned, the cases that are selected should be 'easy and willing subjects'.

All case studies are situated within wider contexts and can also be disaggregated down to finer 'granularity'. The boundaries of the case and the unit of analysis chosen for a study depends on logic and reasoning over which level or scale of focus is best suited to address the research aims and objectives. For this research into allotments and AFNs, the primary unit of analysis was chosen to be the city-scale, with focus on the adjacent scales of context (regional, UK, national, international settings), and nested units (firm/project, household, individual). Comparisons to other cities ('cross-case comparison') are also made on some parameters, with a sample of twenty of these derived from histories (e.g. bombed cities), geographies (e.g. coastal, peripheral region, or neighbouring cities in the region), and socio-economic profiles.

The choice of city as the unit of analysis was both pragmatic and academic: allotments are managed at city level, and it is this scale at which urban AFN activities are defined. The (inter)national and regional scales provide the social-political settings described in the political ecology framework, as well as the contexts of legislation and social movements for the allotments and AFNs in the study area.

3.3.1 Case in focus: Plymouth and the South West

This case study is presented as of intrinsic interest, as exploratory and as illustrative. The selection of case studies for research into allotments and AFNs to inform understandings of their contribution to food security, resilience and sustainability of urban populations was potentially from a global set. Logistically and realistically, cases could have been selected from any region of the UK/Europe. This section justifies why Plymouth with its location in South West of England was selected to be the focus of this thesis out of the many other potential cases of cities that could be the case in focus (Figure 3.2).

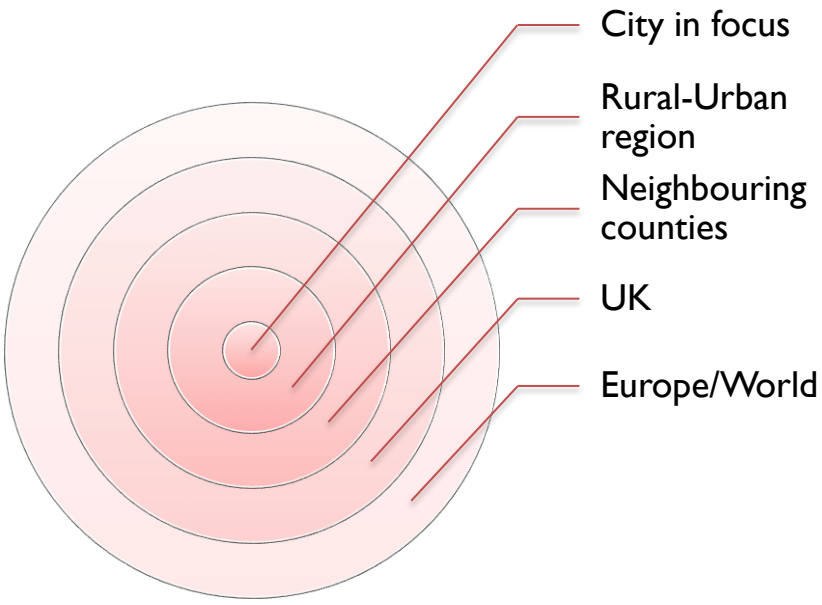


Figure 3.2 Focus of case study research
(Source: author)

The city in focus (Figure 3.2) for this research, Plymouth, is located in the South-West. Out of the set of regions within the UK, the South West (SW) has

been cited as an example of commitment and action within the sustainability agenda and Plymouth cited as a leader amongst English cities in this context (Marsden 2010); over the course of this research Plymouth has become recognised as a pioneer in local food initiatives (Section 4.3). However, the city also has a low-wage economy (Gripaios and Bishop 2005), and has been largely dependent on few employers, for example as the site of Europe's largest naval base. Thus, as for any potential case, there are both similarities and differences between Plymouth and other UK cities, but it is selected as of intrinsic interest with illustrative and exploratory potential to clarify debates in literature on AFNs.

A challenge of this research is also then to trace specific or general contingent factors that favour or affect AFNs and allotments in the study area. These may include its geographical location as 'peripheral' but situated within rich agricultural and maritime surroundings, and so be similar to cities in Wales and Scotland. The size and population density of the city may also be a factor in findings; on these parameters, Plymouth is halfway between others in the SW region with active AFNs (Bristol and Exeter), but is the largest urban centre in its largely rural adjoining counties (Devon and Cornwall). Other possible variables that may confound generalities include the characteristics of the city as a post-war reconstructed urban area, indicating potential comparisons with other bombed cities such as Coventry or Portsmouth. As analysed by Essex and Brayshay (2007, 2008), Plymouth has dubious fame as one of the country's

worst blitzed cities, but also as having achieved the most 'skilful and well-orchestrated' plan for its reconstruction, according to radical proposals made in the Plan for Plymouth under the aegis of Patrick Abercrombie, one of the country's foremost planners (Paton Watson and Abercrombie 1943). Essex and Brayshay (2008) attribute this outcome as being partly the result of an intuitive, powerful and influential axis of support (from Lord Mayor Astor, Patrick Abercrombie and Paton Watson, the City Engineer), and partly as a result of ignoring official procedures and local opposition. All the factors described above indicate the value of a pragmatic approach that acknowledges the contingency of any situation on historical and geographical factors and the interest of Plymouth as a special ('unique') case. These considerations underline the need for wariness in but not impossibility of, generalising from specific snapshots in place and time.

Further justifications can be made of selecting Plymouth as a case study, on both academic and pragmatic grounds (Jones 2008). In seeking to maximise empirical knowledge and the 'efficiency' of the research process, investigation of allotments and AFNs within and around Plymouth provided the best opportunity for generating dependable and trustworthy knowledge (see Sections 3.6.2 and 3.8 below). With 32 allotment sites in the city, and over 1,000 allotment tenants, adequate access to and saturation of data could be achieved, aided by my existing embeddedness within the researched situation.

Issues of boundaries and definitions of areas occurred at all scales of enquiry (see Paasi 2004). As research progressed it became clear that urban-rural links were central to the development of allotments and in present-day AFNs. The regional level thus provided key context of wider settings (see Chapter 4), and allotment and AFN activities that straddles city and the wider peri-urban region are depicted in Table 3.3 below, organized by stage of food cycle.

Table 3.3 Food cycle components of allotments and alternative food networks in the case study area *(Source: author)*

Food cycle stage	Allotment and AFNs within and around Plymouth
Regional production/processing	Producer co-operatives, social enterprises
Neighbourhood production/processing	Community gardens and allotments, city farms, guerrilla gardening
Household production/preparation	Allotments, private gardens
Exchange	Wholesale, multiple, independents, farmers market, pannier market, events, food hubs
Demand	Public sector, food service, wholesale, retail, households, individuals
Eating	Restaurants, catering, domestic
Waste	Packaging recycling. Nutrient/organic matter waste recycling as input to production
Infrastructure (setting)	Local food strategy and action plans

The organization of these multilevel components of the case study within a food cycle framework (Table 3.3 and see Figure 8.3 below) allows for clear comparisons between allotments and AFNs. For the purposes of this research, identifying and describing alternative food activities, networks and systems in the case study area, and mapping these onto generalised food cycles was a first

scoping step (see Chapter 4 and Appendix 4 for the total population of cases identified in the initial stages of this research). The focus at finer granularity, on individual allotments, was then taken in order to provide a benchmark for other AFN activities.

The main components of allotment praxis in and around Plymouth, organized within the conceptual framings discussed in Chapter 2, are shown in Table 3.4.

Table 3.4 Aspects and characteristics of allotment praxis in Plymouth *(Source: author)*

Aspect of allotment	Chapter	Features explored
Geography	4	Locations across neighbourhoods
Demographics	4	Characteristics of allotment holders
Activities	5	Production of food and non-food
Relations	6	Flow and exchanges between tenants, households, and within sites and neighbourhoods
Governance	7	Politics related to allotments in study area and wider settings
Systems	8	Allotments in relation to AFNs

As Table 3.4 above suggests, the research progressed from considerations of the geographies and demographies of allotments in Plymouth (Chapter 4), to investigation of the activities, relations and governance as suggested by concepts of political ecology and the capital assets framework (Chapters 5-7). The findings on these aspects were then compared with AFNs in the study area (Chapter 8).

3.4 Research strategy and design

This section outlines the research strategy and design developed to meet the research objectives. Yin (2003) describes the steps in case study approaches, common to all research, and which draw on multiple data sources, as given in Box 3.1.

Box 3.1 Steps in case study research *(Source: Yin 2003: xvii)*

- Posing explicit research questions
- Developing a formal research design
- Using theory and reviews of previous research to develop hypotheses and rival hypotheses
- Collecting empirical data to test these hypotheses and rival hypotheses
- Assembling a database – independent of any narrative report, interpretations or conclusions, that can be inspected by third parties
- Conducting quantitative or qualitative analyses (or both), depending on the topic and research design.

The characteristics of allotments within the context of rapidly increasing demand and increasing AFN activities, indicated the need for a flexible research design, and one that allowed for continual revision and re-conceptualization as knowledge of the research objects accumulated. According to Robson (2002: 81), 'real world research' requires a repeated and continual revisiting of the following components of research design:

- Purpose: what the study is trying to achieve
- Theory: how the findings can be understood, what conceptual framework links the phenomena being studied
- Research questions: what needs to be known to achieve the purpose of the study, what is feasible
- Methods: what specific techniques are employed, how the data are analysed, how the data are demonstrated to be trustworthy, and
- Sampling strategy: from whom data is sought, how the need to be selective is balanced with the need to collect all the data required.

Thus, rather than a rigid one-way process, a flexible research design implies the existence of 'two-way arrows' between the components of a programme of research in the process of 'retroduction', or description, explanation and re-description (see Figure 3.1 above and May 2001). Robson (*ibid.*) suggests that flexibility is especially important in order to follow up interesting developments in theorising, conceptual frameworks, literature and secondary sources, or on-going data collection.

The overarching purpose of the research did not change during the timeframe of the study. However, as new literature and data became available, and as knowledge grew, the focus of investigation inevitably shifted. For example, the initial framing of the research through the lens of political economy gave way to use of political ecology and pragmatic critical realism (see Section 2.2 above). Further, the context of sustainability and resilience for urban populations at city level, led to greater emphasis on activity at city and regional scale rather than individual project or site level. The initial framing of 'local food networks' also

gave way to the term more frequently used in geographical literature, of 'alternative food networks.'[17]

The methods used in the study also shifted, from an initial intention to carry out surveys (see Section 3.6.4) to increased emphasis on participant observation and informal interviews. The latter was in view of the frequency and extent of AFN meetings and activities throughout the city-region which gathered pace during the early stages of this research. These provided many more opportunities for gaining greater in-depth and intersubjective knowledge of AFN activities, relations and discourses than was foreseen in the initial design stages.

In terms of sampling, the research progressed through purposive, snowballing, or 'respondent-driven sampling' (Goodman 2011, Handcock and Gile 2011, Damianakis and Woodford 2012), with new information and contacts for interviews, participant observations and other empirical data becoming available or suggested during research. Although originating in positivist sciences, the use of hypotheses in social sciences indicates a research objective or question formulated in a clear and pragmatic, 'experimental' sense (Robson 2002): from the viewpoint of critical realism, the results from testing these hypotheses are 'provisional' and inter-subjective, existing in the epistemic or actual domains; they can provide insight into the real domain ('superstructure'), and can be read by either essentialist or constructivist ontologies. Thus, hypotheses and

[17] Though see the concluding chapter for considerations of the potential implications of future use of the terms 'diverse' and 'different'.

outcome measures were developed, with incorporation of new concepts, data and understandings helping to refine the objectives and questions of this research. Table 3.5 presents the hypotheses formulated through this iterative process.

Table 3.5 The questions and hypotheses of this research *(Source: author)*

Research question	Indicative hypotheses
What is produced on Plymouth allotments?	Food and non-food are differentially produced and valued (Cook 2006) Activities on allotments involve all dimensions of capital similar to those described for post-productivist agriculture (Pearson *et al*. 2010, Wilson 2007) Allotments and AFNs represent a quality turn (Ilbery and Kneafsey 2000) Allotments and AFNs represent a bridging of cultures and natures (Bhatti and Church 2001, Bakker 2010)
What relations are involved in Plymouth allotment praxis?	Key characteristics of relations on allotments are non-monetary transactions (Ellen and Platten 2011) Gender divisions of labour still exist (Buckingham 2005) Co-operation and competition are differentially balanced compared to conventional food networks but social capital can be broken as well as built (Fajans 1988) Potential exists for income-earning opportunities as previously seen in continuums of allotments and smallholdings (Crouch and Ward 1997, Halfacree 2006, Maxey 2011) Relations can be conceptualised as diverse economies (Gibson-Graham 2008) Allotments and AFNs represent new social norms of care (Dowler *et al.* 2010)
What are the politics that affect the functioning of Plymouth allotments?	Participation in governance of allotments is dependent on key individuals (Becher 2010) Access to city space is limited by funding and perception of land as 'real-estate' (Heynen and Perkins 2005) Heterodox valuations could demonstrate benefits of allotment praxis (Pretty *et al.* 2005a, 2005b, SDC 2007) Social movements, or new groupings, are providing new narratives that challenge previous conceptions of rurality (Crouch and Ward 1997, Yarwood 2005, Wainwright 2010)
How do allotments relate to alternative food networks in the city of Plymouth?	Systems approaches facilitate understanding of activities, relations and discourses (Ostrom 2008, Zimmerer and Bassett 2003) Learning, linking, flexibility and diversity are key characteristics (Armitage *et al.* 2008) Allotments and AFNs have impacts on the resilience and sustainability of the urban population in the study area (Morgan 2009, Wilson 2012) Allotments and AFNs can be viewed as different components of evolving social-ecological systems (Wiltshire and Geoghegan 2012)
How can this thesis contribute to empirical, conceptual and theoretical understandings of allotments and AFNs?	Political ecology and critical realism together provide an ontological and epistemological framework that can clarify factors and activities in AFNs (Ostrom 2008, Robson 2002, Tregear 2011, Zimmerer and Bassett 2003) Communication of good practice and research findings in different 'languages' enables system learning (Armitage *et al*. 2008, Folke *et al.* 2002)

The above research objectives and questions (Table 3.5) were addressed through their respective indicative hypotheses throughout the study, from the perspective of action research.

3.5 Participatory action research

Participatory action research (PAR) in essence acknowledges the effects of the research process on the focus of the research, has the explicit aim to provide benefit to the participants, and is carried out with the ethos of co-researching rather than researcher and researched (Reason and Bradbury 2001). The evolution of action research occurred within the context of social scientists' contention that their methods can be sometimes of more use to actants than 'hard' or positivist scientific findings (see for example Bradbury 2001). McNiff and Whitehead (2009: 11) define action research as "a systematic enquiry undertaken to improve a social situation, and then made public". Participatory action research (PAR), as defined by Reason and Bradbury (*ibid*: 1), is:

> "a participatory, democratic process concerned with developing practical knowing in the pursuit of worthwhile human purposes, grounded in a participatory worldview … It seeks to bring together action and reflection, theory and practice, in participation with others, in the pursuit of practical solutions to issues of pressing concern to people, and more generally the flourishing of individual persons and their communities."

Parks (2001: 81) contends that participatory research is a "social practice that helps marginalized people attain a degree of emancipation as autonomous and responsible members of society". He suggests that the three main objectives of

participatory research are gathering and analysing information, strengthening community ties, and sharpening the ability to think and act critically. In PAR, the participation of the researcher in the researched situation is explicit, and has a key aim of sharing knowledge and learning (Reason and Bradbury 2001). Throughout the schedule of work for this thesis, sharing information and understandings gained from academic research outside the study area with allotment and AFN participants enabled learning for both 'researcher' and 'researched' in the case study area. Skolimowski (1994: 67) goes further to state that "participatory methodology will be practised in the future because it is the methodology of the evolving universe". The validity and reliability of the findings are then not seen to arise from an objective stance with no effect on the observed, but rather from reflecting, sharing and agreeing on them with the people in the researched situation. The means by which this checking of findings was achieved for this research is discussed in the following sections.

3.6 Research methods

As acknowledged (see e.g. May 2001, Hoggart *et al.* 2002, Olsen 2004), multi-method approaches offer the opportunity to triangulate data from different sources to provide dependable findings. Both quantitative and qualitative techniques are used in this research in order to gain a comprehensive and multi-dimensional analysis (see for example Rocheleau 2008). The benefits and

drawbacks of these are documented throughout the social sciences, with research, policies, and evaluations increasingly drawing on both to provide breadth (quantitative) and depth (qualitative) (see e.g. Hoggart *et al. ibid*.).

Yin (2003: 33) describes as unproductive the debate between qualitative and quantitative research and outlines how qualitative research outputs can be "hard-nosed, data-driven, outcome-oriented and truly scientific". Equally, quantitative can be soft because of inappropriate numbers, or based on inadequate evidence. As Kahneman *et al.* (1974) illustrated, the pitfalls of representativeness and bias are frequently underestimated in quantitative research, and often lead to illusory findings. Thus, what are commonly seen as characteristics of qualitative or quantitative are instead attributes of good and poor research rather than necessarily a dichotomy between the two different types of research method (Cloke *et al.* 2004, Kahneman 2012).

The key concepts and themes of this study were analysed both quantitatively and qualitatively. Data on the factors identified were collected, created and 'harvested' from a range of sources to enable triangulation (see for example Olsen 2004). During the timeframe of this study, I was immersed (defined by Watts (2011), as prolonged participation in the life of a group) in allotments and alternative food networks in and around Plymouth, as well as in (some of the) relevant academic debates. Activities included 175 interactions with people and places where my focus and intent was for some or all of the time on the aim of

this research, as well as frequent visits to different sites and cultivation of an allotment in the city over two years. Forty three of these encounters took place specifically for the purpose of this research (see Appendix 5). Research activities included: participant observations, directed conversations and interviews, analysis of texts including minutes, publicity, grey literature and policy documents, as well as analysis of statistical sources, discussed in the following sections. Surveys or focus groups were not pursued for this study, for the reasons discussed above (and see Kahneman 2012), and as much data covering the location and topics of research already existed (see 3.6.4). Groupings of the actants involved in allotments and AFNs were meeting over the timeframe of this study in many different situations at which the themes of this research were being addressed, providing abundant empirical material, referred to throughout with reference to field notes (FNddmmyy) and research logs (RLddmmyy)

During participant observations, I was either already known as, or introduced myself as, actively researching allotments and AFNs. These participations, observations, interviews, conversations and discussions were recorded in field notes and subsequently in the research log (see Section 3.6.6 below). Although much cannot be included, due to confidentiality, sensitivity or space limitations, they all contributed to and informed understandings during this research. Any quotes selected in a piece of research can be questioned on grounds of being 'cherry-picked', even with systematic and/or technological coding and analysis (e.g. N-Vivo), and there is space to present only a fraction of the total data

generated during any programme of research. Instead, with full and summary transcripts from field notes, the process of 'triangulating' extracts through a sharing and consolidating of findings (Wakefield *et al.* 2007) has been the route of validation for this research. The main research methods, techniques and outputs are discussed next.

3.6.1 Interviews

Interviews, as central in much social-science research, range from seeking basic information to probing issues in depth, and are described as 'a conversation with a purpose' (Flowerdew and Martin 2005). The purpose of the interviews in this research was first to explore initial framings, and, later, to explore issues identified through other research activities or existing data.

The interviewees for this study were people with practical, policy, and/or academic expertise relevant to the research objectives. Purposive selection of informants and interviewees was made through the case studies, the literature and from academic, policy and allotment/AFN meetings, both in the study area and elsewhere in the UK (Appendix 5). Interviewees and informants from these 'sectors' were then selected according to primary, secondary and tertiary stakeholding interest in allotments and AFNs in the study area, as illustrated in Figure 3.3.

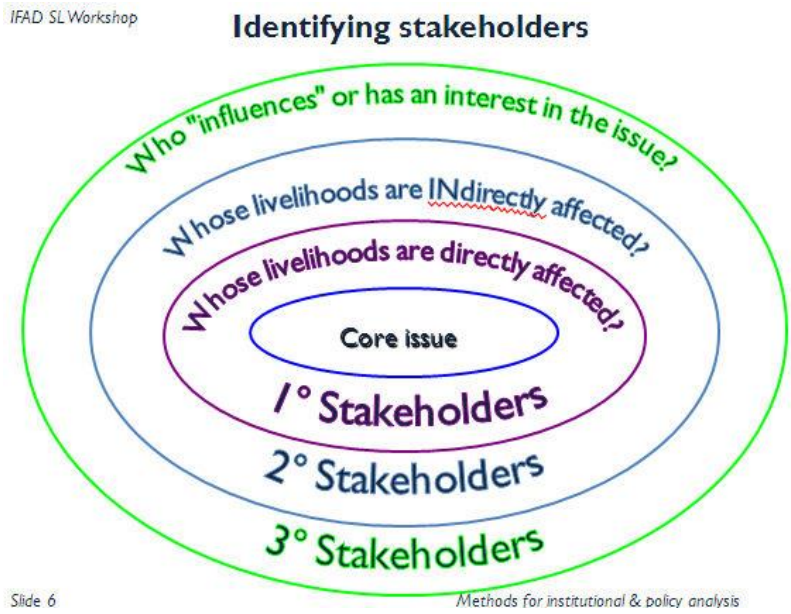


Figure 3.3 Stakeholder analysis *(Source:* http://www.ifad.org/sla/background/ *l.a. 150213)*

Allotment tenants (see Table 4.6) are classed as primary stakeholders in this research, as being closest to the core issue of this study, and according to historical analyses of household reliance on allotments for food security (Chapter 1), even if not livelihoods *per se* in the current day. Besides allotment tenants, interviews were held with AFN project managers, workers and volunteers, and with key actors at city, regional and national level, as listed in Table 3.6.

Table 3.6 Categories of informants and interviewees for this project *(Source: author)*

Sector of action	Level of stakeholding interest [1]	Identifier[2]	Numbers	Role
Government	1	AO	4	Allotment Officers in SW
	3	LA	4	Local Authority Officers
	3	EO	1	Education Officers
	3	HO	2	Health Officers
Commercial	1	FP	9	Food producers
	1	W	3	Wholesalers
	1	R	1	Retailers
	1	FMT	6	Farmers market traders
	2	FS	3	Restaurateurs
	1	CO	2	Consultants
Social Enterprise	1	SPW	3	Social food project workers
	1	SPM	4	Social food project managers
Social	2	CC	3	City coalition partners
	1/2/3	ACT	5	Activist / Food champions
	1/2	M00, F00	60	Allotment tenants
	2	WFA	3	Waiting for an allotment
	3	FA	3	Former allotment tenant
	3	DG	5	Domestic gardener
	1	SPV	2	Social food project volunteers
Academic	3	AC	3	Academic

1. *See Figure 3.3 above.*
Identifier codes are used where quotes are given in the text.

The interviews (Table 3.6) ranged from directed to informal, or semi-structured to conversational style. The latter approach applied especially with allotment tenants, with validity and robustness confirmed through subsequent testing of conceptualisations and findings in different situations and reflections on the understandings and information generated by 'going with the flow' compared to formalised situations that resulted more in 'co-created' data. Frequent conversations over the time of this research, took place at different times, days

of week, and seasons of the year. Audio recording was used for only some of these interactions, for reasons discussed in depth elsewhere (May 2001, Hoggart *et al* 2002): it can inhibit natural interaction, people may 'act' for the recording, and the resultant data can be seen as 'co-constructed'. (It often seemed that the most interesting observations often came out when the recorder had been turned off at the end of an interview.) Besides full transcripts from audio recorded interviews, outputs from other interviews were summary transcripts transcribed from handwritten and shorthand notes, and subsequent reflections and analysis (see Appendix 7). In several cases, a preliminary and scoping conversation was held, and followed up by a more formal semi-structured or in-depth interview. This helped to ensure that relevant points were explored fully, and knowledge and opinions reflected back to check they had been accurately understood. Included contributions from participants, apart from short quotes from individual allotment tenants, have been checked through follow-up conversations and emailed transcripts. Inter-subjective agreement with the conceptualisations and conclusions of this research was checked through informal presentations to local groups, for example, Saltash Environmental Action (SEA) (see Appendix 23(d)).

Only a fraction of the large quantity of data generated from interviews and conversations during this research can be reported in this thesis. It was all analysed through re-reading, reflection and thematic analysis, with continual amending of concepts and categories throughout the time of the research.

In the desire to 'give voice' to as many perspectives as possible in the space, short statements are generally used in preference to longer passages from interviews in the discussion chapters. The selections aim to convey the spectrum of standpoints on the themes investigated, and these statements are either supported by or contrasted to others ('triangulated') in observations or meetings.

3.6.2 Participant observation

Observational methodologies developed out of the desire to understand the cultures and customary practices of people in their lived experiences (Flowerdew and Martin 2005). The processes of participation, observation, and recording in the arena of the study, and subsequent reflection on these activities, then gives greater depth of knowledge than can be obtained from 'one-off' interviews at a particular time and place. The level of 'immersion' depends on many factors (e.g. trust) and lies on a continuum from observer-participant (OP) to participant-observer (PO) (Jorgensen 1989).

According to Jorgensen (1989: 15), the methodology of participant observation is the world of everyday life:

> "… the ordinary, usual, typical, routine or natural environment of human existence. This world stands in contrast to environments created and manipulated by researchers, as illustrated by experiments and surveys."

Key considerations are ability to access the communities involved, the perceived role of the researcher by the research(ed) community, and the method, quality and use of recorded observations. Thus for participant observation (PO) to be successful, the following dimensions are addressed and described in more detail below in the context of this research:

a) Gaining entry to human settings
b) Participating
c) Developing and sustaining field relations
d) Observing and gathering information
e) Making and maintaining notes, records and files
f) Analysing findings
g) Leaving the field and communicating findings.

Jorgensen further suggests (1989: 9) that

> "Direct involvement in the here and now of people's daily lives provides both a point of reference for the logic and process of participant observational inquiry and a strategy for gaining access to phenomena that commonly are obscured from the standpoint of a nonparticipant."

As an allotment tenant and an actant in other aspects of food networks in Plymouth, I have participated in many activities which would have been inaccessible to other researchers, and which aided understandings (see Sections 3.7 and 3.8 below). The nature of my involvement included active contributor in discussions, speaker, team member, researcher, note-taker, and audience member. Through participating in activities, further information, introductions and access to other groupings manifested. As a PhD student in geography, there were many academic seminars and conferences over the period of the research, from which many insightful concepts, helpful conversations and useful information came. I was able to convey some of this back to networks in and

around Plymouth in accordance with the aims of participatory action research, to provide helpful input into the researched situation. Over the time of the study, as more networks and people became known, new relations were formed and I became involved in new projects. Issues of both positionality and ethics continually arose during the time of the research and are discussed in Section 3.8.

The instances of participation and observation during this research (See Appendix 5) included formal meetings of stakeholder groups, such as the SW Allotment Officers Forum, as well as many events and informal meetings of local food initiatives. The majority of these were related specifically to Plymouth, with the others having a wider focus on the South West of England or the UK. Analysis of findings from these research activities, as for the interviews, was through identifying themes from outputs which included summary transcripts, reports and minutes of meetings, event publicity material, press coverage, and entries in research logs (see 3.6.6).

3.6.3 Texts: academic, 'grey literature', PR, media

Existing, or 'pre-constructed' data sources are used as starting and reference points in any study and, as for other research themes, those related to food networks are multiple and diverse. Cloke *et al.* (2004: 7) point out the need to question these from different standpoints:

> "it is vital that we are as familiar as possible with the subtleties of these sources: that we do know the why, the how and also the when and the where of their construction ... It is only by having a clear understanding of these data that we can decide the extent to which we 'trust' them to be revealing an accurate picture of the 'reality' beyond."

Cloke *et al.* (*ibid.*) also outline how this involves asking:

- Which 'voices' are present in the text, who is speaking, who is absent
- What mechanisms led to the production of the report (eg verbatim transcription, summaries, single or joint authorship)
- What rhetorical devices and figures of speech are used to convey the message? What metaphors are used? What effect do these have on the content of the document?

Types of information are textual, graphical and cartographical, aural or numerical; the sources drawn on for this research included statistical (see 3.6.4. below), newspaper articles, websites, leaflets and publicity information from food initiatives. The research also drew on policy and action plans at different scales, published case studies and evaluation reports, academic and 'grey' literature (which is often in fact colourful), as well as meeting minutes.

The sheer amount of information available for research in the current day is unprecedented (Appendix 6), as illustrated by searches on Google Scholar for relevant academic literature, shown in Table 3.7.

Table 3.7 Google Scholar and Web of Science searches [as at March 2012] *(Source: author)*

Search term	Number of results	
	Google Scholar	**Web of Science**
alternative food networks	948,000	427
collaborative participatory research	1,900,000	536
community gardens	322,000	1,605
community supported agriculture	1,250,000	889
diverse food economies	335,000	84
farmers markets	622,000	5,301
food allotments	30,000	61
guerrilla gardening	1,810	1
food cooperatives	87,400	1,157
local food networks	2,110,000	672
local seasonal food	669,000	629
multi scalar overlapping identities	19,300	0
organic agriculture	2,100,000	9,502
school gardens	355,000	350
UK allotments[1]	11,700	19

1. UK was included in this search term as results otherwise returned other meanings of the word allotments ('allocations')

As Table 3.7 suggests, the Web of Science returns far lower numbers of results compared to those from Google Scholar, which includes policy documents as well as popular texts. However, the latter are a useful source of information for any research, and Google Scholar does also return a wider range of academic literature than the Web of Science. Selection of literature, as for other methods, is to some extent through a purposive and snowballing route, following connections between journals, themes, organisations and individual authors. The material investigated originated from the study area, from wider regions, and from UK, European and international contexts.

The data referenced in this research were analysed through close readings and continual development of thematic framings to explore actions and narratives relevant to the case study. Many of the reports, from Plymouth City Council, Defra and other state and civil society organisations, contained quantitative data, some of which was incorporated in a context-setting function for this research.

3.6.4 Statistical sources

The use of statistical sources is often central to research, even if for just initial context setting, but awareness is needed of its limitations. According to May (2001: 28), "data are not collected but produced. Facts do not exist independently of the medium through which they are interpreted, whether that is an explicitly theoretical model, a set of assumptions, or interests that have led to the data being collected in the first instance." Cloke *et al.* (2004: 48) categorise these data as by-products of governing and the bureaucratic process (documents and information); monitoring (health records etc.); and communications, and state that:

> "The production of official statistics is not the neutral, technical and scientific exercise it appears to be ... At the very least they require that certain topics of inquiry are selected as relevant over others. At worst, there may be active manipulation of figures to provide justifications for particular government activities."

Thus, researchers need to ask: why was the information constructed; to which government policies does it relate; whether policy concerns influenced which data were constructed and how; and in what ways were the data constructed. The question needs also to be asked about what data is not collected, thus often effectively rendering some activities invisible (Gibson-Graham 2008).

Bearing in mind these provisos, a range of statistical sources was used to address the questions outlined in Table 3.5 above. A summary list of statistical sources used in this study is given in Table 3.8.

Table 3.8 Summary of statistical information sources used *(Source: author)*

Source	Use
Census	Establish case study areas. Data on demographics and social cohesion
UK Government e.g. Defra, Audit Office, ONS, BIS	Data on food production, local economies and environments
International Data: FAO, UN, WHO, ILO, OECD	Data on agriculture, environments, health and economies
Commercial panel data	Data on food behaviours and economies
Published and unpublished survey reports and evaluations	Data on food behaviours/economies and social and natural capitals (e.g. SERIO 2008)
Third sector	Data on civil society and food network activities; MLFW(1) evaluation

(1) MLFW: Making Local Food Work, £10 million lottery programme

These statistical data (Table 3.8) were re-formulated to provide metrics that informed the research questions, such as on land availability, neighbourhood attributes, and alternative food network activities. The limitations of using data not generated specifically for the project were clear (for example, one survey on Plymouth food shopping, omits several large food stores with no clear

explanation (Baker Associates 2010)). However, their role was often to provide contextual information and proxy indicators of trends. As with all geographical research, statistics and information can be graphically depicted to illustrate these trends.

3.6.5 Visualizations and semiotics

Visual information can enhance understandings, and the imaginaries that it enables is recognised to be central to communications, although valued differently according to individual learning styles (Rose 2001). Through presenting visualised findings, results may be easier to understand, and possible explanatory mechanisms may be revealed (Emmison and Smith 2000, Rose, 2001, and Van Leeuwen and Jewitt 2001). This 'semiotics' of signs and representations leads to analysis of visual materials according to meanings derived from images (Yarwood 2005). From the viewpoint of action research and resilience, the advent of open-source mapping and GIS has brought a tool that can combine both numerical and cartographic data. This combination is suggested to contribute to the learning process and can be used to empower groups of individuals or organisations. Although this research does not employ the in-depth techniques of semiology as defined in geographical methodology, visuals are included throughout for illustrative purposes (see 7.3.2).

This study drew on many different maps of the city and region produced by the local authority (such as IMD profiles, Phase II habitat survey, Greenspace Assessment, etc.), to depict characteristics, activities and functions, for the purpose of gaining further insight into the findings. These were also compared with other mappings of food network activities, such as the interface developed by Tamar Grow Local for the purposes of their project (see Figure 3.4), and analysed for the quality and quantity of information portrayed.

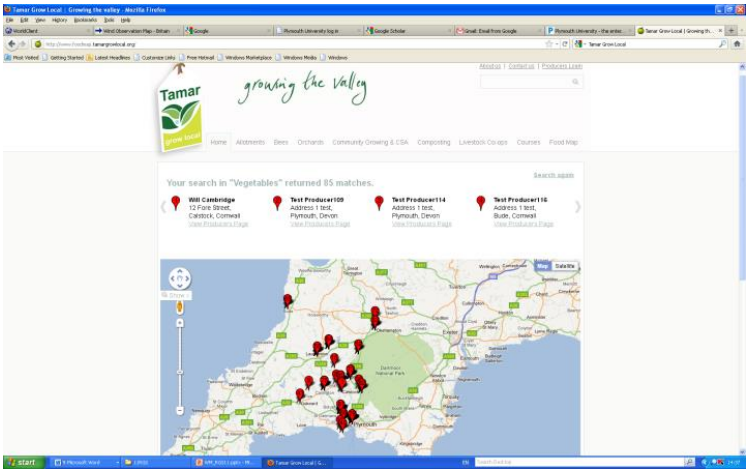


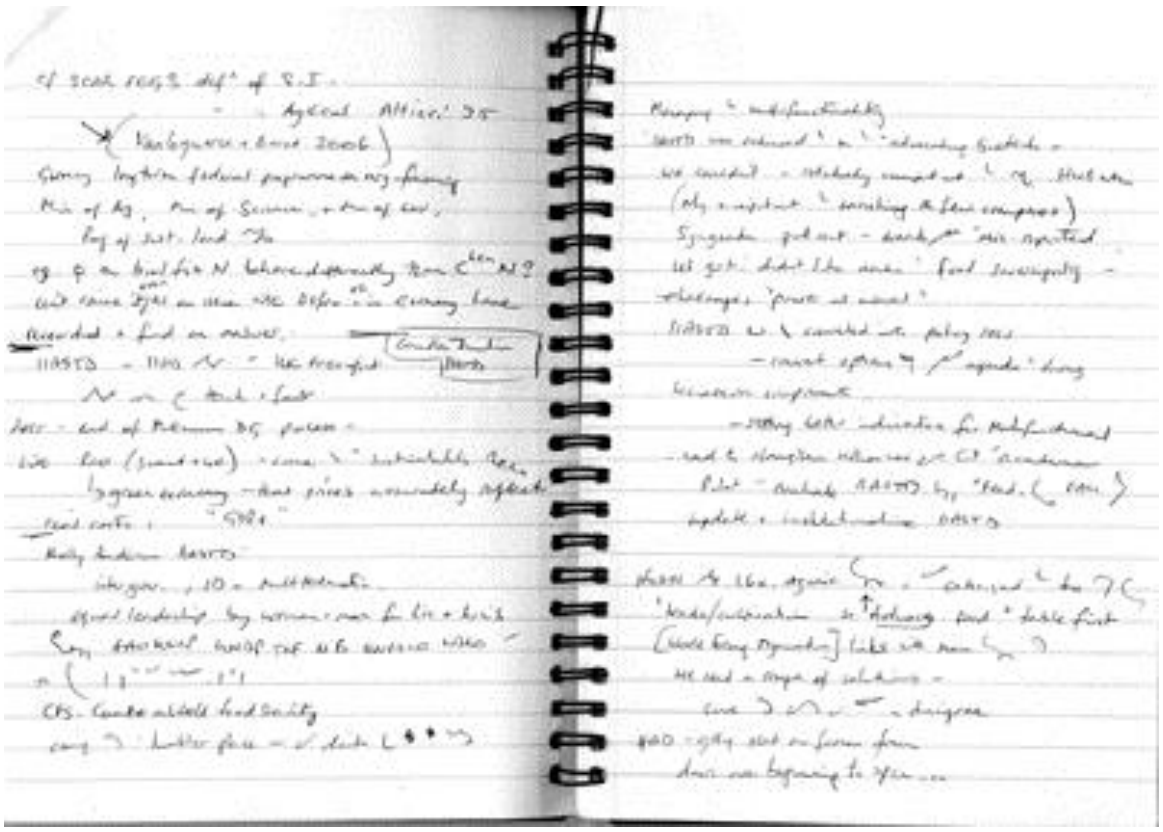
Figure 3.4 Tamar Grow Local Food Map *(Source: www.tamargrowlocal.org l.a. 13/01/12]*

As suggested by Figure 3.4 above, the advent of Google maps has brought a new means of mapping and communicating AFN activities. However, beyond information portrayal and mapping, visual methodologies in geography include semiotic analysis of material (see Rose 2001). Logos are used (see Chapter 8) to illustrate symbols of ethics and values. These visuals and maps triangulate the findings recorded in entries in the research diaries.

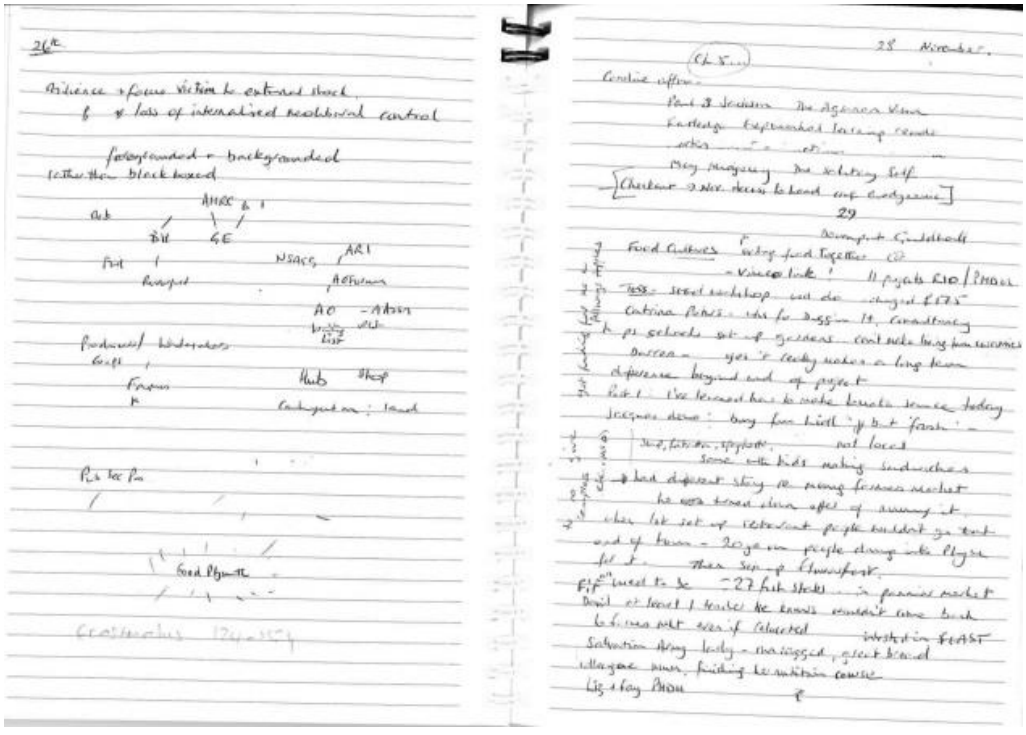
3.6.6 Recording and analysing findings

Research diaries or logs are a fundamental aspect of social science research alongside field notes, and are used especially within observational methodologies (May 2001). The research logs generated throughout this study provide a record over the whole timespan; entries were prompted by thoughts, meetings, events, and conversations. They provided a data source and an aide memoire for the process of analysis. These logs also provide the means for any other researcher to access the research process, and are available for any future development of the research focus (Jorgensen 1989).

A tension was experienced in balancing limited time between writing up the log or converting field notes into computerised transcripts and further direct participation. However, as the research progressed, a routine was established and a separate reflexive diary was incorporated into the outputs. There are thus three main sets of records: (a) field notes taken during meetings and interviews, (b) research log, or reflective diary, on events and activities, and (c) reflexive diary on research themes and progress (see Figure 3.5 below)

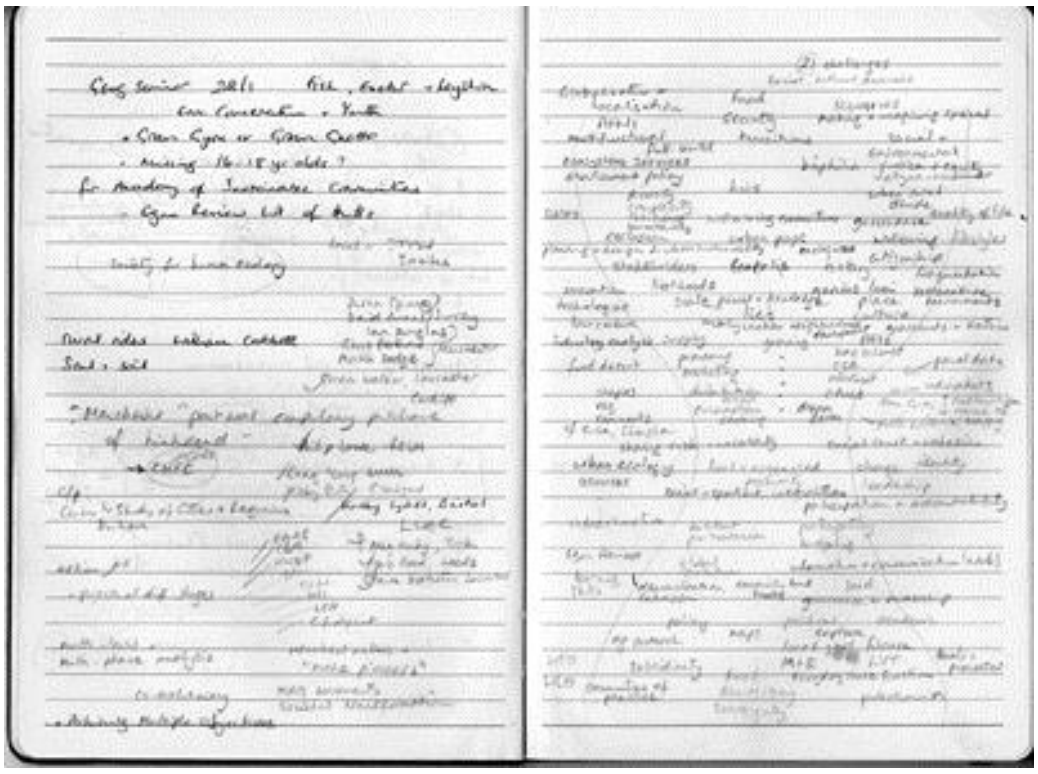


(a) Field Note Book



(b) Research Log

(c)



(c) Research Diary

Figure 3.5. Recording and reflecting on the research *(Source: author)*

Figure 3.5 shows the recording process for activities and thoughts throughout the research. Recurring key words and themes were grouped and regrouped into categories (Corbin and Strauss 1990) to enable conceptualisations and for analysis. Several themes in particular went through different stages of elucidation, for example, the conceptualisation of 'deprived', 'disadvantaged', 'excluded', 'marginalized' or 'low-income' to describe those not privileged in society, as often referred to in discussions on allotments (see e.g. Crouch and Ward 1997, Burchardt 2002,). Descriptions of food networks also developed, from ''alternative' and 'local', to include 'good', diverse', 'different', global', and

'ideal'. The resulting key concepts and themes identified formed the basis of the structure of this thesis, and are represented in the Table of Contents, and the findings are conveyed in the analysis chapters, through text, tables, figures, quotes and images.

Besides concept analysis, stakeholder and policy analysis was carried out based on the data. This conceptual framing is depicted in Table 3.9.

Table 3.9 Institutional and policy analysis *(Source: IFA Sustainable Livelihoods workshop,* ***http://www.ifad.org/sla/background/*** *l.a. 150213)*

Who are the actors involved?	
Identify 'subjects' for change **Who needs to be changed?** **(informed and influenced)**	**Understanding their roles** **At what stage in the policy process** **do they operate?**
Primary stakeholders (resource users) Politicians Bureaucrats (national and local) Private sector groups Local elites or interest groups Policy networks Academics Grassroots groups/organizations or NGOs The electorate Bilateral partners	Knowledge generation/research Agenda setting Option identification Prioritisation of options Policy formulation Policy legitimisation Planning for policy implementation Review and evaluation Review of policy and policy implementation

The analyses suggested in Table 3.9 above, and as drawn on by the MLFW evaluation (MLFW 2012), were applied in this research by drawing on information, knowledge and understanding gained over the period of the study. These were brought together and synthesised in order to address the research aim and objectives, as described in the section below.

3.7 Methods 'in the mix' to address research aims and objectives

This section describes how the methods and data outputs outlined were synthesised and analysed in order to address each of the research objectives and questions. Each research question drew on a mix of data types in different combinations, according to which were most appropriate, and derived from the methods outlined above (Section 3.6). The indicative hypotheses of this research designed to address the research objectives (Table 3.4) are re-presented in Tables 3.8 to 3.12 below, alongside the outcome measures and variables followed by a brief description of how these were obtained.

The activities on allotments and AFNs were explored in terms of capital assets through a combination of analysis of statistical sources, data from participant observations and interviews, images and existing texts (Table 3.10).

Table 3.10 Research objective one: identifying activities on Plymouth allotments *(Source: author)*

Hypotheses	Variables / outcome measures
Food and non-food are differentially produced and valued (Cook 2006) Activities on allotments involve all dimensions of capital similar to those described for post-productivist agriculture (Wilson 2007, Pearson *et al.* 2010) Allotments and AFNs represent a quality turn (Ilbery and Kneafsey 2000) Allotments and AFNs represent a bridging of cultures and natures (Bhatti and Church 2001, Bakker 2010)	Food produced Health and wellbeing Social and natural capital Asset availability and needs

Data generated on the extent and characteristics of activities of food and non-food production on allotments were investigated in order to address the hypothesis that they are differentially important to tenants, vary according to a range of factors, and involve all types of capitals. A major component in addressing this research objective was the use of proxy data from existing studies and cases elsewhere to indicate future possible scenarios and to help reveal the structures and mechanisms at play, or the 'real' and 'potential' layers of allotment praxis.

The relations on Plymouth allotments were explored through data from participant observations and interviews, with reference to statistical and secondary sources including unpublished and published literature. as given in Table 3.11.

Table 3.11 Research objective two: defining relations on Plymouth allotments *(Source: author)*

Hypotheses	**Variables / outcome measures**
Key characteristics of relations on allotments are non-monetary transactions (Ellen and Platten 2011) Gender divisions of labour still exist (Buckingham 2005) Co-operation and competition are differentially balanced compared to conventional food networks but social capital can be broken as well as built (Fajans 1988) Potential exists for income-earning opportunities as previously seen in continuums of allotments and smallholdings (Crouch and Ward 1997, Halfacree 2006, Maxey 2011) Relations can be conceptualised as diverse economies (Gibson-Graham 2008) Allotments and AFNs represent new social norms of care (Dowler *et al.* 2010)	Time spent Gift/exchange features Relations of cooperation and competition Potential income opportunities

The variables given in Table 3.11 enabled exploration of the related hypotheses through the conceptualisation of allotments as diverse economies. The characteristic factors that are described in the literature on diverse economies were applied as a framework to allotments and AFNs in the case study area. The concept of social capital used to explore the hypotheses above was also relevant to the next research objective, of defining the politics on Plymouth allotments, as outlined in Table 3.12.

Table 3.12 Research objective three: identifying politics on allotments *(Source: author)*

Hypotheses	**Variables / outcome measures**
Participation in governance of allotments is dependent on key individuals (Becher 2010) Access to city space is limited by funding and perception of land as 'real-estate' (Heynen and Perkins 2005) Heterodox valuations could demonstrate benefits of allotment praxis (Pretty *et al.* 2005a, 2005b, SDC 2007) Social movements, or new groupings, are providing new narratives that challenge previous conceptions of rurality (Crouch and Ward 1997, Yarwood 2005, Wainwright 2010)	Access to allotments Involvement in site management City and translocal resource allocations Related social movements Narratives employed by different stakeholders

Addressing the research objective to define politics on Plymouth allotments (Table 3.12) involved drawing on generated data and policy documents, and combining these with findings from other areas documented in the literature with in order to gauge outcomes. Through analysis of the data described above, the conceptual framework of spatial justice and new social movements (Harvey 2003, Ruggerio and Montagna 2008) was concluded to be of use in further analysis of alternative food networks (see Section 5.6 below), as was the concept of food networks as social-ecological systems (Walker *et al.* 2002).

Thus, the focus of the subsequent research question, on the relations between allotments and AFNs, was addressed through hypotheses relating to system evolution and learning, as depicted in Table 3.13.

Table 3.13 Research objective four: determining how allotments relate to alternative food networks in Plymouth *(Source: author)*

Hypotheses	**Variables / outcome measures**
Systems approaches facilitate understanding of activities, relations and discourses (Ostrom 2008, Mann 2009) Learning and linking are key characteristics (Armitage *et al.* 2008) Allotments and AFNs have impacts on the resilience and sustainability of the urban population in the study area (Morgan 2009, Wilson 2012) Allotments and AFNs can be viewed as different components of evolving social-ecological systems (Wiltshire and Geoghegan 2012)	Emergence of networks and connections Flexibility and diversity in connections Sustainability and resilience narratives Asset bases Place identity Social narratives and values

The fourth research objective (Table 3.13) was addressed through synthesising findings from analyses of the first three objectives, and referencing these against the conceptual models outlined above, of multidimensional capitals/assets, diverse economies, spatial justice, and of resilience and sustainability explored through systems thinking and political ecology. Policy documents, texts and images were analysed to elicit patterns of activities and events in networks within the city and beyond.

The overall aim of the research was to add to the literature, in this case on allotments and alternative food networks. Thus the findings were also analysed for their implications for future theorising and conceptualisations, as shown in Table 3.14.

Table 3.14 PhD objective: contributing to geographies of allotments and AFNs

Hypotheses	Variables / outcome measures
Political ecology and critical realism together provide an ontological and epistemological framework that can clarify factors and activities in AFNs. Communication of good practice and research findings in different 'languages' enables learning.	'Mapping' of AFN factors according to theoretical frameworks Findings referred to globalisation/ neoliberalism/internationalism, diverse economies, Structure/agency Conceptual: Synthesis and analysis of research findings and literature

Broadening out analyses to national and global scales through further exploration of policies, literature and reflection on research activities helped to address the aim of contributing to geographical literature through consideration of diverse place-specific as well as contextual factors related to alternative food networks.

3.8 Standpoints, positionality, reflexivity and ethics

As suggested throughout, the perspective of attaining inter-subjective agreement was pursued in this research. Nevertheless, my own perspectives inevitably influenced all stages of the process, of choosing the research topic, conceptual framings, data generation, and writing up. The participatory methodological approach adopted for this research involves acknowledgement of the lens, or positionality, through which the work was conducted and the findings presented. I have been an allotment holder for many years, and have norms and values aligned with many people and organisations active in food networks in

the study area. From the pragmatic critical realist (Skolimowski 1994, Robson 2002) and feminist standpoint/empiricist perspectives (Intemann 2010), this positionality enables new understandings and knowledge. A 'potted version' of factors contributing to my positionality, or standpoint, is given in Box 3.2.

Box 3.2. Relevant formative experiences

- General: white, middle class, university education
- Mother: her mother spent many hours preparing produce in the kitchen from sister's farm and growing up milking early in the morning; great aunt in land army; cousin 'the NFU man' for Sussex
- Father: group accountant for Tate & Lyle (global food commodity); his father taught by Keynes and authored book on foreign exchange (1935)
- Teenage years: campaigned for Friends of the Earth and Greenpeace, against live animal exports.
- Travelling: two years through Europe, Israel, India, Sri Lanka, eye-opener to other cultures
- Working life: in many sectors (health, education, media), including Sainsbury's (e.g. less than 1% content is not on the label (*cf* GM/US))
- Content and production editor of '*Holistic Health'* (8 years), and of *Planet* (3 years), both quarterly, approx. 48pp publications
- Over 10 years working in higher education research administration and communications
- Around 30 years of taking and transcribing meeting notes, often using shorthand.
- Life in a housing co-op: 'the tribe', shared food and celebrations
- Politics: Green Party parliamentary candidate, steep learning curve on all policy areas Gardening and growing: therapeutic effects from exercise, food (herbs/medicine) and being outdoors. Over two years, not intensive, searching for a field on outskirts of Plymouth for more growing space, without success
- Inspirations: seminars and books, e.g. 'Remembering and forgetting Kett's Rebellion' (see Wood 2008), 'This Land is Our Land' (Shoard 1987), 'Last Emperor' (film Peploe/Bertolucci 1987), Rural Rides (Cobbett (1830/2001ed), Grandmother's Secrets (Palaiseul 1976)
- Home life: not much time to cook; marmite on toast is great, but also immeasurable pleasure from a simple plateful of first crop potatoes and green beans (with a bit of cheese)
- Allotments and AFNs: allotment tenant and active in several non-profit networks since moving to Plymouth in 2001

To provide 'waypoints' for my positionality, the findings and reflections from the research were shared with others in AFNs in and around Plymouth. According to Jorgensen (1989: 36):

> "Participant observation requires the researcher to collect multiple indicators (or forms of evidence) regarding key concepts ... Actual use of the concept in the field during interaction with natives provides a very powerful test of the validity of concepts. Successful use of the concept strongly suggests that you have described it accurately, while objections to your usage by natives suggest inaccuracy."

Ethical issues are also a key aspect in participatory action research: the aim is to work and research *with* rather than *on and about* individuals and groups. Plymothians, as most people, may well have certain feelings about being called 'natives' (see Section 5.4), The issue of confidentiality and anonymity is especially important given the fact that I have been embedded in the community in which I am researching, and that several participants are likely to be recognised by others on reading some quotes or reported statements. Robson asks (2002: 67):

> "Is confidentiality always appropriate? If people have done something good and worthwhile, and probably put in extra effort and time, why shouldn't they get credit for it? Conversely, if inefficiency or malpractice is uncovered in the study, should the investigator let the guilty ones hide?"

In this study, although some of the 'champions' and 'heroes' are named, as suggested above, most contributors are anonymously cited or described, and no photographs of tenants on allotments are included for reasons of privacy. However, it was recognized that it would be impossible to maintain complete anonymity to all potential future readers of the research, and some data has not

been included in this report for this reason (see also 3.6 above). As Jorgensen (1989) further states

> "As with truth, there is no way of absolutely ensuring ethical research. Like values and politics, research ethics are matters of constant concern as the PO identifies a problem for study, gains access to everyday life situations, participates, interacts, and develops relationships with other human beings" (*ibid:* 29).

Research ethics, in other words, are "a daily concern of the participant observer" (*ibid*: 38), and I have been aware of the tensions of having roles of both researcher and participant throughout this study. Some reflections on this process are given next, by way of conclusion to this chapter.

3.9 Work in progress: situated reflections on the research

This section offers some reflections on the research process, and some lessons learned. The aims and objectives for this research were affected by my positionality (3.8 above), drawing on the approach of pragmatic action research. I hoped and intended that, through researching allotments and alternative food networks, a contribution could be made, however small, to enhancing social and ecological justice as well as wider sustainability and resilience. The aim was that the findings would substantiate efforts amongst diverse food networks within and around Plymouth towards change in the realms of economy, community, health, learning, and environment, within a frame of social-ecological justice.

In the process of carrying out the research, even given relevant training and good supervision, there were many occasions when the feeling was 'I wish I had known that'. This related to methods and techniques of research, as well as more generic skills issues of recording findings, keeping logs and notebooks. Nevertheless, with the view of the PhD process as being one of research training, besides addressing the objectives, the outcomes have been: application of a theoretical approach to a research topic (3.2); learning-by-doing an in-depth case study (3.3); working with a flexible research design and strategy (3.4); the participatory action research approach (3.5); selecting and using a range of research methods (3.6); synthesis and analysis of research outputs (3.7); and working with an awareness of ethics and positionality (3.8). The process of developing and undertaking this research programme involved much reflection on the many issues discussed above, for example, on concept grouping, formulating aims and objectives, and on recording and validating research findings. The process has also given some surprises, which are also described below for further consideration in future studies.

Concept grouping is the key stage in developing any research strategy, aim and objectives. Bhaskar (2010) discusses how concepts shift as knowledge grows, leading to the need to adjust terminology, for example in this case from local food networks (LFNs), to alternative food networks (AFNs), having also considered 'different' and 'diverse' food networks (DFNs). Employing new terminology, as suggested by Skolimowski (1994), is an essential aspect of

enlarging understandings in a changing world, but is challenging within the time-limited context of a PhD.

It is hard to imagine what carrying out a PhD without the internet would have been like if I had pursued an original proposal in 1997 rather than being diverted into other lifeways. My current experience appears to be highly preferable, given that much information can be obtained at all scales and so less dependent on the limited time and funds available for personal visits. On the other hand, it has perhaps made it more challenging: slower incremental knowledge balanced against an often-sensed awareness of information overload. As recognised within the Education for Sustainable Development agenda,[18] in order to attain sustainability, the nature of skills required is evolving, and an increasingly key generic transferable skill, given the quantity of data available, is of priority-setting.

Achieving balance of breadth and depth is acknowledged to be a defining feature of PhD research[19]. In academia, where specialist knowledge is privileged, an attempt to arrive at a 'system-level' holistic understanding is challenging. Rather than satisfying a desire when I started, to study one subject in depth and 'get to the bottom of it', the process has opened up avenues of research and thought that would take more than one person's lifetime to pursue. Nevertheless, the research has given rise to many understandings which will contribute to any

[18] ESD; Education for Sustainable Development, the terminology employed by the UN and the UK's Higher Education Academy to signify learning in accordance with the sentiments expressed by the Bruntland Commission (1987).
[19] For example, a Google search for 'breadth and depth in PhD' returned 1,570,000 results [l.a.230513]

future pathways. As a brief synthesis, summary and conclusion to the chapter,

the following main points are offered:

- The theoretical framework of critical realism provides a helpful distinction between the ontological layers of real, actual and observed that are useful for research into open systems.
- The case study approach can allow for focus on multiple scales and spaces both for context-setting purposes and for probing structures and mechanisms, or the layer of the real.
- Participatory action research provides an approach which goes some way to overcoming the positivist/constructivist divide through shared processes and validation.
- Real-world research requires a flexible research strategy and design to allow for changes over time, attributed to Heroclitus as 'you can't step into the same river twice' (Jamison and Wegener 2010).
- The mixed-method approach gives greater confidence in findings through triangulation between datasets.
- Positionality and ethical considerations are an integral aspect of any research programme.
- Reflexivity on the research process enables learning for researcher and, if effectively communicated, potentially for readers.

The next chapter (Chapter 4) goes on to describe and discuss the case study of

this research.

4 Plymouth and its allotments

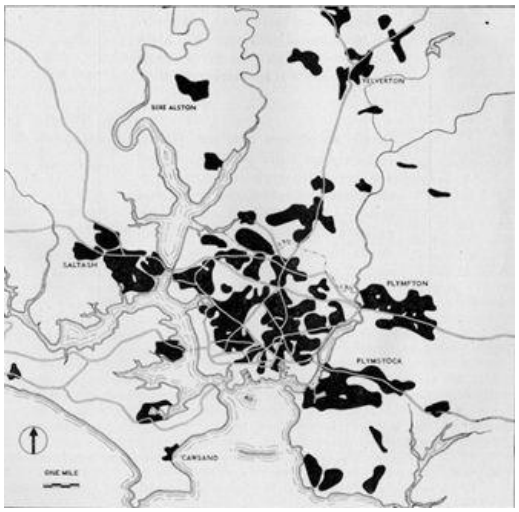
4.1 Introduction

This chapter introduces the case study of the research, giving an overview of allotments and AFNs in the city of Plymouth, SW England, to provide the context for discussions in Chapters 5-8. It explores the city's demographic and socio-economic characteristics (4.2), and outlines patterns of food provisioning and AFNs in the city and surrounding regions (4.3). Consideration of the historical provision of allotments in Plymouth (4.4) and their present-day extent and management (4.5) is followed by an illustration of allotment tenants who participated in this research. The concluding section (4.6) summarises the key factors which inform this research.

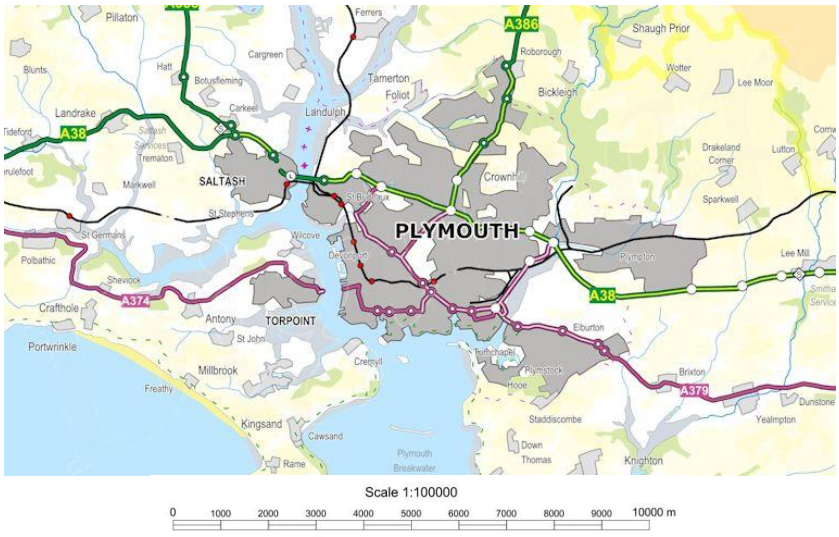
4.2 Plymouth: development and demographics

Plymouth grew from a small bronze-age settlement at the estuary of the River Plym, into a trading and naval port with national significance by the time of its municipal independence from Plympton Priory in 1439. Since the 1800s, as with other cities, Plymouth's development has been characterised by rapid increases in its population and geographical extent, aided by developments in transport (Paton Watson and Abercrombie 1943). The single County Borough of Plymouth was formed in 1914, incorporating the adjoining settlements of Stonehouse and Devonport, subsequently becoming the City of Plymouth in 1928. After destructive bombing in World War 2, the city was reconstructed

according to the Plan for Plymouth, known as the Abercrombie Plan (Paton Watson and Abercrombie 1943), and is now the nineteenth most populous city in England and Wales with 256,400 people at the 2011 census. Figure 4.1 illustrates the city as planned, with distributed development, and its current extent.



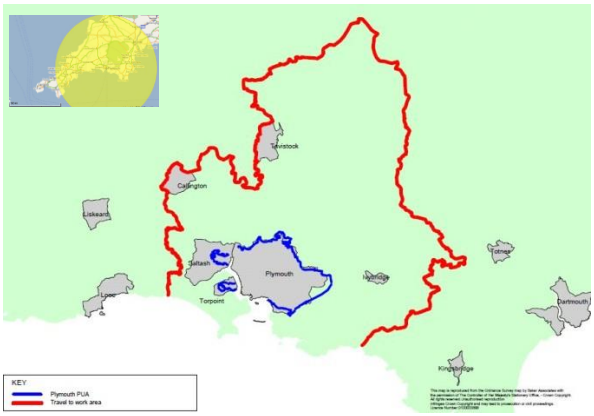
(a) Envisaged expansion of Plymouth by 1960
(Source: Paton Watson and Abercrombie 1943: xiv/xv)



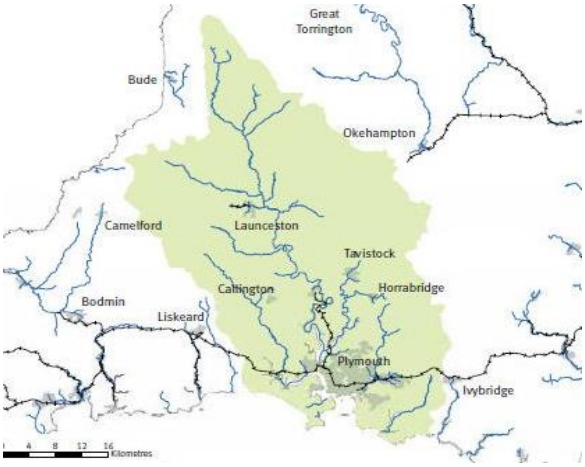
(b) Extent of city development in 2013 *(Source: Digimap. © Crown Copyright/database right 2012. An Ordnance Survey/EDINA supplied service.*
)

Figure 4.1 Envisaged and current extent of Plymouth city

As Figure 4.1 above illustrates, post-war expansion of the city has mostly consisted of infilling rather than expansion of borders, partly due to unsuccessful discussions with adjoining administrations during the 1950s (Essex and Brayshay 2005). The different boundaries that variously define present day Plymouth include those of building development (Figure 4.1b above), as well its administrative (political) and Travel-to-Work (economic) areas, the catchment (natural) zone of the Tamar Valley, and the 30 to 50 mile radius by which 'local food' is defined for farmers markets, as illustrated in Figure 4.2.



(a) Plymouth Travel to Work and Unitary Authority areas *(Source: with permission from Baker et al 2005) Inset: The fifty mile radius around Plymouth which covers most of Devon and Cornwall (Source: Digimap)*



(b) The Tamar Valley catchment *(Source: with permission from Defra / Environment Agency 2009)*

Figure 4.2 Economic, administrative and ecological boundaries of Plymouth

Implications of different scalar boundaries (Figure 4.2) are widely debated in literature (e.g. Brenner 2000, Collinge 2005, Bai 2007, Veldkamp *et al.* 2011; see also Chapter 8), but the main focus for this research is the administrative boundary of the local authority, Plymouth City Council (PCC), for which data on allotments are available. The demographic and economic characteristics relevant to praxes within allotments and AFNs on which comparisons can be made with other cities (see Section 3.3) are population levels and densities; employment and incomes; and education and health, shown in Table 4.1.

Table 4.1 Demographic comparisons of Plymouth with other conurbations
(Source: ONS 2012)

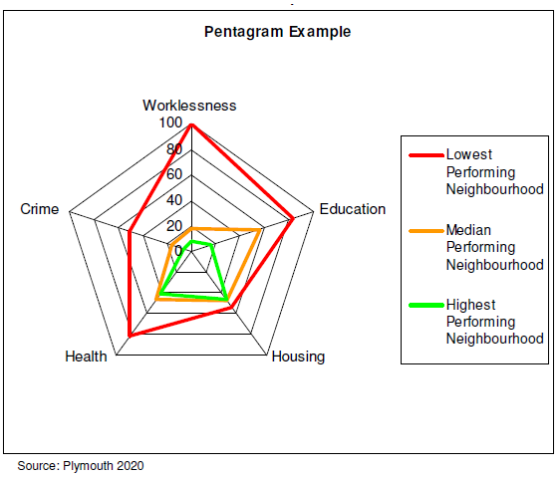
Conurbation	Population	Pop density km^2	Male life expectancy at 65 years	Female life expectancy at 65 yrs	Unemployment rate (%)
Bournemouth	183,491	3974	18.4	20.9	7.3
Bristol (incl. greater Bristol)	428,234	3907	17.4	20.6	7.6
Exeter	117,773	2504	18.8	21.5	6.5
Gloucester	121,688	3001	18.1	21.0	8.5
Plymouth	256,400	3214	17.6	20.6	8.7
Swindon	209,156	909	18.1	21.1	7.4
Birmingham	1,073,045	4007	17.4	20.4	13.6
Brighton	273,369	3307	18.0	21.6	7.7
Cardiff	346,090	2467	17.7	20.4	9.4
Coventry	316,960	3213	17.9	20.8	8.9
Leeds	751,485	1380	17.9	20.6	9.9
Leicester	329,839	4497	16.4	19.3	12.7
Liverpool	466,415	4170	15.8	18.4	11.2
Manchester	503,127	4351	16.1	18.7	12.8
Newcastle	280,177	2470	17.2	18.2	10.6
Newport	145,736	765	16.9	20.8	10.0
Nottingham	305,680	4097	16.3	19.7	13.1
Portsmouth	205,056	5081	18.1	21.0	7.4
Sheffield	552698	3949	17.6	20.3	10.4
Southampton	236,882	4752	18.4	21.5	7.9
Swansea	239,023	632	17.8	18.7	9.2

As Table 4.1 shows, although smaller in size and population, Plymouth is similar to Coventry on several variables (and with Brighton on population densities, Bristol on life expectancies, and Gloucester on unemployment rates). Allotments developed in response to poverty (Chapter 2) and, as elsewhere, the South West has experienced loss of employment since 2008. Although unemployment levels in the city are below those in the former 'industrial heartland', they are higher than other conurbations in the South West. Wage rates in the city are also lower than the national average, at £468.90 compared to £502.60 gross weekly pay (PCC 2012). In common with other peripheral regions, the fall in the economic benchmark of Gross Value Added (GVA) in the South West has been less than in many UK regions (-2.5% compared to an average of -3% between 2008 and 2010 (ONS 2012)), and it could be hypothesised that these regions, with generally lower population densities and higher dependence on land-based activities, are potentially more recession-proof. However, this difference could also be due to higher funding streams (e.g. European) or other variables such as public sector employment (armed forces, health and education). Many additional variables could be brought into play to test potential causal factors through city comparisons, but are not pursued here for this exploratory case study research into allotments and AFNs, although differences with Coventry are discussed briefly in Chapter 8.

Within the city, as also in other cities, sharp differentials exist between areas of prosperity or deprivation. Out of its 160 Lower Super Output Areas (LSOAs,

the UK census unit), Plymouth has 13 among the least deprived 20 per cent in England, and 41 among the most deprived 20 per cent. Of the latter, 17 also sit within the most deprived 10 per cent, and one is within the most deprived one percent in England. Reporting on these variables by the local authority is given according to the neighbourhoods and regions defined by the Local Strategic Partnership, 'Plymouth 2020' (Figure 4.3; see also Appendix 9).

(a) Plymouth City boundary, regional localities and neighbourhoods



(b) IMDs for highest and lowest Plymouth neighbourhoods

Figure 4.3 Intra-city boundaries and demographies *(Source: Plymouth 2020, 2009)*

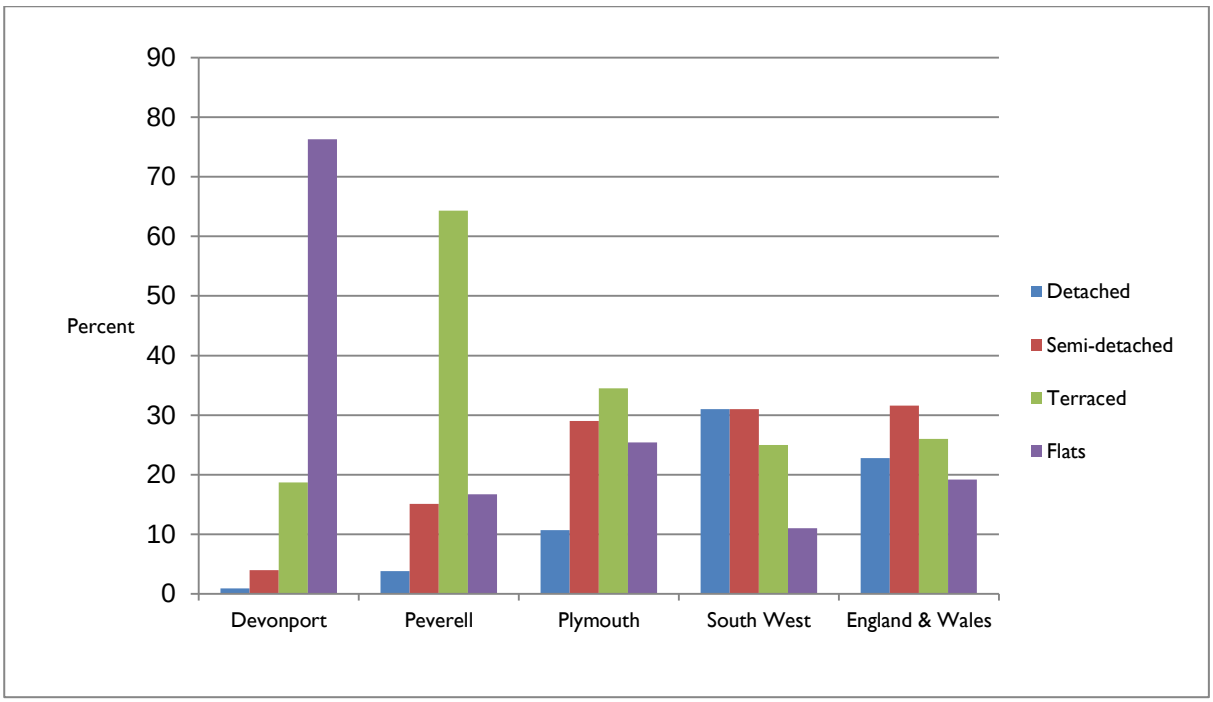
The IMD data (Figure 4.3) still obscures differences within each neighbourhood, although some information exists at finer granularity through PCC's Sustainable Neighbourhood Assessments[20]. These give detailed descriptions of neighbourhood characteristics, e.g. demographic and greenspace, along with a short narrative on major issues. The latter, for Devonport and Peverell (top and bottom of the IMD list respectively) describe implications for allotments and AFNs:

> "Devonport has a high proportion of young families, singles, childless couples and older people residing in high rise of upper floors of social housing, who are often engaged in uncertain employment opportunities…." (PCC 2009)

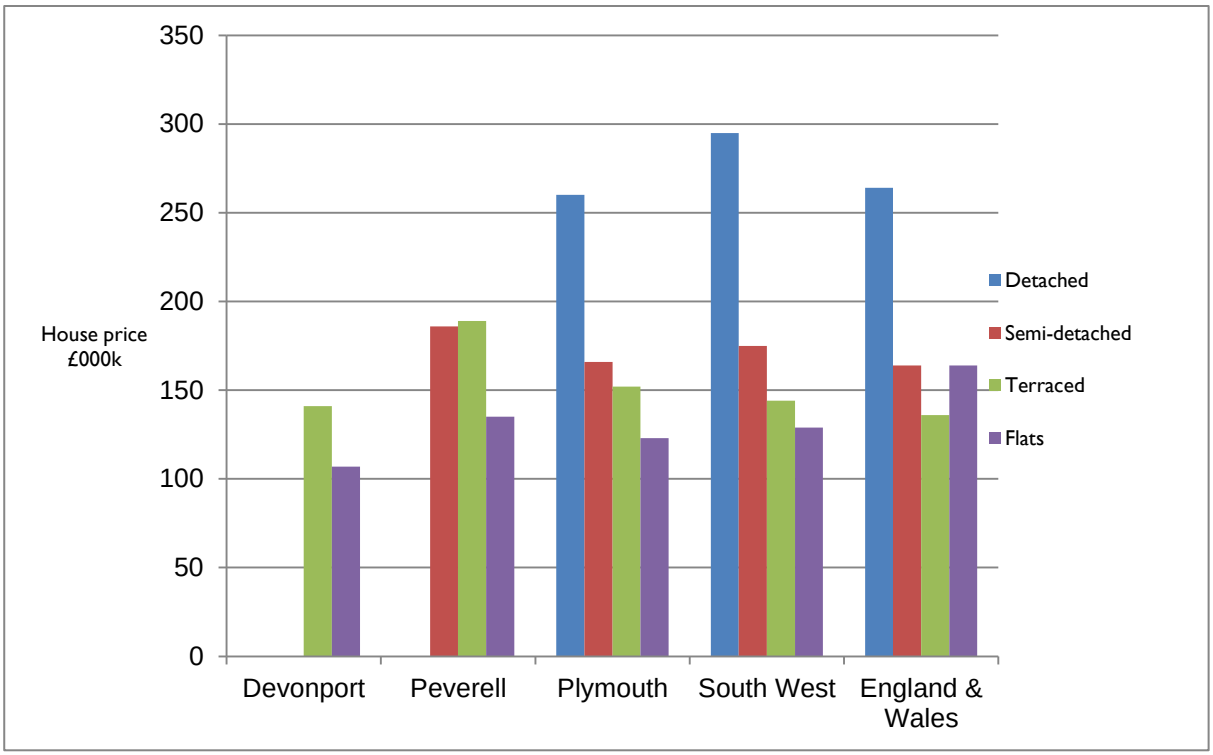
> "Peverell consists of generally close-knit inner-city, mixed communities, comprised of urban residents living in well-built early 20th century housing … priorities for the neighbourhood include issues regarding anti-social behaviour in Central and Pounds Park and criminal damage to allotments" (PCC 2009)

These brief statements suggest variables that all have an effect on allotments/AFNs. Housing type and price is used here as a proxy for household space, and so potential for household food production, as well as for income or asset levels. These are depicted in Figure 4.4 below, for the same two neighbourhoods and in comparison with those at regional and national level.

[20] http://www.plymouth.gov.uk/homepage/environmentandplanning/planning/planningpolicy/ldf/ldfbackgroundreports/sustainableneighbourhoodassessments.htm [l.a. 130313]



(a) Housing type in highest and lowest IMD neighbourhoods



(b) Housing price in highest and lowest IMD neighbourhoods
[Missing bar indicates no or insufficient data available]

Figure 4.4 Housing type and price in highest and lowest IMD neighbourhoods
(Source: PCC Neighbourhood Profiles 2009)

Figure 4.4 shows that Devonport has a high proportion of flats (75 per cent), valued at lower than average prices at all other scales, whereas Peverell has a high proportion (64 per cent) of terraced houses in Peverell with higher than average prices at all other scales. Besides some of the best schools in the city, Peverell also has significant area of greenspace (Central Park) as well as the highest number of allotments of any neighbourhood. Figure 4.4 further illustrates the loss of detail from data at city-level, and indicates the variances that can be revealed through micro-level (individual allotment site) analyses.

Policy narratives for populations, economies and environment in Plymouth and the South West are frequently phrased in terms of sustainability, for example a statement of intent by the (now disbanded) SW Regional Development Agency: "to make the South West the leading region for sustainable development" (SWRDA 2010). In Plymouth, the Local Strategic Partnership's document, 'Securing the future for generations ahead' (PCC 2007: 4) draws on the Bruntland Commission's (1987) definition, stating that : "… we must manage our social, economic and environmental resources so that in meeting our short-term needs we don't compromise the quality of life of future generations." The actual validity of such claims are difficult if not impossible to verify. For example, Plymouth ranked eighth in a 2010 Sustainable Cities Index by Forum for the Future, but the methodology was hotly contended and the index has not been calculated since then.[21] However, the City's Environmental Strategy and Plan

[21] http://www.forumforthefuture.org/project/sustainable-cities-index/overview [l.a. 130113]

(*ibid*.) does cite the Worldwide Fund for Nature's (WWF) Ecological Footprint of 60 British Cities (2007)[22] in which Plymouth and Newport emerged as the cities with the lowest ecological footprint (a 'requirement' for 2.78 planets to maintain standards of living compared with the UK average of 3.01 and 2.85 for Coventry). Although this low footprint could be attributed to the lower than average income levels, Marsden (2010) does suggest that Plymouth is a front-runner city for sustainability issues (Section 3.3.1). The food sector is contended to be a main contributing factor to any city's ecological footprint (WWF *ibid*.), and its characteristics in Plymouth and the South West region are explored next.

4.3 Plymouth's land and food

Agriculture accounts for nearly three-quarters (1.8 million hectares) of land use in the South West administrative region (which comprises 10 per cent of the UK land mass) (Defra 2012). Livestock predominate in agriculture in the region, which has a temperate climate and extensive grasslands, with 8 per cent of the region designated 'less-favoured areas' at relatively high altitude (see Appendix 8 for further description of agriculture in the South West).

[22] Available at http://www.wwf.org.uk/what_we_do/changing_the_way_we_live/cities/ [l.a. 100912]

As with all cities (Steel 2008), there has been a long interdependency between Plymouth and its surrounding region for food provisioning. The city played a key role in the French wars and food supplies were drawn into the city from neighbouring Devon and Cornwall for the expanding populations and provisioning of ships. With wages in Devon amongst the lowest in England and in the context of rising unemployment, there were periodic food-related protests in the eighteenth and nineteenth centuries to release food supplies from traders, farms and mills (Bohstedt and Williams 1988, Poole 2006). Riots during nearly every decade in the 1700s (Section 2.4 above) culminated in protests at Plymouth Dock in mid-April 1801. Food protesters from other parts of England were transported abroad from Plymouth, and dockyard workers campaigning for higher wages joined in the food protests and rescued transiting prisoners (Poole *ibid*.). In the context of national food protests, parliamentary debates, and legislation, landowners in the surrounding counties of Devon and Cornwall gradually made more land available for rent during the nineteenth century (Burchardt and Cooper (2010), with plots ranging from 12.5m^2 (0.00125 hectares) to 15.4 hectares (or 15 yards to 38 acres) in size (see Appendix 10).

The trajectory of global food trading continued through the twentieth century, and, as with other cities (Steel 2008), links with Plymouth's hinterland became less important in provisioning food for city residents. In the present day, nearly all urban households buy the majority of their (globally-sourced) food from supermarkets and, as elsewhere, these are located mainly on the city edges

around Plymouth. All mobile city residents now have access by car, bike, bus or on foot, to the major chain supermarkets (Tesco, Sainsbury, Morrisons, Asda, Waitrose, Lidl, Aldi, and Iceland). There are also around fifty branches of the Co-operative, fourteen branches of Spar, as well as other smaller neighbourhood outlets for the major supermarkets and chains such as Costcutter. A few other outlets exist in the city, including stalls in the pannier market, for fresh produce, fish, and health and ethnic foods. For residents who buy food from neighbourhood outlets of the smaller chainstores, produce is not always very fresh but is relatively highly priced, according to the Public Health Community team (FN150311), and as suggested in research on 'food deserts' (e.g. Pothukuchi 2004).

The numbers of households who choose (at least some) food on ethical or environmental grounds has increased over the past few decades (SERIO 2008, Defra 2010c). This diversity in food provisioning includes buying from alternative outlets from the peri-urban region, such as farm shops or vegetable box schemes, as well as obtaining food through community food projects (AFNs) or allotments. Table 4.2 outlines the main AFN initiatives in the study area (social and commercial) identified during the initial phase of this research, according to stage in the food cycle.

Table 4.2 ***Alternative food network activities in and around Plymouth*** *(Source: author)*
G = Growing (or production), P = Processing (including packaging), E = Exchange (retailing and gifting), S = Service (cafe, restaurant, public sector), C = Consumption (domestic) and R = Recycling (composting). A = Alliance

Activity	Stage in Food Cycle (1)	Brief description and characteristic of interest
FoodPlymouth	A	City-wide alliance of public, private and civil society organisations.
Tamar Grow Local	GPECR	Initially set up to attain allotment land. Now includes grant-funded project to increase land, production and markets for local food production.
Plymouth farmers market, Pannier market, Independent retailers	GPEC	Suppliers of locality and local food.
Treasury, Bistro One	S	High- and mid- range restaurants promoting local food.
Luke's Farm Shop	GE	Farm shop, PYO, winner of Plymouth Food Award
Riverford vegetable box scheme	GESR	Largest vegetable box scheme in England, farm, producer co-ops, shop and cafe/restaurant.
Tamar Fruiterers	PE	Wholesaler promoting sale of local food into city public sector. Sponsor of Plymouth Food Awards.
City allotments	GPECR	Over a thousand individuals with annual tenancies.
Diggin It, Dig for Devonport,	GPECR	Grant-funded community garden initiative on allotment site.
Grow Efford	GPECR	Neighbourhood regeneration project, growing, processing and cooking events.

As Table 4.2 illustrates, Plymouth AFN initiatives and allotments cover all aspects of the food cycles. A significant development over the period of this research which brought many of these together was the formation of FoodPlymouth, described in Box 4.1.

Box 4.1 FoodPlymouth *(Source: author)*

Food Plymouth developed from a seed initiative of the Centre for Sustainable Futures[1] and was facilitated by a consultancy (Barefoot Partnership), to assess potential for 'local food' at the university. A subsequent project funded by South West Food and Drink on short food supply chains (SFSCs), co-managed by Barefoot Partnership and the Soil Association, worked with public sector food procurers in the city (notably Brad Pearce of the PCC school meals services, and also the hospital, universities and colleges) to increase levels of local food sold into the public sector in Plymouth.[2] The Soil Association then convened these and other interested individuals and organisations across the city, to submit a lottery funding bid for a 'Sustainable Food City Plymouth' project.

In 2010, despite not securing funding from the Big Lottery, those involved decided to build on existing activities and relations, and continued meeting. The three main public/non-profit organisations involved at that time (Plymouth University, Public Health Development Unit (PHDU), and the Soil Association) committed seed funding which enabled the Soil Association project manager, Traci Lewis, to work for 2 days a week on developing an event for a food charter and on funding bids for FoodPlymouth. The charter was developed through one-to-one and group meetings over the course of several months, with signatories required to pledge specific actions on increased availability of local food in the city, as suggested by the Barefoot Partnership consultant, Peter Redstone. The launch event (February 2011) attracted publicity in the local press, with tastings from cookery demonstrations, stalls offering local produce, talks from academics and PCC representatives, and copies distributed of the Charter, as shown in Figure 8.1 below.

Over the subsequent months, greater numbers of individuals and organisations became involved, with 'task and finish' groups for each of five sub-themes given the remit to write three points to feed into an action plan. In a subsequent meeting convened by Tom Andrews of the Soil Association to consider ways of setting up a coalition of cities active in local food (Bristol, October 2011), Plymouth was cited as a pioneer in the area. The Coordinator developed a website, which included signatories' commitments to local food, and the Council Leader gave a speech at the Action Plan launch in February 2012 in Plymouth Guildhall (See Appendix 11).

Notes

1. This was one of 90 or so Centres for Excellence in Teaching and Learning in the UK which received £5 million funding over 5 years from HEFCE (Higher Education Funding Council for England.
2. I was a team member on this project, working with two nationally-recognized champions of local food, Judith Pearce and Roy Heath, and producing two short reports, on Sell2Plymouth, and a comparative study of urban centres in the South-West.
3. As already-intended for the background for this research, I pulled together charters of other cities (in US/Canada, and Bristol and London in the UK). Following further discussions, notably with the author (a PCC planner) of an original position paper on Plymouth as 'the UK's food city', I prepared a first draft of the Plymouth Food Charter, with five themes and ten principles. Subsequent iterations and editing, mainly with a representative of Plymouth 2020 (the local strategic partnership), and the Soil Association project manager, led to a form of wording that was agreed by the (by-then) Steering Group of FoodPlymouth.

Figure 4.5 The Plymouth Food Charter (Source: Food Plymouth *www.foodplymouth.org*) (See ***Appendix 11*** for full-size version)

The new city-wide cross-sector and cross-functional grouping of FoodPlymouth (Box 4.1) was not foreseen at the design stage of this research. The number of actants involved in FoodPlymouth increased over the time of this research, as

did signatories to the charter (totalling 67 as at January 2013; see Appendix 11). During meetings of the Steering Group and sub-groups (FN 050910, 151210, 070411, 15111), common values were expressed through principles of the charter, as given in Table 4.3

Table 4.3 Examples of values expressed in FoodPlymouth meetings *(Source: author)*

Value / Norm	**Statement**
Children's health	"I just realised that it was really, really, important for me to be able to give my children the best food that was the best for their health." (EO1)
Cohesion	"Food is just the one topic that everyone can talk about, it is *the* uniting agenda." (CO1)
Ecology	"I want to minimise my footprint and so I don't want to buy most of the things in the supermarkets." (SPV2)
Learning	"You can use food as a topic for pretty much everything in a curriculum, all subjects can relate to food, and at every level." (CO1)
Better, affordable, food Reducing health inequalities	"People don't realise that a lot of the food they buy cheaply in the supermarket is doing their health no good." (LA1)
Linking with producers	"Shopping in the farmers market is so different to the pannier market; you are talking to the people who actually produce the food, know all about it." (ACT1)
Growing and eating food	"My son never ate any vegetables before we started growing them. Now he loves the broccoli from the garden." (ACT2)

This research focuses primarily on the growing and producing stages in the food cycle and this exists within the setting of current land allocations in Plymouth, as shown in Figure 4.6.

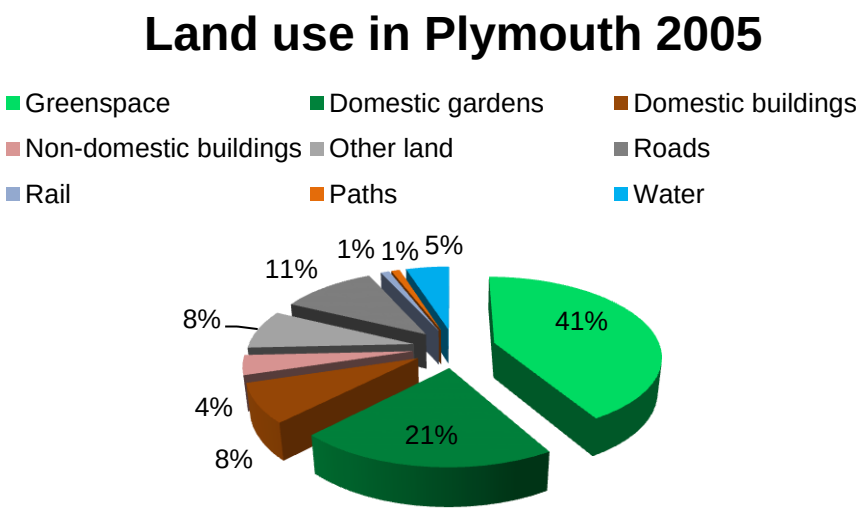


Figure 4.6 Greenspace in Plymouth *(Source: ODPM courtesy of www.visionofbritain.org.uk)*

Figure 4.6 above shows that 41 per cent of the city is comprised of greenspace (owned privately or by PCC), and Plymouth's Greenspace Strategy (PCC 2009) documents that 0.27 per cent (23ha) of the total city area (84,000ha) is allocated to allotments. Apart from these, the main sites of food production in the city are individual household gardens (21 per cent of city area), yards, balconies, windowsills and in a few cases, roofs, as well as school and community gardens. The historical trajectories involved in these allocations are discussed next.

4.4 Historical provision of allotments in Plymouth

By 1881, there were 141,676 acres (57,334 hectares) of land in Devon, equivalent to around 10 per cent of the current total greenspace area in the county, described as either smallholdings or allotments and let to 29,282 tenants

(i.e. an average size of 4.84 acres, or nearly 2 hectares) (Burchardt and Cooper 2010; see Appendix 10). As elsewhere in the UK (see Crouch and Ward 1997), around the growing urban settlements of Plymouth, Stonehouse and Devonport, patches of land were increasingly surrounded by and sought for building development, the size of lettings decreased, and records show demand for allotments in Plymouth consistently exceeded supply (PWDRO 1718/2362, PWDRO 1648/146).

In response to requests for further land to be made available, the Plymouth Smallholders Association was informed by the Council's Smallholdings and Allotments Committee in 1911 that:

> "Having given careful and anxious consideration the Committee find there is no land in the Borough suitable for smallholdings and allotments which is not now used for agricultural purposes or which is not at the present time, or in the near future, required by the Corporation for some municipal or sanitary purpose" (PWDRO 1648/146, 3 February 1911)

However, during WW1 additional land was released for allotments under emergency legislation (DORA 1914) to help meet population food requirements, and after the war, to help feed returning soldiers and increasing numbers of unemployed. Records of the Allotments and Cemeteries Committee, consisting of seven councillor members, show that, in 1919, disparate parcels of land for allotments had been obtained within the city under the Land Settlement (Facilities) Act 1919, but with a continual letting and reclaiming of sites, and accompanying displacement and re-allocation of plots to individuals. During 1921, with a documented 666 applications for allotments

within the Borough, the South West Federation of the National Union of Allotment Holders sought to have a representative on the city's allotment committee, but the request was turned down (PWDRO 1718/2/2362, 21 January 1921, 22 February 1921).

Several sites obtained under DORA legislation were returned to landowners during 1923. Although allotment numbers fell during inter-war years, local authorities were continually encouraged to make plots available for the unemployed, on both public and household food security grounds (Poole 2006). In 1939, during WW2, the Plymouth Parks and Recreation Committee allocated additional city land for allotments on the condition that they were vacated upon 6 months' notice when required (PWDRO 2384). In 1940, the Devon County War Agricultural Executive Committee again asked the City Surveyor to make available further sites within public parks and recreation grounds, with approval subsequently given for approximately four acres to be cultivated for potatoes, at the south-east end of Central Park (*ibid*.). A further request from the Ministry of Agriculture and Fisheries in 1940 met with the response from the City Surveyor that twelve acres had already been made available in Central Park and "in his opinion it was inadvisable to break up any more park land". However, around two extra acres of allotments were made available in 1941, as well as a further 1.25 acres at Barne Barton. Supplies from these allotments and domestic gardens were distributed to Plymouth populations as well to servicemen during

the war by the Women's Voluntary Service who organised 110 collection points across the city (Poole 2006: 174).

After WW2, allotment sites fell into disuse due to factors that included suburban housing developments with private gardens (Paton Watson and Abercrombie 1943: 91), falling prices and increasing availability of retailed foods, and widespread advertising for convenience products (see Chapter 1 above). However, allotments remained in city authority duties of provision, and sites envisaged in the Plan for Plymouth are depicted in Figure 4.7.

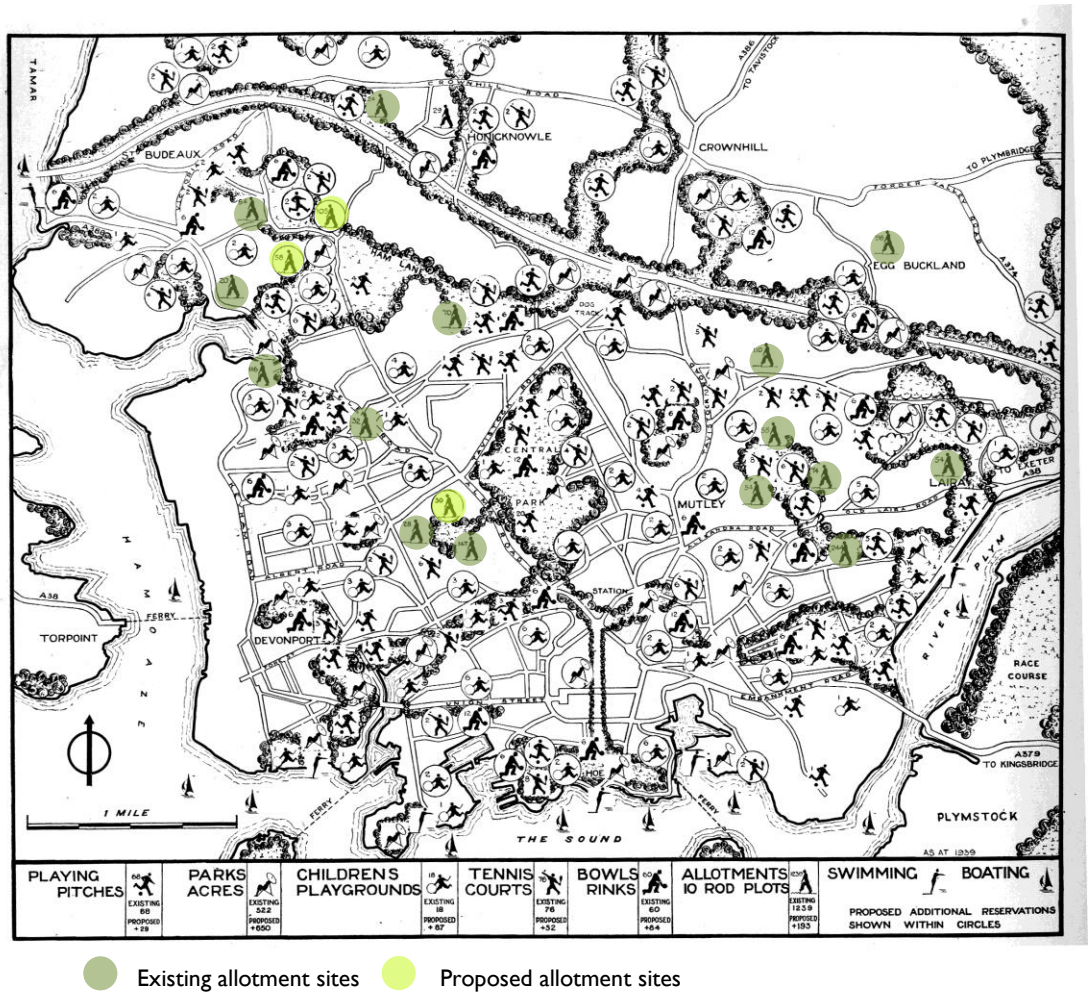


Figure 4.7 Plymouth Outdoor Recreation 1943 showing allotment sites
(Source: Paton Watson and Abercrombie 1943 facing p91)

As Figure 4.7 shows, some new allotment sites were planned for in light of legislation that required compensation for disposal of other sites. However, not all of these materialised, whilst some others that were not envisaged in 1943 have been set up.

4.5 Present-day provision and management of Plymouth allotments

The geography and characteristics of Plymouth allotments in the present day are explored in this section. As for domestic gardening, levels of allotment provision are variable throughout the city, and site locations are depicted in Figure 4.8.

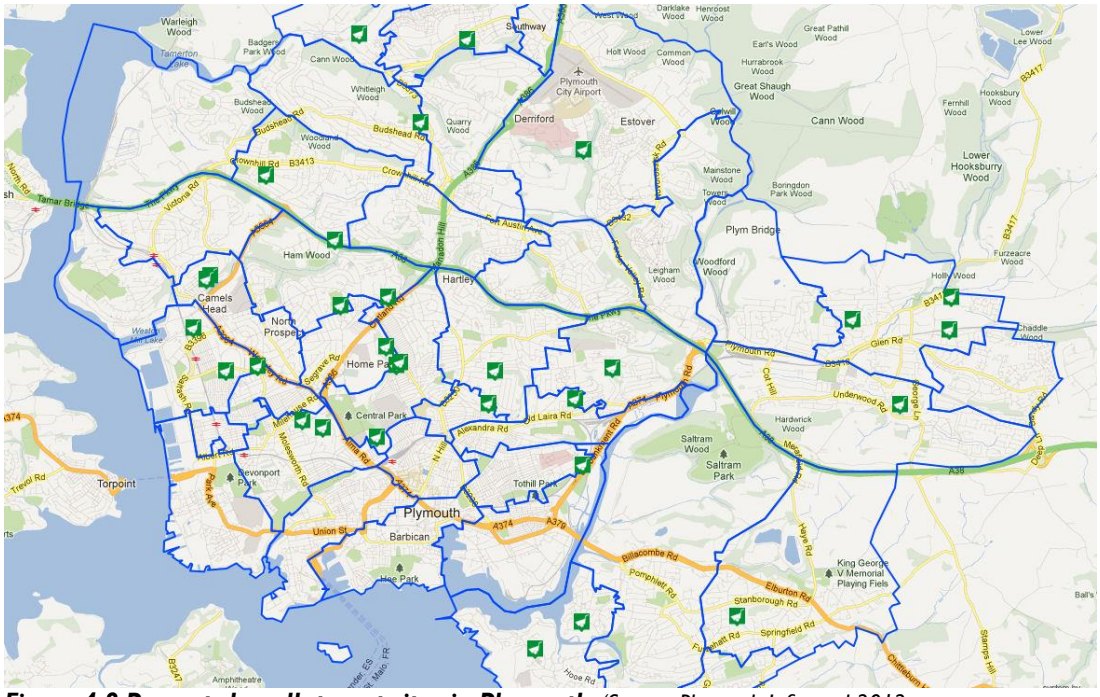


Figure 4.8 Present-day allotment sites in Plymouth *(Source: Plymouth Informed 2012 [http://plymouthinformed.zubed.com/])*

As Figure 4.8 shows, there were 31 allotment sites in the city in 2012. Their existence largely results from historical land ownership patterns and not

necessarily according to present-day need (FN101110). Their neighbourhood locations, number of plots, and facilities are given in Table 4.5.

Table 4.5 Location, size and facilities on Plymouth allotment sites
(Source: www.plymouth.gov.uk a030511)

Neighbourhood	Street location	No of plots	Assn	Hut	School plot	Community garden
Beacon Park	Hermon Terrace	39				
Compton	Lower Compton	45	x			
Efford	Derwent Avenue	62		x	x	
Efford	Pike Road	21				
Elburton	Dunstone Lane	20				
Estover	Blunts Lane	84	x	x		x
Ford	Henderson Place	15				
Honicknowle	Chaucer Way	23				
Hooe	Hooe	35				
Keyham	Mays and Frys	46			x	
Keyham	Parkside	27	x			
Laira	Embankment Road	44			x	x
Mannamead	Seymour Road	63	x	x		
Milehouse	Penlee Valley	74		x		x
Milehouse	Rowdens Reservoir	64	x			
Mutley	Swarthmore	138	x	x	x	x
Oreston	Oreston	19				
Pennycross	Fosters Field	21				
Peverell	Barn Park Road	55	x			
Peverell	Central Park	119	x	x	x	x
Peverell	Peverell Park Road	52	x			
Plympton	Ditch Gardens	9				
Plympton	Lucas Lane	21				
Plympton	Newnham Park	55	x			
Plympton	Stoggy Lane	29	x	x		
Southway	Southway Drive	50	x	x	x	
Southway	Southway Lane	39	x			
St Budeaux	Eliot St	13				
West Park	West Park Terrace	28	x	x		
Weston Mill	Bridwell Road	20				
Whitleigh	Kendal Place	25				
Total number of plots		1355				

As Table 4.5 shows, the 31 sites are located across 22 of the 43 city neighbourhoods. Fourteen sites have allotment associations, nine have trading huts and eight contain school and community projects (see Chapter 8). Given this total number of plots, and the population of Plymouth (256,400) there is roughly one plot per 190 individuals, or one per 80 households (average size 2.35 people). As a comparison, a household size of 3.05 would result in equivalence to the national average found by DETR (1998), of 1 allotment per 65 households. Further detail on geographical location of a selection of these sites is given in Box 4.2 below for illustration.

Box 4.2 Profiles of allotment sites in Plymouth visited for the purpose of this research

(Source: images from Google Earth Google Earth *)*

Figure 4.9(a) *Swarthmore*

Land bought by the Quakers for the purposes of allotments at the south of Central Park, and the site that most people know as seen from the railway station. Site expanded during the war under DORA, with potato patch dug by Prisoners of War. Site under pressure from development, with proposals for housing, although promised replacement plots. The trading hut (situated on the corner that would be taken for development) was burnt in an arson attack a few years ago. Periodic summer raiding and vandalism.

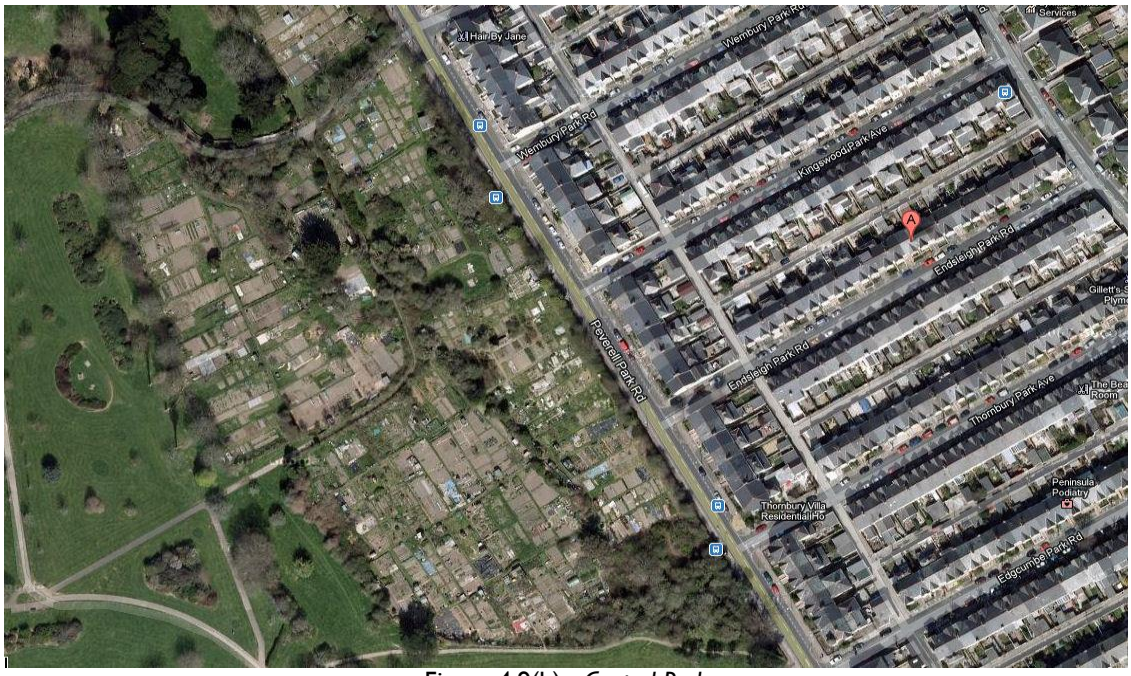


Figure 4.9(b) *Central Park*

The second largest allotment site in the city. Allocated during WW2 from part of Central Park. Periodic pilfering, raiding and vandalism. Attempts by plotholders to reinforce boundaries with hawthorn and brambles partially successful. LDF plans would have meant an edge shaved off, loss of plots and led to a campaign that galvanised the site's allotment association.

Figure 4.9(c) *Embankment Road*

Embankment Road. Site of old fertilizer factory. Contaminated top soil removed, high secure fencing and location of one of most active community garden projects in Plymouth (East End Community Allotments).

Figure 4.9(d) *Penlee Valley*

Site with the largest community garden project, Diggin' It, funded by the lottery and managed by a parent organisation that also runs a project, Dig for Devonport, in Devonport Park, just further to the south-east of the city.

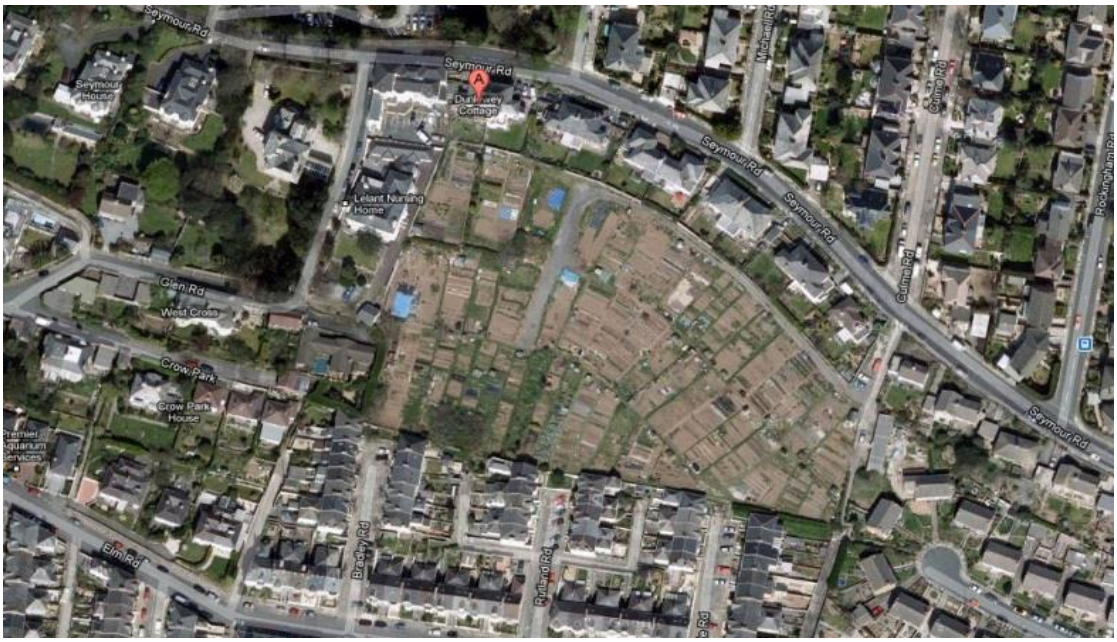


Figure 4.9(e) *Seymour Road*

Situated in Compton, an area that contains both highest and lowest density housing adjacent to each other. Site is well overlooked by housing, and no reported pilfering or vandalism.

Figure 4.9f *Southway Drive*

This site on the northern edge of the city with an active allotment association and a chicken-co-op where tenants share responsibilities. Described by one tenant as the best allotment site in Plymouth.

Figure 4.9g *Mays and Frys*

Site of an old commercial nursery. Situated on the edge of the dockyard and sewage works nearby.

Figure 4.9(h) *Eliot St*

In St Budeaux, a low-income neighbourhood but surrounded by housing with fair size gardens.

The maps in Box 4.2 show that the nature of neighbouring buildings varies considerably, as does the accessibility and desirability of location. For example, Eliot Street is in an area of housing with fair sized gardens but high on the IMD, as is May and Frys which is also near the sewage works which affects the quality of air on the site periodically (see Chapter 7).

Allotment management has been the remit of the Parks Departments within Plymouth City Council since the end of World War 2. During the time of this research, the team of one full time Allotment Officer (AO) and one full-time site maintenance worker was added to with a new post of full-time administrative assistant. Additional input for site maintenance is also given by others in the Parks Department for specific tasks, such as felling trees, or laying hardcore for car tracks.

As recommended by DETR (1998), most local authorities promote allotments, and the page on Plymouth's website is shown in Figure 4.10.

Figure 4.10 Plymouth City Council website page for allotments
(Source: *http://www.plymouth.gov.uk/homepage/leisureandtourism/parksnatureandgreenspaces/allotments.htm l.a.230512, with permission from Plymouth City Council*)

Figure 4.10 illustrates how allotments in Plymouth are promoted on the basis of food, fresh air, learning, social opportunities and wildlife, although the potential contribution to household economies is not suggested. The page has links to the

request form, to contact information for each site and to other organisations (BBC Springwatch, BTCV, Groundwork, Natural England, RHS Britain in Bloom, and The Royal Society for the Protection of Birds (RSPB)). However, there are no links to other allotment societies locally, regionally or nationally, or allotment blogs. This analysis suggests that PCC supports the Thorpe Report's suggestion (MLNR 1969) to promote leisure aspects of allotment holding.

The locations and management of allotments all have some impact on the levels and characteristics of use, discussed in Chapters 6 and 7. The demographies of some of the allotment tenants are introduced next.

4.6 Demographies of plotholders in Plymouth

The demographies of allotment tenants are suggested to include most sectors of the population (DETR 1998), with increasing numbers of females and younger people, but also the traditional stereotyped 'old man with a cap' (Crouch and Ward 1997). A brief picture of the key characters who participated in this research, many from the larger sites, but also from others across Plymouth is given in Table 4.6 below.

Table 4.6 Demographic profiles of allotment holders and gardeners in Plymouth quoted in this research *(Source: author)*
M = Male, F = female, C = 'community plot'

C01	0-10	Classes of children with plot and classes run by one (dedicated) teacher. Hoots of delight heard across the site when they are digging up potatoes.
F01	40s	Plot is designed as a wildlife haven by agreement with the AO, which elicits comments from other tenants "allotments are meant to be for growing food". Has help from an older friend who would like his own allotment. Feeds other tenants' chickens and ducks every day.
F02	60s	Retired schoolteacher looking after elderly father. Mainly just loves gardening and the wildlife.
F03	40s	Young family and working. Lives just over the road, so easy to call by after work.
F04	60s	Single professional woman. Offered to be on the committee and to help with publicising events, although not familiar with computers. Interested in discussions of buying woodland.
F05	30s	New tenant in the last year, delights in the whole experience of gardening and growing food to eat.
F06	30s	Offered to help with association if there was something practical to do. Comes to site events with children and husband
F07	40s	Macmillan nurse, so a difficult day job. Partner helps out with any 'construction' aspects of the plot and occasional clearing and digging.
F08	30s	Two young girls. They all come along as a family in the evenings. Novice gardeners and plot was overgrown into the spring but they got it cleared, and have crops growing well.
F09	40s	Friend of F07. University academic, expert gardener in a traditional style and gets good crops.
F10	40s	Young daughter. Lives next to M11. Enthusiastic and husband kept chickens for a while until he experienced heart problems. Finds it hard work without his help.
F11	30s	Got the hut 'going', helped by M27, and started selling canes, compost and organises books, and veg box for DCFA.
F12	70s	Wife of M13. Also retired. Expert grower of cabbages, and comes from a farming family.
F13	50s	Wife of M16. Does not visit much during winter, but then 'blitzes' it during spring and gets tidy and productive crops growing.
F14	50s	Professionals at council and university. Teenage daughters. Organised the lottery bid and hut as well as two of the veg shows. Now taking a back seat but still come to events.
F15	70s	Often seen sitting on the plot, sunhats on and having a picnic. Keep their plot tidy, productive and attractive.
F16	60s	Daughters and grandchildren often there early evening, playing on the plot, which has an entrance arch and neat paths and an air of the leisure garden. They are there most days, coming and going.
F17	40s	Daughter away at university. Parents grew vegetables when she was a child; they visit occasionally from Durham and take a good interest in the plot.
F18	40s	Wife of M21. They have different gardening styles but both enjoy spending as much time on the allotment having started many crops off at home.
F19	60s	Husband died unexpectedly a few years ago. The plot had been their joint effort, and now sometimes looks a bit overgrown.
F20	30s	Works at local university. Had been on waiting list for a plot in London for several years and had just been offered one when she moved to Plymouth. Waited for a couple of years here, got one just before getting married and has now had a baby.
F21	50s	Was university lecturer, then travelled for a year during which time a friend looked after the allotment. Now a researcher. Her father grew vegetables.

F22	40s	Yoga teacher. Plot looks wild and unkempt but food crops in between the 'weeds'.
F23	40s	Married with grown-up daughter. Gave up her plot when she went away for a year then waited for over 2 years for another when she got back.
F24	30s	Young professional involved in greenspace strategy at the council.
F25	60s	Wife of M26. Healthcare professional. Their plot demonstrates the approach of a French potager, looking colourful and attractive.
F26	30s	Single mother. Doesn't get to the plot as much as she would like. Leaves all the forget-me-nots because she loves them and wants them to go to seed before clearing for the growing season.
F26	20s	Single mother, doesn't manage to get to the plot very often but gets good crops of what she does grow. Brother helped to build a fruit cage, which is sturdy but looks untidy and was told to 'do something about it' by the AO.
F27	50s	Waited for over three years for a plot and delighted to now have one. She is an experienced gardener. Husband is supporting her through bringing in bags of compost and building bed structures, but not interested in growing.
F28	30s	Civil engineer with busy job. Joined with F14 to galvanise CPAA
F29	50s	Working weekdays but spends many hours on the allotment at the weekends and during summer evenings when possible. Partner occasionally helps bringing in manure and weeding.
F30	30s	Negotiated for a new allotment site on a patch of land adjacent to home and set up a community plot.
F30	30s	Enthusiast for local food and for growing what she can in her garden. The most important aspect is for her children to learn about growing food.
M01	80s	Retired, likes telling stories about the war, and carries a card from Rommel's son with him all the time. Tells of how they got prisoners of war to dig allotments on a new patch the other side of the main path. (The 'Surveyor planting potatoes' patch...)
M02	70s	Runs allotment trading hut. Knows everyone on the site, and has long chats with all the 'old boys'. Hut got put on fire a couple of years back; arson.
M03	40s	Single, his father encouraged him to take on an allotment. Plot was overgrown when he took it on. Trying a Permaculture approach, growing green manure.
M04	60s	Retired. There most days in fine weather, enjoy pottering around and opportunity just to be outside.
M05	60s	Retired schoolteacher and expert gardener.
M06	70s	Retired from city FE college. Brews up tea for other retired men every day.
M07	70s	Retired from the dockyard, travelled all over the world. There nearly every morning, before going off to swim at the new Life Centre or to take his grandson to the golf course.
M08	50s	Out of hours work at PCC. Has 4 plots, keeps ducks, chickens and bees and visits the site most days.
M09	70s	Retired. Joins in with others at coffee time. Often seen wandering around the site.
M10	40s	Builder and Argyle supporter with big Union Jack flag flying on his plot. Calls by before and after work to water regularly. Family there at the weekend to have barbeques.
M11	40s	Works in London during the week. Makes up for lost time at the weekends. Partner visits occasionally, mostly to pick sweet peas or soft fruit.

M12	40s	Husband of F10. Built raised beds on most of the plot and kept chickens for over a year, but had heart problems, and only very rarely visits any more.
M13	60s	Husband of F12. Now retired and pleased to be able to get to the allotment more often. Used to brew wine from all the excess produce. Often there in an evening with their dog Molly.
M14	70s	His plot looks like a tree nursery. Son is a tree surgeon and drops off piles of wood shavings at the entrance regularly, which people barrow away to their plots for paths.
M15	70s	Retired dockworker. Works two half plots with other friends, one a train driver. Goes off on weekends with old working mates; wants to buy a place in France.
M16	50s	Husband of F13. Built a colonial-style veranda around their shed. Barbeques there when there are concerts at Home Park. Two men from his workteam spent a day barrowing compost onto his plot for him.
M17	50s	Husband of F14, works at university. Teenage daughters. Likes the peace and quiet of the allotment site but doesn't get there as often as would like.
M18	70s	Husband of F15.
M19	60s	Friend of F16, makes a lot of structures and plot has entrance arch and neat paths giving it an air of the leisure garden.
M20	50s	Builder. Chatty about life in general rather than gardening. Joins in tea breaks whenever he gets a chance.
M21	40s	Husband of F18. Drug trial manager. He ran the site association easily and efficiently.
M22	60s	Professional musician who keeps a tidy plot.
M23	70s	Retired, brings whole tea-brewing kit on trolley to CPAA events. In Africa as cook for troops during war, talks about bushmeat. Chuffed to have been filmed for BBC programme about wildlife on his plot. Shed is like Fort Knox.
M24	50s	Works at local plant nursery. Expert grower. Brings the barbeque to events at the hut.
M25	60s	Retired dockworker. Loved the allotment but gave it up as he couldn't fit it in around home life and working.
M26	60s	Husband of F25. Involved in 'Food is Fun', organising Flavourfest for the city and helps with school gardens across the city
M27	60s	Retired. Used to have a plot on another site but this is nearer his home. Experienced gardener and gets good crops. Transformed the site entrance, which is adjacent to his plot, building planters and an archway.
M28	70s	Has been on the site for many years; his plot is right by the entrance. Referred to as the one with the loud voice. Buys and saves seeds and grows plants for the association to sell from the trading hut.
M29	70s	Longest rows of runner beans seen on any plot, of many different varieties. Gives surplus crops to his bowling association to help them raise money.
M30	50s	Technician at the university. Keeps himself to himself and not interested in any site politics.
M31	60s	Retired. There most days in fine weather, enjoy pottering around and opportunity just to be outside.

The brief descriptions of allotment holders in Table 4.6 are developed throughout this thesis. As can be seen, some tenants are occasional visitors, and others have a life that is more centred on their allotment; the latter are largely but not all retired or unemployed. There are male and female tenants across the age ranges and across a wide range of occupations. They have different motivations for cultivating a plot, from increased self-reliance or greater choice in food, to enjoying being outside and the restorative natural environment. Some seek social contact, while others desire a place to get away from stresses of life. Conversations with these and many other individuals took place over the period of this research on frequent site visits, often daily during some of the growing seasons, which were recorded in field notebooks and research logs. Many of their comments are included in the following chapters, referenced by their gender and allocated number in Table 4.6. The purpose was to illustrate the wide range of demographies and tendencies rather than categorised biographic profiling. These individuals are presented to demonstrate diversity, rather than as a statistically representative sample of Plymouth allotment tenants to reveal correlations or causal factors on the numerous socio-economic, cultural and demographic variables that could affect allotment cultivation. As suggested in Chapter 3, this research is instead presented as exploratory and illustrative, and the conceptualisations and findings included have been tested in individual and group conversations (e.g. RL310112, RL160113, RL 210313).

4.7 Conclusion

This chapter has considered the development and demographies of Plymouth over the years, to provide the context for the discussion chapters that follow. Characteristics of size, population density, health and employment in Plymouth compared with a sample of other UK cities showed similarity on some parameters, and especially with Coventry. The city's status now as a 'frontrunner' in AFN activities through FoodPlymouth (Box 4.1), gives another justification for research into allotments and AFNs through the case of Plymouth (see Section 3.3.1 above).

This chapter also gave an overview of the systems of food provisioning in the city as the context from which to consider allotment praxes. The geographies, facilities and management of the 31 sites in Plymouth, with over a thousand individual plots, were introduced, showing the variable geographies of size and location across the city. Demographies of the allotment tenants and other gardeners that participated in and contributed to this research were also presented with a view to demonstrating the range in socio-economic characteristics, ages and inclinations. The setting that this chapter has provided thus forms the basis for the discussions that follow in Chapters 5-8.

5 Food and non-food production activities on Plymouth allotments

5.1 Introduction

This chapter addresses the first objective of this research, to identify the food and non-food production on Plymouth allotments, in terms of social and natural capitals, assets and capacities of tenants. The definitions and categories of capital assets used encompass the factors considered in research on multifunctional, post-productivist agriculture (Wilson 2007), on multidimensional production in urban agriculture (Pearson 2010), and from a health perspective (Morgan and Ziglio 2007) (see Section 2.5).The categories applied in this research (Figure 2.6 above) are depicted for allotments in Figure 5.1.

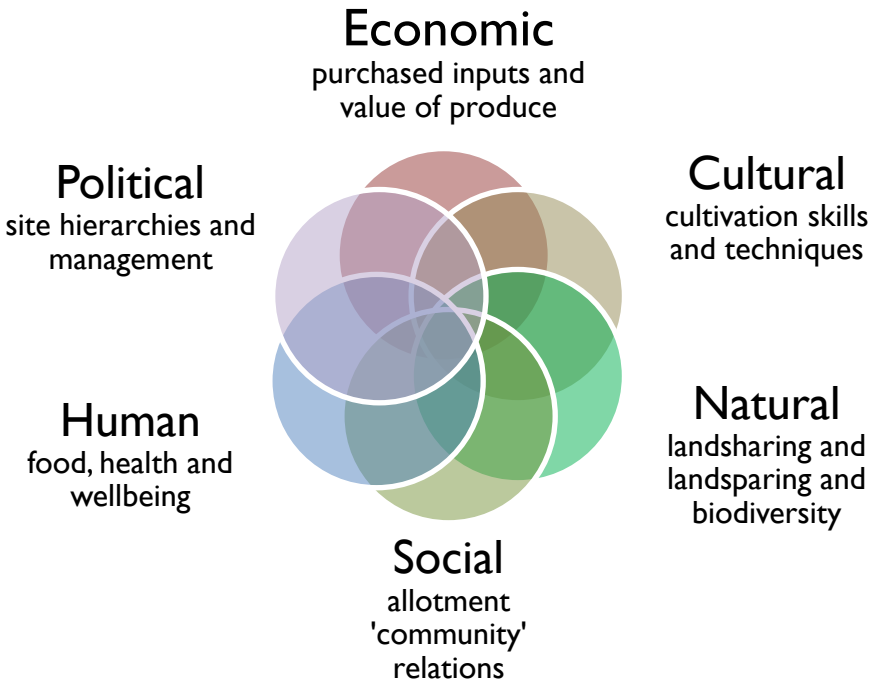


Figure 5.1 The capital assets on Plymouth allotments (*Source: author)*

This chapter takes a main focus on activities involving human, social, cultural and natural capital. Chapter 6 then focuses mainly on social and economic capital, and Chapter 7 on political capital. Findings of this research on capital assets (Figure 5.1) within allotment production activities are derived from observations during visits to eleven sites across Plymouth over the growing seasons 2011/2012, from participation in allotment and AFN meetings and events (see Appendix 5), and from conversations and interviews with individual allotment tenants (see Table 4.6 above).[23] The relevance and implication of these findings and explanations are then explored in reference to gaps in knowledge on allotments and AFNs, as introduced in Chapter 2.

First, the food produced from activities on Plymouth allotments is discussed: what kinds, relative quantities, and how they are used (5.2). Through use of proxy data from statistical sources, these findings are then presented as 'human assets', in terms of food security, and in terms of (potential and observed) dietary and medicinal implications. The 'non-food' production activities are then considered as also involving human capital (5.3), including outdoor exercise, creative projects and the restorative value of natural settings. Exploration of activities in terms of social assets, involve leisure, families and communities on allotments (5.4), and is followed by investigation of activities on allotments involving cultural and natural assets (5.5). The chapter concludes (5.6) by

[23] Observations, participations and conversations are referenced from Field Notebooks as (FNddmmyy), and from the Research Log as (RLddmmyy). Attributed quotes and statements from conversations and interviews are referenced as defined in Chapters 3 and 4, in this chapter predominantly local authority employees (LA0) and allotment tenants (M00 or F00 for males and females respectively).

discussing how the findings can be viewed through concepts of building and using a multidimensional asset base and offers possible explanations for the outcomes. It explores comparisons with research on AFNs that suggest a 'quality turn' (Ilbery and Kneafsey 2000) and considers how the patterns can be viewed through the theoretical lens of political economy (Treager 2011), and illustrate culture-nature or social-ecological binaries (Bhatti and Church 2001, Castree 2005, Bakker 2010, Stenner *et al.* 2012), with potential for overcoming the urban metabolic rift (McClintock 2010, Schneider and McMichael 2010). Finally it considers the policy implications of the findings for allotment and AFN activities.

5.2 Producing human capital from allotment activities: food security, quality and plant medicine

This section considers the information generated in this research on the levels and types of food produced on Plymouth allotments for its contribution to household food security, nutrition and health. In line with Cook's (2006) findings, record-keeping by individual allotment tenants of crops, time allocations, and inputs/outputs is sporadic and not necessarily representative. Although of interest in investigations of effective cultivation techniques, obtaining detailed data on current crop yields on allotments was not a remit of this research. Instead, observations are compared with yields and levels of specific crop production from secondary sources (for example, commercial

producers and Defra's agricultural surveys) to provide a broader picture of potential contributions to food security from Plymouth allotments.

The range and quantities of crops grown on sites across Plymouth vary significantly between individual tenants, but are similar across sites (as is predictable in view of the shared climatic and ecological contexts). Even so, each plot has a unique and individually-created arrangement of beds; Figure 5.2 below gives some sense of the difference in layouts of some of these individual plots and the differential allocation of space to crops.

(a) Southway Drive

(b) Central Park

Figure 5.2 Individual(ist) layout of plots in Plymouth *(Source: author)*

As shown in Figure 5.2 above, some tenants lay out their plots in a regular and traditional manner of rows across nearly the whole area, whilst others have more varied layouts. They may maximise food production from smaller beds, but give greater allocation of space to structures and sitting areas. Despite different layouts of individual plots, observations from visits to sites within the city over the period of the research (and from over 20 years as an allotment tenant on sites in Plymouth and London), indicate that most tenants devote the majority of space on their plots to the foods that have been staple components of UK household diets for many years. Food crops observed were allocated into three categories, according to frequency of cultivation observed, as given in Table 5.1 (see Appendix 14 for full list of crops cited by Plymouth tenants).

Table 5.1 Food crops observed on Plymouth allotments *(Source: author)*

First tier: on over 75% of plots	**Second tier: on 25-75% of plots**		**Third tier: on fewer than 25% of plots**	
Beetroot	Apples	Pumpkin	Asparagus	Marrow
Blackberries	Blackcurrants	Radish	Cauliflower	Plums
Broad bean	Broccoli	Redcurrants	Celeriac	Swede
Courgette	Brussels sprouts	Rocket	Celery	Welsh onion
Leek	Cabbage	Shallot	Cherries	
Lettuce	Carrot	Spinach beet	Cress	Eggs (chickens and ducks)
Onion	Garlic	Sweetcorn	Cucumber	
Parsnip	Gooseberries	Swiss chard	Elephant garlic	Honey (bees)
Peas	Parsley	Tomato	Fennel	
Potatoes	Jerusalem artichoke	Turnip	French bean	
Raspberries	Kale		Grapes	
Rhubarb			Hazelnuts	
Runner bean				

The patterns of relative space allocation to crops recorded in Table 5.1, seen on visits to allotment sites throughout Plymouth over the period of the research,

are similar to those recorded in popular magazines (e.g. *Kitchen Garden*) and books (e.g. Bullock and Gould 1988) on allotments. As indicated in Table 5.1, the most frequently grown crops, with the greatest allocation of space, include potatoes, runner and broad beans, onions, and leeks. Figure 5.3 below depicts the appearance of these crops during July 2012, within the landscape of a plot and site.

(a) Potatoes at Central Park

(b) Runner Beans at Turnchapel

(c) ***Leeks at Turnchapel***

(d) ***Welsh onions at Seymour Road***

Figure 5.3 Crops on Plymouth allotments *(Source: author)*

As suggested by both Figures 5.2 and 5.3, plot layout, allocation of space and mode of cultivation varies according to individual preferences, as suggested for gardening in general by Van den Berg and van Winsum-Westra (2010). The well cultivated rows of crops also suggest the potential for 'scaling up' given the contingent factors of plot size and amount of time committed to cultivation. The crops as identified in Table 5.1 that are grown by the majority of tenants are the 'staple crops' that have potential to provide a supply of food throughout the seasons of the year. They have high productivity, long cropping seasons, a wide range of culinary uses, and/or can be stored or preserved, especially by freezing, for eating out of season. As described by plotholders during conversations (in a close approximation of conversations taken from subsequent recording in research diaries):

> "Runner beans don't freeze brilliantly, but they still give a taste of summer in the winter; I've still got beans from last year, and that's with giving loads away to the family and friends." (F10)
>
> "You can tray-freeze courgette slices then bag them up, then you've always got something to add into stews, soups or whatever all through the year." (F08)

The 'second tier' in frequency includes crops of tomatoes, cabbages, carrots, peas and garlic. Some plotholders described difficulties experienced in their cultivation:

> "I keep on trying to grow carrots, one day I'll get a good crop. They looked like they were doing well, then I went away for a few days and they'd all gone by the time I got back." (F26)
>
> "All my garlic rotted last year. It was looking so good, but when I dug it up, it had this white-ish looking mould and they were all squidgy. This year, I'm going to dig up some really early and leave the others in the ground for a bit longer." (M15)

> "I've tried growing tomatoes a few years, but they always get blight; it's so disheartening that I gave up." (F26)
>
> "I grow tomatoes at home: you bring them here, and they'll just get blight. They want lots of looking after." (M13)

The 'third-tier' crops include dwarf beans, purple sprouting broccoli, pumpkins, and herbs, as well as less common varieties of some foods. Plotholders describe particular preferences for these foods:

> "Someone gave me a bulb of elephant garlic one year, and since then I've just been re-planting it and my 'stock' has grown to the point where it is coming up everywhere. It's got a milder flavour than the normal garlic, and it's that much bigger that it adds bulk to any dish." (F29)
>
> "I just love French beans, that's the one thing I miss when I tried not to buy things that had come from a long way away, so I reckon I'll just grow as many as I can myself." (F40)

Besides the listed fruit and vegetables, a very few allotment tenants in the city also keep chickens and/or ducks for eggs, and bees for honey. One site contains a plot with around a third of the area devoted to a large chicken house, with 18 chickens which are tended on a rota basis by six different plotholders. These livestock require constant attention, as well as specialised knowledge and skills, and thus their presence denotes highly committed tenants. For one plotholder, keeping animals is an integral part of a food-provisioning allotment:

> "I learned everything I know from the head gardener at the school. It's easy keeping animals really and the children just love it … I really, really want to keep pigs and chickens. Then I could live from it completely: lots of veg, some bacon or ham joint, and eggs. OK, a cow would be good for milk and cheese too, but that's out of the question on this site!" (F30)

The subject of wild food or game was also sometimes raised by plotholders. There was wariness due to mixomatosis (but otherwise willingness) expressed by one about catching rabbits 'for the pot.' Another tenant was able to clearly

describe how to construct a baited trap that would catch the pheasants that had been spotted on the site, with a structure of netting and alcohol-soaked raisins (RL160811).

The predominance of the most popular crops on Plymouth allotments can thus be suggested to be generally attributed to:

- the ease with which they can be grown, and low level of inputs required for cultivation (whether space, labour, skills, water or nutrients);
- the capacity for harvests that represents 'good use of space';
- the ability to save seeds;
- the ability to store or preserve to give food supplies throughout the year; and/or
- household food preferences.

Historically, the primary reason given for choice of crops has been the ability to maximise food supplies from any given space (Burchardt and Cooper 2010). More recently, household preferences and seed saving are recognized to be factors, in an echoing of AFN narratives of the quality turn (Ilbery and Kneafsey 2000) and sustainability (Morgan and Sonnino 2010). The latter is represented by the crops for which seeds can easily be saved from one year to the next, indicating the ability for locally-suited varieties ('land-races') to be readily available across the sites (see Chapter 8). However, apart from runner beans, and given the widespread commercial availability of seeds and plants and concerns about pests and diseases (such as potato blight), seed-saving is not

widespread practice amongst Plymouth allotment tenants. The lower frequency of production of 'second tier' crops can perhaps be attributed to their more demanding growing conditions; for example, tomatoes suffer from blight especially in poor weather, and carrots are likely to be eaten by slugs or overcome by weeds and require a fine tilth soil. 'Third tier' crops appear to be either demanding of space, even more difficult or time-consuming to grow, or less frequently used and not so familiar in household diets. The motivations for growing the more challenging second and third tier crops amongst those that do so, can be explained through reference to enjoyment of the challenge (see 5.5 below), because particular plots provide the right growing (micro-) environment, or, as indicated in this research, more often due to specific dietary preferences, and documented in extensive literature on food choice (e.g. Peters *et al.* 1995, Pettinger *et al.* 2007, and *Journal of Nutrition*). These in turn are affected by the (changing) wider settings of the effect of the media on growing and cooking food, as well as availability of varieties and other inputs from garden centres. Plotholders who achieve harvests of these less-common crops either have greater variety in their diets, or can save money from buying these foods in, whatever the particular combination of reasons for the cropping choices of individual tenants in any one year.

The desire to add a popular fruit or vegetable to the family diet despite being more time- and space- consuming or demanding of expertise to produce mirrors findings by Kortright and Wakefield (2011) who describe the

unhappiness of household food growers on having to buy their favourite foods (e.g. tomatoes and cucumbers) from the shops when their own harvests are unavailable. Unhappiness with bought produce was also expressed by Plymouth allotment tenants, with several suggesting that they produce food for the freshness, taste and range of varieties that can be obtained, as well as knowing exactly how the food has been produced:

> "I know I could buy potatoes by the sackful quite cheaply, but there's nothing like the taste of ones that are freshly-dug from the allotment." (F23)
>
> "I don't trust stuff in the shops, you never really know what they've done to them." (F07)
>
> "Even from the veg box, they look great, and they're definitely organic, but they've still probably been sitting around for at least a few days. You know what they say, you need to run from the garden to the kitchen to get the best taste." (F29)
>
> "These are better than any you'll find in the shops." (Pink Fir potatoes) (F07)

Besides the quality of food being valued, the levels of food production on the allotments are suggested by many to be more than adequate for requirements, with over-abundance of certain crops at specific times of the year. With the advent of home freezers, the harvests of many crops can be kept for use throughout the year. Some tenants and their families/households eat (more than) enough of a particular food, while it is in season, and some express relief when harvests are finished:

> "I can't be doing with all that freezing and preserving lark. I'd rather just have my fill of whatever is in season and then move onto what's new." (M27)

> "My children say they'll scream if they see any more courgettes." (F10)
>
> "I grow all the vegetables we need on this half plot, but then there's only four of us." (M03)

The most popular crops grown on Plymouth allotments then, for the variety of reasons discussed above, are likely to be also those which produce abundant harvests. They include some, notably potatoes, which have been a staple food for UK households for many centuries, as described in historical literature on allotments. Archer (1997) documents how the main crops were grain and potatoes, and it is suggested that most fruit and other vegetables were obtained from foraging (Chase 1988). Potatoes, as a staple source of dietary calories that lie at the core of basic household food provisioning, are widely researched (evidenced by the *Journal of the European Association for Potato Research*), and are in widespread cultivation despite their frequent association with hard times, as described in Box 5.1.

Box 5.1 'The humble potato' *(Source: author)*

Potatoes and grains (wheat, oats, rye, barley etc.) have together been the staple food sources of carbohydrates (energy) for the majority of the UK population for hundreds of years, supplemented by intakes of fat and protein (e.g. from dairy, eggs and meat). Alongside increasing land enclosures and loss of open field systems, the allocation of an annual potato patch to agricultural workers by farmers was common practice during the eighteenth century and amongst the first recorded instances of 'allotted land'. There were two-way benefits of this practice: to workers, of food to supplement what they could afford to buy with their wages; and to farmers, of cultivated land that would otherwise lay fallow being returned in good condition for cropping in subsequent years. The benefit to the land and future harvests of this spade cultivation was such that farmers would find it worthwhile to provide manure, and sometimes the initial ploughing (Archer 1997, Burchardt 2002).

The dietary balance between staples of potatoes and grain has varied over time and according to social, economic and political contexts. The renowned over-reliance on potato crops that became blighted is cited as the major cause of the Irish Famine (1845-1850). However, this occurred alongside harvests of good grain crops which were exported out of the country by (mainly English) landowners. The cause can be alternatively viewed as being due to decreasing plot sizes for households on which mainly just one high-yielding potato variety was continually grown without crop rotation (Fraser 2003); and the legislated exclusion from common lands which had been a major source of food supplies and diversity in people's diets, from wild fruit, vegetables, herbs, nuts and game (Chase 1988).

Although early UK allotments are reported to have mainly cultivated grains as well as potatoes (Archer 1997), the increasing commercial milling and retailing of grain crops, as well as imports from 'the Empire' meant that smaller areas of plots were allocated to grains. During WW1, with import restrictions, potatoes increased relative to grain in UK diets, both as an addition to flour and as a dietary vegetable (Dewey 2005).

In England, during WW2 and the Dig for Victory campaign, people were exhorted not to grow potatoes on urban allotments, although they were probably the most important of all the war-time vegetables for the sake of adequate food supplies: "I've been told by those who ought to know, that potatoes supply more food per acre than any other crop … So if we all keep a good stock of potatoes in the store and use them sensibly we shall never starve" (Middleton 1942/2008: 110). However, potatoes can be cultivated with low levels of labour on larger patches of land, and it was deemed better to use scarce urban land and labour for crops that required more intense cultivation and that provided for gaps in nutrition, such as greens (Way 2008). Records from Plymouth show additional areas in the city, including in Central Park, given over to potato cultivation in response to requests from the government (see Chapter 4). The public records show that permission was given to the City Engineer to grow potatoes on land adjacent to the current Swarthmore allotments, and one tenant who was there at the time explained that the cultivation was carried out by Prisoners of War (M01).

With potential potato yields of 45 tons per hectare (Defra 2012) and on the single basic parameter of calorie intake (leaving aside fat, protein and nutrient needs), Fairlie's (2007/8) calculations of a basic daily diet of 2767 calories, indicate that one person would need1.5 tons of potatoes over a year. This equates to 30 people fed per hectare, or 0.03 hectares per person (compared to standard allotment plot size of 0.024 ha). Dependence on this basic annual calorific requirement from the most 'efficient' food crop is clearly far from current reality.[24] However, the calculation does provide a proxy baseline, as used during previous wartimes, from which to estimate potential food security from land in and around Plymouth.

While potatoes are known as a crop to clear uncultivated land, and will grow in nearly any situation, in order to do well they require high inputs of manure or other source of nutrients, and well-dug soil, as suggested by Figure 5.4.

[24] The current pattern of household diets, from the weekly household spending survey (ONS 2010, see Appendix 15), shows a total £53.20 spend on food and non-alcoholic drink includes £9.30 spent on grain-based foods, £11.60 on meat, £4.80 on dairy, £2.30 on fish, £4.20 on fruit, and £7.60 on vegetables, of which just 90p is spent on potatoes.

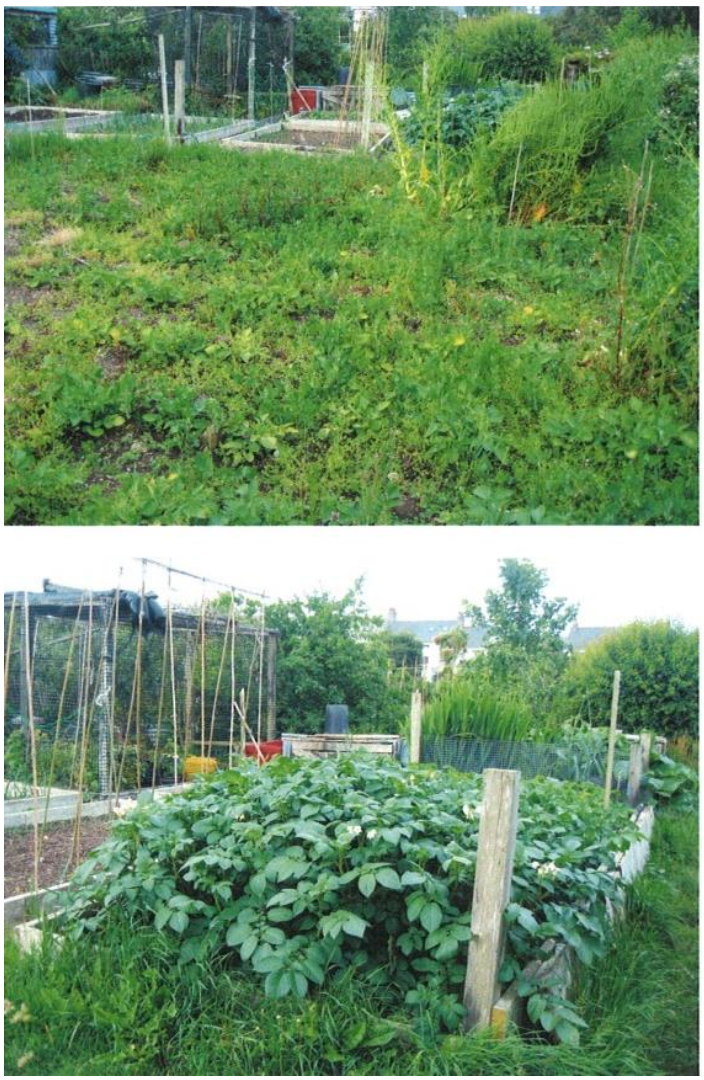


Figure 5.4. Variations in productivity on adjacent plots *(Source: author)*
The photos above taken in summer 2012 are of adjacent plots (a) where potatoes have been planted but not tended and (b) where potatoes have been put into compost with regular fertilizer application (seen by the colour of leaves).

The potatoes on Plymouth allotments vary significantly in health (Figure 5.4) and harvest, indicating that the right inputs of nutrition, labour and skills would be needed if higher levels of production were to be required. Although potatoes can be grown in pots on balconies and windowsills (as suggested by some popular magazines and TV programmes), overall levels of production, and so contribution to any individual's or family's food security, remain ultimately dependent on space available.

Whilst potato cultivation has the potential to enhance basic food security when food is not available from other sources, as suggested in Box 5.1 above, they are also being 'rehabilitated' from their 'lowly' status, with a wide range of new

varieties now available as seed potatoes, including varieties that are bred for blight-resistance. Moreover, those produced on Plymouth allotments are often stated to be grown in preference to the tastelessness of those provisioned through most commercial outlets.

The range of fruit and vegetable produce from allotments (see Appendix 14) varies more over the seasons than the range available in supermarkets. However, the free availability of supplies of the range of fresh fruit and vegetables available through allotments, as suggested by the statements above, suggests that plotholders and their families are more likely to meet recommended intakes in their diets, as found by Alaimo *et al.* (2008) for participants in a community garden in the US. The blurred boundary between meeting fruit and vegetable intake recommendations for reasons of nutrition or for medicine is illustrated by promotions during the Dig for Victory campaign, as illustrated in Figure 5.5.

Figure 5.5 Material from the Dig for Victory campaign (1939-1945)
(Source: Imperial War Museum with permission (Art.IWM PST 8105))

The use of plants for medicine as well as for food, as suggested by Figure 5.5 above, has a long history (Section 2.5). Although many of the plants that have been in use for common disorders are to be found on Plymouth allotment sites (e.g. thyme, rosemary, parsley, sage), they are not extensively cultivated, and their use is for culinary rather than salutogenic purposes:

> "That rosemary plant just gets bigger every year; I only need a few sprigs to put in when I'm cooking lamb now and again" (F26)
>
> "It makes all the difference if you add a bit of fresh parsley to sauces and stews ..." (M07)
>
> "I just go and pick bits of whatever is around, marjoram, thyme, chives, and fennel – for the taste mainly but I know they're good for our health too." (F25)

As the above statements suggest, herbal plants were generally used for their culinary aspects, and were freely available in quantities, exemplified by the rosemary plant depicted below (Figure 5.6).

Figure 5.6 Rosemary plant on Plymouth allotments *(Source: author)*

As Figure 5.6 suggests, rosemary plants thrive in conditions on Plymouth allotments, but only a few people were aware of the potential medicinal benefits

as detailed in *materia medica* (see Appendix 16*)*. A few tenants expressed willingness to consider learning about the use of herbs for medicine if opportunities were made available, but also wariness, for example:

> "I wouldn't know what would be safe or how to use it." (F02)
>
> "I'd love to find out more, but I wouldn't know where to start, there's so much information on the internet but you can't tell which sites are reliable sources of information." (F08)
>
> "I'm sure my doctor wouldn't approve ... I'd be afraid that they might cause a side-effect or interact with the pills I'm on for indigestion." (F19)

Thus, although in widespread use globally (Section 2.5), it appears that on Plymouth allotments very little use is made of the potential of phytomedicine. This is perhaps unsurprising as herbal medicine knowledge has been side-lined since the development of what is now conventional medicine in Europe and the UK. The demography of Plymouth allotment tenants is predominantly white English. However, as documented for community gardens (Armstrong 2000), Hope and Ellis (2009) suggest that allotment sites in areas of greater ethnic diversity (such as London, Birmingham and Coventry) may be sites of learning about a wider range of crops and plant uses as more tenants may still retain traditional knowledge.

The statements above have indicated how some participants were clear that one plot was enough to supply their household, if not extended family or friends, with their requirements for fruit and vegetables over the year. Nevertheless one standard allotment of 0.024 hectares (250m^2) is smaller than the 0.03 hectares estimated to be needed for basic calorific requirements (from

potatoes) for one person per year at commercial yield levels (Box 5.1). As recorded in historical literature on the debates over allotment allocations (Burchardt 2002), the size of allotment rented during the 1800s often varied according to household size and inclination. A plot of between 0.2 and 0.8 hectares (0.5-2 acres) was thought adequate for an average family of seven (two adults and five children). In other words, 0.1 hectare was taken to be the amount of land required for food security for one person. This area would have incorporated all food staples (i.e. included grain), and diets were also supplemented by (albeit decreasing) access to wild foods including game. This historical assessment of 0.1 hectare per person can be compared to current allotment sizes of 0.024 hectares (0.06 acres) per household (average national size of 2.6 people), and equivalent to 0.009 hectares per person.

In terms of food security at wider community or city level, rarely addressed in literature on AFNs (except in the context of low-income neighbourhoods and 'food deserts', see e.g. Pothukuchi 2004), the critical consideration is at what spatial scale the analysis is undertaken. At city-level, allotments in Plymouth provide for partial food security of fruit and vegetables requirements for the 0.5% of the population who are participating households. The current provision of allotment in the study area of 23 hectares in total can be compared to the 7,700 hectares (on the basis of 0.03 ha per person) that would be required for the city population even for a diet solely of potatoes. This calculation throws into light the extent to which urban populations are dependent on their

surrounding peri-urban regions, a factor raised in discussions on AFNs (e.g. Morgan 2009). For example, in a focus on Totnes, Hopkins *et al.* (2010) illustrate how the overlapping 'foodsheds' of neighbouring cities (Plymouth and Torbay) create tensions in local food self-provisioning. This tension also echoes historical debates of periodic episodes of food protests during the 1700s and 1800s in protest at food leaving rural regions for markets in the expanding urban regions (Stevenson 1992).

At UK level, Fairlie (2007/8) explores different cropping regimes, and concludes that Britain has the capacity to feed itself, with potentially minor changes in basic dietary compositions (notably reduced meat intakes). However, attaining the yields required would require higher inputs of human labour than commercial agriculture (as seen on allotments), and likely involve a degree of agrarian resettlement (see Chapters 6-8). National food security was achieved to some extent during WW2, where a baseline diet of carbohydrates was met from mainly vegetables grown within the UK, with fat and protein supplemented by imported bacon and dairy (Stark 1984; see Appendix 13). An estimated one-tenth of the total 13 million tonnes of fruit and vegetables consumed in 1944 were produced on allotments (though these figures exclude 8 million tons of grains and 4 million of sugar beet) (see HMSO 1944). As Tudge (2007) concludes, and analysis by Angus *et al.* (2009) helps to clarify, given an overall UK agricultural land area of 19 million hectares, and a population of 60 million, there is 0.31 hectares per person available for food provision, or ten times as

much for each person as would be needed for a 'basic calorific diet of potatoes'. On these calculations, it is clear that overall UK land availability is adequate to ensure national food security if the necessary factors were to be mobilized, giving weight to Tudge's (2007) contention that '*Feeding People is Eas*y'.

In this research, beyond contributing to basic food security, the taste (organoleptic) and nutritional aspects of fresh fruit and vegetables produced on Plymouth allotments were valued by plotholders, indicated by statements above (and suggested by the vast research and technical effort devoted to avoiding post-harvest crop spoilage; see e.g. *Journal of Food Science and Technology* or *Postharvest Biology and Technology*). In line with some AFN research, this valuation suggests that nutritional recommendations are more likely to be met by those who grow their own food (Armstrong 2000, Kortright and Wakefield 2011). However, the key contingent factor that determines relative contribution to household diets and health of individuals through supplies of 'fresh, seasonal food' as described for AFNs (e.g. Armstrong *ibid*.), is the area of available growing space per individual. A quick calculation, based on an average annual number of participants of 50 people on a 4-plot-equivalent site (or 0.08 hectares) for one Plymouth community garden, reveals 0.0016ha available per person. Allotment tenants clearly have greater potential to contribute to food security than participants in community gardens in urban areas, but less than those participating in CSAs in peri-urban or rural areas. However, in the

present day, yields may be higher on CSAs and community gardens than on allotments, due to intensity of cultivation and skilled paid gardeners.

As Kirwan and Maye (2013) report, local food activities rarely feature in policy discussions on broader food security goals, and there is a dearth of information on levels of food production from within AFNs.[25] However, this research has shown how greater levels of food supplies could also be attained from Plymouth allotments through more intensive cultivation. This suggestion is supported by research on higher productivity levels on allotments historically (Archer 1997, Burchardt 2002), in urban agriculture of the global South that recognizes an inverse relationship between farm size and productivity (Bakker *et al.* 2001, IAASTD 2008), and in high-intensity cropping regimes now being seen, such as 'SPIN' urban farming in the US (www.spinfarming.com). The present-day choices of UK households to meet some of their food needs through self-provisioning, rather than buying food commodities (whether from a farmers market or supermarket) is, however, also clearly dependent on other factors, or capital assets, including social, cultural, political and natural (Figure 5.1; see also Chapter 6).

[25] Although the reasons are not discussed, Kirwan and Maye's (2013) presentation of the food security issues identified by Defra (2010a,b,c; see Table 1.1 above) omits the category of technological challenges to UK food supplies, which include farming practices, yield growth, and investment and skills. It can be contended that this category includes some of the most salient threats to household food supplies and is the category for which allotment or urban agriculture production could provide a partial solution, given the necessary inputs (space, inputs, know-how, and motivation).

5.3 Producing wellbeing: outdoor exercise, self-reliance and the natural setting

The reasons for allotment holding and AFN activities more generally are often suggested in the present day to be as much for the production of health and wellbeing rather than food needs (Hope and Ellis 2009, Sherriff 2009). Beyond the human capital produced on Plymouth allotments through food supplies, nutrition and plant medicine, the potential co-production of wellbeing on other parameters was also confirmed during this research. This wellbeing is derived from the exercise involved in allotment activities, the psychological and emotional effects from the enjoyment of gardening, and the relaxation or stress-relief afforded by the restorative natural setting. All of these factors are recognized in literature on present day allotments (Crouch and Ward 1997, Buckingham 2005, Hope and Ellis 2009, Wiltshire 2010), are documented in literature on community gardens (Armstrong 2000, Pudup 2008), and have been recognized in debates on allotments since the eighteenth century (Burchardt 2002). These aspects are each the subject of different subfields of academic literature, but are explored below specifically in relation to allotments and the findings of this research.

The main contribution to physiological health (human capital) apart from food derived from allotment cultivation is from the physical exercise involved. The physical activity represented by gardening is classified at least as of 'moderate' level, and so helps to meet recommendations for exercise (Section 2.5).

Allotment activities represent a fairly consistent increase in levels of physical activity compared to the majority of urban populations. In winter, many tenants average around 2 hours a week or less (for example digging or bringing in manure), but in the summer months it can be 30 hours a week or more (see Chapter 7). These hours spent are recognised by tenants as an enjoyable means of keeping active:

> "I feel exhausted when I get home and find I've been down there for more than five hours nearly non-stop; I can't imagine doing anything else that would keep me so active." (F21)
>
> "I get really fed up in winter when there's not so much to do; they say that's why double-digging was started, just to keep gardeners busy in the quiet season, not because it's a good thing to do particularly."(M16)
>
> "I hate being cooped up inside, I can't wait to get outside" (F29)
>
> "What better way to spend a few hours relaxing than gardening; there's always something new, and always something interesting. I can just do my own thing, and listen to the birds, fiddle about, sit down a bit then go and do a bit of digging". (M03)

In other words, the levels of physical activity in gardening for food is recognized and is welcomed by these tenants as contributing to their health, and enjoyment is a key factor in sustaining exercise habits (see e.g. Sairanen *et al.* 2012). The enjoyment was frequently also attributed to the fact that it is outside and in the natural environment. However, as indicated by the statements above, it is difficult to always differentiate between the perceived benefits for allotment tenants. As with the boundary between food and medicine, the boundaries between physiological and psychological benefits are blurred. For example, as one tenant stated, "you see more smiles on sunny days." The enjoyment of good weather by many is widely recognized. However, possibly a largely unrecognised 'side-effect' (and unrecognised potential) is of enhanced

physiological health due to time spent outside; this results in elevated levels of vitamin D, which is reported to be deficient in up to 90% of urban populations (e.g. Zitterman 2003, Holick 2004, Holick and Chen 2008: 1080S, Turnbull *et al.* 2010, Gillie 2004, 2010, Coghlan 2012, Vacek *et al.* 2012). This suggestion can be contended to especially apply within the current context of the increasingly indoor everyday lives of urban populations.

Beyond any direct physiological effects of outdoor exercise, the benefit from being in the natural environment is a major factor in allotment cultivation, according to tenants. Some especially see the allotment plot and/or site as a sanctuary:

> "The only time I ever really relax is when I get here ... it's a mad world out there" (M13)
>
> "It kept me sane after a very difficult personal time; just to get gardening, feel the soil, look at the trees, listen to the birds ..." (F29)

These and many other statements made by plotholders support the findings of the visual, aesthetic and restorative benefits of the natural environment (SDC 2007). The psycho-physiological effects of de-stressing and relaxation reported are also accompanied by a sense of self-reliance. The suggestion that those who take allotments have a greater desire for control over life and self-reliance is illustrated by the desire for their own 'space'; according to one local authority employee, "I often wonder whether people take an allotment just because they want their own little bit of England, or patch of land they can call their own" (LA3). The aspect of self-reliance, or control over life that this statement

represents, is discussed in Stenner *et al.*'s (2012) framing of reasons for gardening, as being 'mimetic' or as part of a desirable social norm (imitation). It also represents the positive attribute or aspiration encouraged in policy, for example in welfare debates (see Chapter 6).

Health-creating aspects of allotment activities are also documented through their role as leisure, hobby and creative past-times, or 'personal projects' (Mozja *et al.* 2012). These are acknowledged for the present day (Hope and Ellis 2009) as well as historically (Burchardt 1997). Leisure opportunities have multiplied exponentially, but gardening remains the most popular form of active leisure in the UK, carried out by 64 per cent of adults aged 45-64 years, and 62 per cent of adults 65 and over, outranking sports or other formal exercise (DCMS 2012). The desire to garden can be explained as desire for creative self-expression, as described by one tenant:

> 'I don't just enjoy producing food to eat, I love just feeling the earth, and creating a garden that is a pleasure to be in and look at; just look at the French potager, they know what they are doing, they're producing fruit, veg and flowers all together.' (F21)

The importance of the different recreational aspects of allotment activities ranges widely between individuals, but includes a desire for a skill-enhancing hobby ('personal project'), as well as a pleasurable way of passing time:

> "I'd rather be on the allotment than shopping or watching television" (F11)
>
> "I get such a sense of satisfaction from stepping back after being down here and seeing how it all looks" (F26)
>
> "I don't care how much food I grow really, that's a bonus, it's more I just like having a place to come to where I can choose whether to just laze about and do what I want, rather than wear myself out getting maximum amounts to eat ..." (F29)

The leisure aspect of allotment praxis expressed by participants gives some credence to the Thorpe Report (MLNR 1969) which recommended the 'rebranding' and redesign' of urban allotment sites along the lines of European gardens (see Section 2.4 above). It also echoes the popularity of the 'detached gardens' in nineteenth century urban areas in England which were rented to trades and crafts people as leisure- and food-producing family spaces (Thornes 2011), as well as the 'allotmentitis' documented in the 1920s (Section 2.4).

The combination of enjoyment of the natural setting, outdoor exercise and self-reliance are themes that have consistently run through literature on the roots of allotments and access to land (Crouch and Ward 1997, Chase 1988, Burchardt and Cooper 2010, Boyle 2012). In the present day, statements of tenants in Plymouth support the contention that allotment cultivation can also buffer the psychological and emotional impacts of stress and urban-living (and so the concomitant challenges to immune responses; see e.g. Neilsen and Hansen 2007). These factors also represent a development of 'attachment to place' through gardening (Armstrong 2000, Bhatti and Church 2001, Brook 2003). It can be concluded that allotment cultivation provides potential for production of physiological, psychological and emotional health, and that, in the light of concern over levels of obesity and lack of physical exercise in UK urban populations, it provides potential especially for older people and the 'healthy ageing' agenda (Age UK 2011).

5.4 Producing social groupings: family and community

Allotments are also widely documented to create leisure opportunities for families and local communities (Burchardt 1997, Crouch and Ward 1997, Ellen and Platten 2011, Thornes 2011). These leisure pursuits range from being individual, household/family-centred, or with friends and fellow plotholders at wider site level. Allotments were historically viewed as places where families could get together during leisure times, for outdoor activities away from cramped housing and factory working conditions. These suggestions are also described by Plymouth plotholders:

> "It's the one place where xx (autistic grandchild) begins to relax a bit, she's fine on her own here, but the problems she has at school ...." (M07)
>
> "It's so good seeing them enjoy themselves so much outdoors for a change, something to get them away from hunched over a games toy" (F08)
>
> "The times that we do manage to get here together as a family are great, it's that quality time that they always talk about" (F10)

Allotment tenancy provides opportunities for joint activities whereby individuals spend time with their partners, families, and wider networks. However, allotment tenancy can also produce tensions over differing priorities within families and households.

> "I'm really torn about going away during the growing season; I do want to go on holiday, but at the same time, I'm really sad about having to leave the plot when there's so much to do and enjoy." (F29)

Whilst allotments do provide an opportunity for families to enjoy themselves together, it is especially for those who are not in waged labour (whether

retired, unemployed, or looking after young children) that the social opportunities from plot holding are generally more important:

> "I'd be lost, well, it would be a bit boring, without my morning cuppa with X and Y " (M07)
>
> "It was great, so lovely to talk to people who are interested in the same things, you can rave about manure which most people would think very odd!" (F01)

However, reservations are also expressed by other individuals:

> "I can mix with all the people I want outside [the site]; it's the chance to just 'be' that I really enjoy here ..." (M03)
>
> "No, I wouldn't go ... I don't know ... I'm just not into that kind of thing" (M07)
>
> "I avoid going to the plot when X is there, because I just haven't got the time that he has to stop and chat about everything going on in the world but I don't want to seem rude or unfriendly." (F23)

The above statements support analysis by Wiltshire and Geoghegan (2012) that a sense of community is not necessarily sought by allotment tenants, by Crouch and Ward's (1997) description of allotment tenants as often individualistic, as well as by Bhatti and Church's (2001) findings that gardening is often an individual activity. Nevertheless, Plymouth allotment sites that do have an allotment association and organised social events (see Chapters 6 and 7) do provide opportunities for the many individuals who seek 'sense of community', or 'reduced isolation' as termed in policy goals on health inequalities (Windle *et al.* 2011). These different reactions can be explained with reference to psychologies (e.g. of the 'big five' personality types[26]; see Barnett 2013) but also with reference to differing availability of time (see Chapter 7). Further possible explanations for the lower emphasis on social interaction for some tenants

[26] Barnett (2013) contends that a 'voluminous' body of evidence points to five personality types: neuroticism, extraversion, openness to experience, agreeableness and conscientiousness

include time pressures and increased levels of stress in '24/7' twenty-first century cities.

Allotment gardening has been described as more individualistic and anachronistic than domestic gardening (see e.g. Crouch 1989). Any such difference could be perhaps explained by the lack of domestic restrictions that may apply in a garden attached to a home. Where one adult in the household takes responsibility for plot cultivation, they have their own 'domain', and popular literature on allotments describes (mostly) men heading for their plot at the earliest opportunity after a working day and a meal at home (Wale 2006). It can be suggested then that allotments may be more suited to those who prefer a more individualistic form of leisure compared to the community and social inclusion discussed in literature for AFNs (e.g. Kirwan 2006).

5.5 Producing cultures and natures

Research on allotments indicates the potential for increased biodiversity (Ellen and Platten 2011; see Chapter 2), discussed in geographical literature as co-producing socio-natures (Bakker 2010). The cultivation of an allotment (for food, health and wellbeing, self-expression or the sake of socializing), can be explained as activities of multidimensional co-production, of both people (skills and learning) and 'nature' (ecologies and habitats). The cultural and natural

capitals depicted in Figure 5.1 above are considered here within the context of expressed concerns over separation of cultures and natures ('metabolic rift'; see McClintock 2010). The different styles of allotment cultivation, whether wild or manicured, land-sparing or land-sharing, are seen to represent continual learning (individual and social), and evolution of cultures and natures involved (Hope and Ellis 2009, Van den Berg and van Winsum-Westra 2010, Tilman *et al.* 2011).

Upon being asked where they learned about allotment-holding and growing food, most imaginable sources were mentioned by different plotholders: family, friends, schools, books, TV, internet, etc. Providing opportunities for children to learn about growing food is one of the most frequently cited-benefits of local food growing projects (e.g. Armstrong 2000, LV 2009; see Table 4.4), and this holds true for some Plymouth allotment-holders:

> "It's such a relief to know that M [young child) knows his potatoes come from the ground, rather than just from the freezer department in a supermarket". F08

As observed on the sites in this research, whether cultivation is practised for the sake of learning, food supplies or pleasure, and whether in a wild or manicured, intensive or extensive, land-sharing or land-sparing manner, the style remains largely according to individual preference. From observations, it appeared that cultivation practices by older plotholders were more likely than those by younger tenants to have the main aim of maximising productivity and reducing competition for crops from wildlife (RL171112). This difference could be explained by stronger memories of wartime campaigns, but also the

optimism from using agrochemicals before environmental concerns surfaced (Section 1.2).

Conversely, new aims of learning to grow food for new and (mostly) younger plot holders include experimenting with agro-ecological approaches and learning about wildlife such as how bees help to pollinate crops etc. These different preferences are illustrated by Plymouth tenants by the following statements:

> "I like to leave a corner wild; and really hope that a hedgehog or two might make their home there."(F17)
>
> "I like letting things just grow together as they like; an oak sapling is home to more insects than any other plant in the UK." (F01)
>
> "Why bother to do the work if you're just going to let the slugs have it all." (M10)
>
> "The blackbirds tell you when the sweetcorn is nearly ready … start pecking it open … then you just need to get to it before they do." (M01)
>
> "It's amazing how plants can recover from an initial attack from something, birds or slugs ... It might mean I get less produce, but it's not as if I'm desperate for it." (F21)

The statements above suggest a gender difference which was also observed on visits to sites, with male tenants tending towards more controlled plots and expressing more concern over time spent working and the resulting outputs (see Chapter 6 for further discussion of gender roles). The range of contingent individual factors result in a demonstrable diversity of attitudes to nature between plotholders, as with preferences for gardening style (Van den Berg and van Winsum-Westra 2010). However, these differences may have a sharper focus when gardening for food, some of which are illustrated by the pictures in Figure 5.7.

(a) Bug hotel

(b) ***Pollinator-attractors***

(c) ***Bird box***

(d) ***Slug pellets used to protect beans***

Figure 5.7 Cultures accommodating natures on Plymouth allotments *(Source: author)*

The pictures from site visits (Figure 5.7) evidence the levels of awareness (ecological literacy) of many allotment tenants: 'bug hotels', planting of flowers known to attract pollinators, and bird feeders, as shown in (a) to (c). However, as (d) indicates there is also ruthlessness towards other creatures that jeopardise crop success, in this case and most commonly, slugs. As Figure 5.4

also illustrates, there are many different ways in which allotment tenants in Plymouth aim to attract biodiversity to their plots. The level of awareness observed on many Plymouth allotments can be explained by the increase in media coverage on wildlife, and the ready availability of information on the internet on 'gardening with nature'. This is in comparison to the prevailing thrust of information available to food gardeners during WW2, which although highlighting the work of microbes in breaking down compost, in general was aimed at maximising productivity, and towards use of chemicals to get rid of weeds, pests and diseases (Middleton 1942/2008).

Besides the skills and learning in growing food (cultural capital) and encouraging biodiversity *per se*, the claims of encouraging wider sustainable behaviours reported for AFNs was explored. Plotholders reported that the experience of learning to grow food has affected how they relate to nature and the environment more generally:

> "I'll never look at a supermarket shelf in the same way again. It's just so humbling seeing those mountains of perfect produce; how do they do it?!" (F26)
>
> "I always look to see where the food comes from now; I never used to be so aware, but it seems crazy to buy something that has travelled half way across the world when I could just eat something different from down the road."(F31)
>
> "I hate buying processed and packaged food now. You're just so aware of all the things it's probably got added, all the energy it's taken to produce, and those layers of plastic." (F21)
>
> "I've got a respect for the weather and power of nature that I didn't have before; you can do everything right and then get an unexpected frost, or attack [pest/disease], or torrential rain that just batters everything ... it's such an uncertain business..."(M03)

> "I suppose I'm more realistic about nature now. I used to look at birds and things and think 'ah, aren't they lovely', but now I'm more thinking are they going to get to my crops before me" (M03)

As seen in these statements, claims made for allotments and in AFN literature that growing food enhances individual learning about nature as well as local biodiversity are supported. The learning cultures of the natures on Plymouth allotments considered above can again be explained by wider social, political and economic settings: media influence on cultivation techniques; school curricula (especially primary) related to wildlife; increasing numbers of school gardens where children learn how to grow food; and social movements (e.g. Sustain and Greenpeace) provide information on the adverse impacts of globalised food networks ('GFNs'). If these contexts were to change, for instance, as with the wartime exhortations of 'Every man (*sic*) a gardener' and 'Dig for Victory', then the generally evidenced 'benevolence' towards other-than-human natures may become restricted, as suggested by cultivation techniques more frequently practised by older allotment tenants. However, from a different perspective, the agro-ecological approaches that are observed to be prevalent are supported by findings of their potential to increase productivity over mainstream industrialised agriculture (IAASTD 2008).

The (disputed) claims that AFNs reduce adverse impacts of food growing in distant environments through food produced locally (Tregear 2011) are clearly supported for allotments in the sense of reduced transport and packaging for food produced and consumed locally. These same impacts apply to some AFN

activities, for example, community gardens and CSAs, with the extent in all cases limited by the levels of food produced. However, these impacts can be and are more contested for other AFN activities such as farmers markets and vegetable box schemes. These have been discussed mainly so far on parameters of transport or 'food miles' (Kirwan 2003, Desrochers and Shimizu 2008, Coley *et al.* 2009), with the notable exceptions of Pretty *et al.* (2005a) and Pimentel *et al.* (2005), who calculate other externalities of conventional agriculture, such as depleted water quality. The variances in allotment practices observed in this research supports the suggestion that the key factors affecting impacts on natural capital are cultivation techniques, rather than necessarily scale or 'localness' (*Reed, pers. comm.)*.

The above discussions support the contention that allotments, and gardens more generally (Brook 2003), provide opportunities to overcome the separation between nature and society experienced by urban populations. This separation is described as a 'metabolic rift' (McClintock 2010), and explored as nature-society binaries (Castree 2005) which facilitate environmental degradation (Kovel 2007). It can also be suggested that the root of this effect of gardening or allotment cultivation can be seen as gaining an understanding of nature as originally described in Greek by the word '*physus*' which denoted a dynamic sense of 'becoming' and encompassed all life-forms (see e.g. Fielding 2013). Reclaiming this dynamic sense through the interactions involved in gardening, and especially growing food, could help overcome the separation

entailed in labelling life-forms as either nature or human; and facilitate understandings of emergent linked social-ecological systems (e.g. Scholes *et al.* 2013; see Chapter 8).

5.6 Conclusions: fulfilling different needs, producing many assets

The production activities on allotments discussed above have been found to affect the human, social, cultural and natural forms of capital assets and capacities depicted in Figure 5.1. The presentation of these in distinct categories has been problematized above, with discussion of the blurring of boundaries between the different domains of assets. Nevertheless, distinct dimensions were defined and findings on these were presented in this chapter. The meeting of basic human needs for food supplies is not of such prime importance for all present day tenants in Plymouth as historically (in the 1800s and during WW1 and WW2), similar to discussions on post-productivist and multifunctional agriculture (Wilson 2007). The potential for plant medicine is greatly under-utilised, although there is likely to be enhanced micro-nutrient content of food due to reduced temporal/spatial distance between production and consumption. Nevertheless, despite the wide availability of alternative sources of food, the desire for tasty (organoleptic) produce is a co-determining factor in motivation for plot cultivation, alongside the opportunities for exercise, creative

expression, stress-reduction and learning. For some, but not all tenants, the family and social opportunities are also contingent factors for allotment tenancies. These impacts are summarised and compared to AFNs and globalised food networks ('GFNs') in Table 5.

Table 5.2 Summary of impacts of allotment activities in Plymouth on human, social and natural assets *(Source: author)*

Production activities	**Allotments**		**AFNs**		**GFNS**
	Observed current	***Potential future***	***Community gardens and CSAs (current)***	***Farmers markets (current)***	
Human health: food security, nutrition, plant medicine,	Increased fruit and veg intake for tenants' households. Quality food. Very little plant medicine known or used.	Could provide resource for survival diets. A major contributor to individual and family health.	Variable levels of food for participants. Very little plant medicine known or used.	'Quality food.' Some manufactured proprietary products limited by regulations.	International range of 'fresh' produce but emphasis on processed and long shelf life. Functional foods. Pharmaceuticals.
Wellbeing: physiological, emotional and psychological	Exercise, variable over the year. Sense of purpose, autonomy, personal projects, Creative expression. Restorative natural setting.	Fulfil recommended requirements. Reduce levels of prescriptions, medical care.	Variable over the year. As for allotments.	Shopping, walk, drive or public transport to markets.	Shopping, walk, drive or public transport to supermarkets. 'Shopping experience'.
Social: family, leisure, community	'Quality time.' Inclusion. Reduced isolation. Sense of community.	Reduced requirement on social services.	As for allotments.	'Quality' shopping experience.	Mostly chance encounters.
Culture: Learning	Self-expression. Skills.		Learning from professionals.	Talking to producers.	Expression of status.
Nature	Variable. Attachment to place.	Biodiverse habitats.	Variable.	Support small-scale agro-ecological.	Monocultures, transport infrastructures.

In summary, the impacts presented for allotments (Table 5.2) represent the quality turn described for AFNs (Ilbery and Kneafsey 2000), yet they are not monetized. Thus any 'quality turn' is not necessarily for 'the privileged', nor does it necessarily entrench inequalities in nutritional intakes. The foods produced exemplify 'terroire' in terms of attachment to place whereby there is an ongoing relationship between people and natures (Bhatti and Church 2001, Brook 2003, Castree 2005). They do represent a privileging of the local, but not as 'defensive', but more rather as a positive relationship with place. Allotment (or AFN or domestic) food gardening provides opportunities for overcoming these binaries, or bridging the metabolic rift that exists in urban settings where the majority are largely separated from nature (McClintock 2010). The next chapters explore these issues further through the relations (Chapter 6), and the politics (Chapter 7) that are involved.

6. Non-monetised relations on Plymouth allotments: diverse economies, different ethics

6.1 Introduction

This chapter addresses the second objective of this research, to determine the social relations involved in Plymouth allotment praxis, or the 'interactions' included in Ostrom's (2008) political ecology framework (Figure 2.3). Human relations are explored through concepts of heterodox and diverse or 'care' economies (Dowler 2008, Gibson-Graham 2008) and through perspectives of regional development (Marsden and Sonnino 2009). These both aim to define the extent of activities and relations, or communities of practice, which lie outside the 'monetized tip of the human economy iceberg'.[27]

Gibson-Graham (2008) defines economies as consisting of market, 'alternative market' and 'nonmarket' relations. Their framework is therefore suited to investigation of the largely non-monetised relations on present-day allotments and enables consideration of the historically-drawn continuum between smallholding and allotments (Crouch and Ward 1997). The human relations on Plymouth allotments are presented below through the three main forms of relations that Gibson-Graham (*ibid.*) defines, of labour, transactions, and organizational forms. Non-monetized relations are discussed in anthropological

[27] See http://www.communityeconomies.org/Home/Key-Ideas l.a.290513

literature as 'mutual aid' involving trust and reciprocity (Kropotkin 1913/1985ed), and the norms, 'rules' and sanctions, or habitus, within allotments and AFNs are investigated in this research through the concept of social capital with strong and weak ties, with bonding and bridging characteristics (Mohan and Mohan 2002, Ferlander 2007). Drawing on diverse economies combined with the capitals/assets model then enables discussion of allotment and AFN relations, in terms of fungibilities between different forms of capital (notably economic and social; see Section 2.6) and livelihoods, regional development and post-productivist agriculture (Bebbington 1999, Wilson 2007, Scoones 2009). Findings from observations, conversations and interviews are triangulated with existing data and the following sections progressively broaden focus out, from individuals to wider economies, as depicted in Figure 6.1.

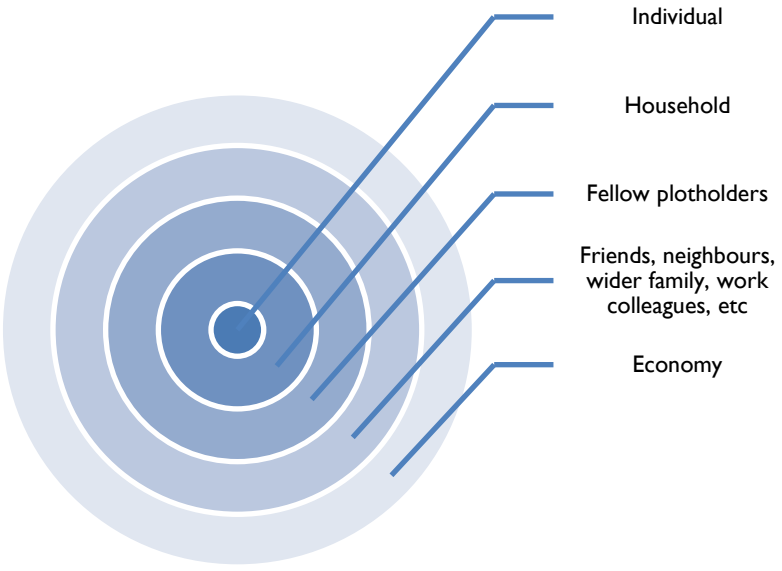


Figure 6.1 Broadening spatial scales of human relations *(Source: author after Macintyre et al. 2002)*

Social relations can be viewed on a scalar and translocal continuum from micro- to macro- level (Macintyre *et al.* 2002; Figure 6.1). This chapter first examines considerations of self-reliance by tenants who commit labour to allotment activities (6.2), and then how these are affected by the gender and household relations involved in Plymouth allotment activities (6.3). At wider spatial scales, relations involve non-monetised transactions between allotment tenants, as well as to wider family and social networks 'beyond the gates' (6.4). These are affected by norms, rules and sanctions (organizational forms or habitus) (6.5) with implications for expanding relations into the monetised economy through earning income from production activities (6.6). The chapter concludes (6.7) by considering how defining relations on Plymouth allotments is enabled by the framework of diverse economies which can broaden understandings of livelihoods and regional development within AFN literature (Marsden and Sonnino 2009, Tregear 2011).

6.2 Multiple motivations and contingent factors in 'giving labour': from individual to social being

Non-monetized gifting and exchange of time/labour covers every sector of human activity and relations and is the subject of diverse literatures (e.g. Kropotkin 1913/1985, 1902/2009, Smart 1993, Kolm 1994; see Section 2.6 above). Committing (unpaid) time to allotment activities on Plymouth allotments is explored in this section in terms of 'intra-individual decisions' around self-

help, food autonomy, and gains in 'capitals'. The purpose of this section is not to quantify the relative importance of the multiple motivations, or the multiple contingent factors, as defined in Defra's work on sustainable behaviours (Defra 2011). It is designed instead to illustrate how the building of autonomy and social capital through allotment activities compares to food provisioning through other means, including charity (e.g. foodbanks) and monetary transactions (income from benefits, waged employment or assets), whether through conventional systems or AFNs.

The range of descriptions given by Plymouth plotholders in this research of the reasons for committing time to allotment cultivation for the sake of food production indicates the differential importance given to food self-reliance and thus a desire for (relative) self-help and independence from monetised food relations:

> "It gives me such a kick that I could supply a lot of my food needs from my own efforts and I wouldn't starve. Any time of year, there's always something to eat." (F07)
>
> "I'm just practising for if food does get scarce. It's just play really at the moment, and continual learning, no two seasons are the same … I don't care how much food I get to eat really, it's a bonus. It would be different if there weren't supermarkets all over the place." (F01)
>
> "I love not having to go to the shops for vegetables, it's such a freedom. I don't have to think about how it's been produced or how far it's travelled, let alone what to buy." (M03)
>
> "It's great to know that I can always find something to eat without having to worry about money" (F11)

As the above statements indicate, for some tenants there is the sense that, given the widespread availability and affordability of food, the level of food

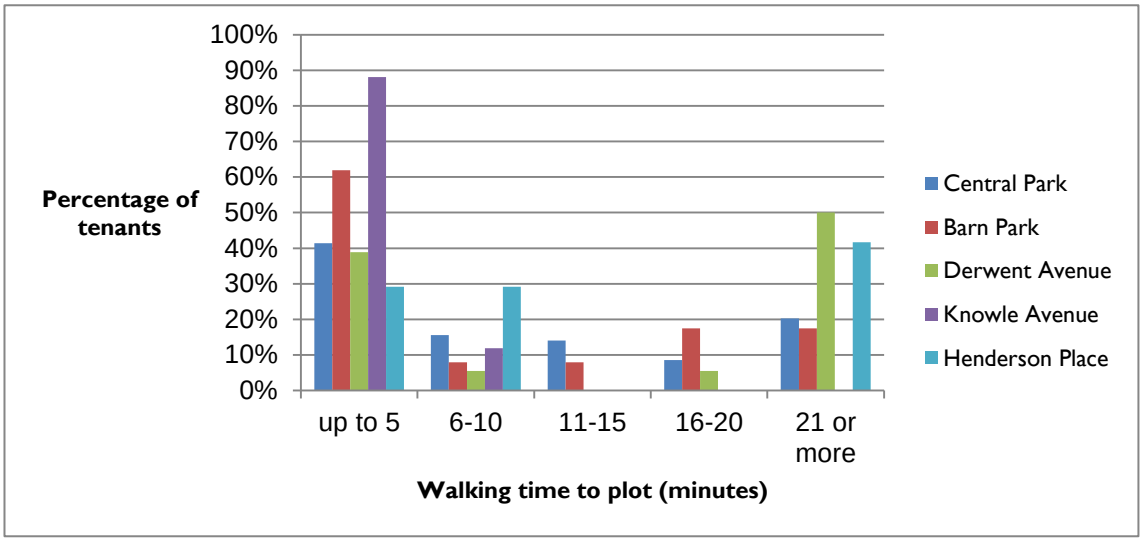
provisioning from allotment cultivation is not particularly important, yet it provides a potential for greater food autonomy if needed in the future. This idea of an 'insurance policy' for potential future food needs was found to be a key factor in dacha cultivation in Russia by Clarke *et al.* (2000). Yet for other tenants, the availability of food is of greater importance in the present day for relieving strains on household budgets. These findings support those from research on community gardens and allotments, that individuals have different reasons for giving time to food production, in the UK and elsewhere, and historically as well as in the present day (Burchardt 1997, Armstrong 2000, Clayton 2007, LV 2009). This research aimed to identify the strength of these combined motivations through detailing the actual levels of time spent on allotments in relation to constraining time commitments.

The levels of time committed vary significantly over the seasons and between plotholders, from less than an hour a week for some during the winter to nearly the equivalent of a full-time job, or over 30 hours a week in the summer for others. The variance in levels of time spent on allotments (whether on production or other activities) represents the extent and strength of commitment; whether out of ('interested') building of multidimensional capitals, including individual self-reliance, or for ('disinterested') wider social or environmental reasons. Attitudes of Plymouth tenants give further insight into their valuations of time:

> "It's silly spending so much time really, and I could buy food much more cheaply especially if I charged myself for the labour! On the other hand I just love it there ...." (F21)
>
> "I probably spent more money on seeds and plants than I got back in food. But I don't care really. It's a learning curve and a challenge." (F24)
>
> "I've got plenty of time on my hands ... I might as well be doing this." (M03)
>
> "I do enjoy having veg and stuff to give to friends ... people seem to love the stuff, 'tasted great' and all of that ..." (F04)

Estimates of time needed for allotment cultivation vary, but the comment that "people need to be aware of the massive time commitment they are taking on" (LA1), can be compared with popular literature that downplays the time commitment involved (Leendertz 2006; see Section 7.4). The level of time spent on allotments is co-determined by cultivation techniques used: for example, one tenant suggested she could obtain food with minimal effort, using no-dig techniques and mainly perennial plantings according to permaculture techniques (Holmgren 2007, Whitefield 2011). Other cultivation methods, such as double-digging (digging two-spades' depth) require higher levels of effort, and were observed more frequently amongst older tenants. Proximity of residence was also a factor in time spent on allotments. Whilst the majority of Plymouth tenants live within a ten-minute walk of their allotment site, a significant minority live further away, as depicted in Figure 6.2.

(a) Walking time to Knowle Avenue site for tenants *(Source: PCC/author. Digimap)*
No tenant on this site has more than a ten minute walking time to their plot



(b) Comparative walking times for tenants of five sites *(Source: PCC database)*

Figure 6.2. Walking times to Plymouth allotment sites[1] *(Source: PCC database)*
1. *Generated from Google maps*

Figure 6.2 shows that the majority of tenants live within five minutes' walk of their sites. The significant proportion of those who live further away (apart from Knowle Avenue, which was a newly-opened site in 2012, where all live within 15 minutes' walk), can be explained either by attachment to a plot though having moved to a different area of the city, or not wanting to wait until a plot became available on a nearer site. Greater distance is a co-determinant with other time availability factors, and even a five minute walk is perceived to be a reason why home gardening would be preferable for some tenants:

> "When I had a garden I could just open the back door in the morning and go out and collect slugs or check on what needs watering. It's such a big difference from locking up the house, getting my tools together and going down the road." (F21)

However, this desire for immediate proximity may not be such a big factor for tenants who may pass by their site on routine car journeys, or who are retired, as suggested by Box 6.1.

Box 6.1: Spending and passing time

M07 is a retired plotholder who lives a bus-ride away from the site. He takes the bus journey of quarter of an hour each way most days, apart from extremely cold or wet days, and spends four or five hours on his allotment but much of this may be spent reading the paper and sharing cups of tea with other (mostly) retired plotholders. It fits in nicely with taking his grandson to the golf course or visiting the new sports centre, both on the other side of the park. On some days he will take a bus first into town to do some shopping and then go from there directly on to the allotment, or the other way round depending on the weather. His plot is well cultivated and productive, according to traditional cultivation techniques. He has a greenhouse for starting crops off, against which a grapevine grows successfully and produces bunches of grapes in late summer which he grazes on, takes home for his family and gives to other plotholders. He has spent of his working life in the merchant navy, and his attitude is relaxed. He jokes about two-legged animals taking crops (see 6.5 below), but keeps clear of any politics on the site. He has no interest in allotment association activities or events that take place at the hut, and sees no need to join in.

As Box 6.1 above illustrates, retired plotholders have flexibility in synchronising allotment time with other commitments and with weather conditions. Tenants without as many other commitments are not so aware of the length of time spent on the plot and are unable to disaggregate their estimated overall times into the proportions spent in sitting, socialising or gardening:

> "Well, I get here and I might do a bit of digging, then I'll sit down and have a cup of tea and read the paper, then, well, it depends on the weather and the season, and how much there is to do really ... if it's sunny, I'll just hang out..." (M07)

On the other hand, tenants with fixed-hours commitments, especially employment or childcare, have difficulty in fitting in time for the allotment:

> "Well, I liked it well enough, it was great to have all that fresh food, but it just got too much, by the time I'd finished a long day's work, I just wanted to get home and have my tea. If I went by the allotment I'd be in trouble with [xx]. And once you're home you're not wanting to go out again, even when the days are long enough." (M25)

The juggling of commitments described above point to potentially conflicting loyalties. As suggested to new tenants by the Allotment Officer "you realise this means the end of summer holidays" (FN070211) (though see Section 6.4). As the above statements illustrate, the time spent by allotment tenants reflects patterns of co-determinants that include desired outcomes and competing commitments. Tenants in this research did not often attribute the time spent on allotments (whether producing food or 'hanging out') to any one factor.

The complexity of these factors are not conveyed in broader national surveys that showed an increase between 1998 and 2009 from under two per cent to

over 50 per cent of households wanting to grow food for financial reasons (DETR 1998, LV 2009). The importance of food self-reliance would be expected to depend partially on level of household income. However, the variation in socio-economic demographics of Plymouth allotment tenants (Table 4.6 above) as reported in the literature elsewhere (for example, Wiltshire and Azuma 2000), cannot account alone for time spent on allotment cultivation, as perhaps illustrated by the existence of foodbanks (FN280312 ; and see Insley 2011). Nevertheless, the motivation to rent an allotment plot in the face of rising food prices was evidenced in statements above and in observations, conversations and interviews throughout this research (e.g. RL 210811, 050711, 010611). Without attributing causality to any specific (combination of) factor(s), and given the critical realist perspective that 'the future is always open' but that potentials can be indicated (Sayer 2000), the findings support the difference between those who participate in allotments and different AFN activities (e.g. CSAs or foodbanks). The distinction is between a form of self-help and seeking autonomy, as opposed to seeking charity, as seen, and as widely debated in the nineteenth century (Weinbren 2007), at the start of the UK allotment system, and increasingly in discussions on the 'deserving' and 'non-deserving poor' in the context of welfare benefit cuts. Using estimates of the food security gains from a full-size allotment (Horrocks 2011; see Chapter 2), the 'self-help' is potentially equivalent to a ten percent increase in monetary income for those on £10,000 p.a. or less, which includes the 12,000 people aged 16+ in Plymouth who are unemployed but economically active (ONS 2012). It could be suggested that

unless or until rates of employment rise, and given ongoing welfare benefit cuts, there is likely to be continued increase in demand for allotments, as well as for foodbanks (see Chapter 1), as alternative means of food provisioning in place of commodified labour attaining commodified food: as Moran (1990: 6) contended "by its nature, the Allotment Movement is a barometer reflecting conditions in society at large". However, even if demand for allotments increases, there may be no more plots made available, and the commitment, physical wellbeing and skills required mean that not everyone would be able to take up tenancies.

It has been seen in this section and Chapter 5 above, that the distinction between providing for reasons of 'self-interest' and self-reliance, or 'disinterest' (altruism) are blurred within Plymouth allotment praxis, as observed in anthropological literature (e.g. Bornstein 2009). It has been acknowledged historically that increased household food autonomy from allotment cultivation significantly reduces demands on welfare benefits and charity (Way 2008). Thus, the time allocated by tenants can be viewed as the strength of commitment to 'building' both individual (autonomy) and social capital, to the extent of 'pulling out' from the mainstream economy (Castells 2012). These relative strengths of individual commitments to building human and social capital through allotment cultivation are linked closely to their nearest human relations, in the household and family situations of plotholders, explored next.

6.3 Gender and family food relations on allotments

Recent decades have seen increasing numbers of female tenants on Plymouth allotments, as in the rest of the UK (Hope and Ellis 2009). Opportunities for family leisure were explored in Chapter 5 above, and this section explores gender and family relations involved in cultivating an allotment. The sparse recent literature on gender relations in UK allotment praxis suggests that they are places where traditional roles can be escaped for women (Buckingham 2005), compared to post-war characterisations of men escaping domestic situations on the allotment site (Crouch and Ward 1997).

As indicated in Chapter 4, there are increasing numbers of female tenants on allotments in Plymouth, as in the rest of the UK and suggested to be a result of changing wider social settings (Crouch and Ward 1997). The relative proportion of male and female tenants varies across the sites in Plymouth as shown in Table 6.1, which also gives the Index for Multiple Deprivation (IMD) score for their respective locations.

Table 6.1 Male, female and joint tenancies across seven Plymouth allotment sites
(Sources: PCC 2012, P2020 2009)

Site	Male		Female		Joint		Neighbourhood IMD*
	No.	%	*No.*	%	*No.*	*% of total*	
Central Park	61	47	70	53	7	5	20.46
Penlee	35	54	30	46	6	9	51.13
Mays and Frys	35	59	24	41	6	10	70.10
Seymour Road	45	59	31	41	7	9	30.23
Embankment Road	23	50	23	50	4	9	40.83
Rowdens Reservoir	42	53	37	47	5	6	52.09
Southway Drive	42	68	20	32	3	5	48.52

The highest percentage of joint tenancies in this sample (Mays and Frys) being in the neighbourhood of highest IMD could be possibly explained as a result of more predominantly traditional gender roles amongst low-income households (Washbrook 2007). However, the differing joint tenancy figures for Penlee (nine per cent) and Rowdens Reservoir (six per cent) in neighbourhoods of similar IMD indicates the need for further explanations. For example, fairly equal numbers of male and female tenants exist on most of the allotment sites, with the exception of Southway Drive, located at the edge of the city. Houses here have larger gardens, and the lower proportion of female tenants may be due to a preference for gardening in a private rather than public space, which also facilitates a 'multi-tasking' of gardening and household roles. Such preference compares to the frequently-reported motivation of male tenants in seeking an escape from domestic situations (Crouch and Ward 1997) and also provides a contrast to neighbourhoods where females are reported to more often seek a wider social setting through allotment cultivation (Buckingham 2005). Nevertheless, while Table 6.1 above demonstrates that allotment cultivation is not gender-biased in terms of responsibility for the tenancy, the figures give no sense of the actual gender split of the different activities and relations that are involved through the different stages of household food provisioning.

Predominantly, one adult takes responsibility for a plot (Table 6.1 above), and less frequently a couple, or sometimes an extended family (RL070211). Some Plymouth tenants describe 'non-traditional' roles, for example, "My wife's the

boss, I'm just the labourer, I just do what I'm told. Except for the asparagus bed, that's mine" (M26). Others illustrate long-standing gendered divisions of labour, illustrated in Box 6.2.

Box 6.2: (Nearly) traditional gender divisions *(Source: author)*

F07 mainly cultivates the allotment on her own. Working in an emotionally demanding healthcare role, the allotment is a place to rebalance. Although not participating in allotment association event activities, she does enjoy a good 'chin-wag' with a few fellow plotholders especially. Friends from outside the site have plots which are non-adjacent, but they share watering and plants. Her partner works in local industry and he comes in to build sheds, put up greenhouses, and do the digging and clearing at the end and beginning of the seasons. Otherwise, he is more likely to spend his weekends going to football matches, supporting the Plymouth local team. She will listen to the matches on the local radio and so have some idea of his mood when he gets home.

F21 works at the local university and grows crops successfully, having learned from her father who used to grow vegetables, as well as from reading a lot about the subject and going on courses run by a community project on her site. She enjoys both gardening and cooking, and produces enough surpluses of different fruit and vegetables to take home and process into jams and chutneys:

"I enjoy all of it, the growing, the harvesting, the cooking and the freezing. It's a pleasure for me, and knowing I've grown it makes all the difference. And I love cooking meals for other people with the veggies I've grown, I feel really proud."

Her partner is busy with many different projects although retired from formal employment, and enjoys a challenging project, and as described, "He's my JCB". He investigated and sourced scaffolding poles for a fruit cage and built a structure that could last decades.

As described in Box 6.2, female tenants still seek help of male partners. These traditional roles involve male partners tending to take on roles relating to structural 'DIY' aspects and the more intensive physical labour required, for example digging and bringing in loads of manure, on plots otherwise cultivated by females (RL051111). Help for female tenants historically came also from employment of extra labour, especially at harvest time (Burchardt and Cooper 2010). However, only one advertisement for gardening services was seen on one site (*ibid.*), and this practice was only mentioned by one tenant during this research (RL270611), indicating that employing labour is rare in the present day.

This could be explained by the reduction in size of allotment plots, but also by the greatly reduced cost of food compared to the cost of buying in help.

Gender relations are also involved in preparing and cooking the produce, with greater time commitments compared to purchases of prepared or convenience foods. For some, tenants and partners, these activities are viewed as an enjoyable pastime (Box 6.2 above), and it is clear that the pleasure of cooking is enhanced by knowledge of the food provenance. However, others describe how the added time in the kitchen is not welcomed and adds to time pressures: "I haven't usually got the spare time to deal with all the produce. I feel awful, but I do let it go to waste sometimes." (RL270611)

Waste of food is not unique to allotment produce,[28] although it can be contended that the latter is more likely to be returned to soil via composting and so the nutrients retained within the food cycle. There is also at least anecdotal evidence[29] that there may be less waste of home-grown food, and as suggested above, more guilt may be experienced if the food represents efforts of a known individual. These factors combine to support the contention in AFN literature of the benefits of 'reconnecting' producers and consumers in eliciting ethical and environmentally sustainable behaviours (Kneafsey *et al.* 2008, Defra 2011). The sentiments of some tenants expressed above are the same as those

[28] An estimated 7.2 million tonnes of food is thrown out in the UK every year, valued at a total of £12 billion http://england.lovefoodhatewaste.com [l.a. 121212]
[29] http://www.sparkpeople.com/resource/nutrition_articles.asp?id=1275 [l.a. 121212]

reported by McIntyre and Rondeau (2011), where the extra effort and hours involved in preparing meals with fresh produce is not welcomed on top of other time commitments. Even so, others welcome the opportunity, aligning with proponents of AFN activities that highlight the central role of preparing food and feasting in traditional celebrations (Section 5.4, Chapter 8).

Chapter 5 discussed how allotments provide opportunities for family leisure opportunities, and tenants with young children also describe how the different patterns of family relations are reflected in food production:

> "I can't get anything done when x (child) comes along" (F26)
>
> "I get them going on the dandelions, they're great, they love feeding them to the chickens." (F10)

These statements could be explained by the ages of the children in the household involved (RL270611), but also by differences in attitudes. Women historically held allotments in their own right (Burchardt and Cooper 2010), especially during and after wartimes (Poole 2006). The differences to current day practices include that there were likely to be more children given larger family sizes, a greater need to attain food security through allotment cultivation, and a greater sense of children as co-workers compared to present-day attitudes of allotments as family learning and leisure opportunities (F08, F10, F26).

While Bianchi *et al*. (2012: 59) conclude that gender equality tends to diminish among married couples as they transition to parenthood, the discussion above broadens that of Buckingham (2005) who found that allotments are places where people can escape traditional gender roles. The examples above, and the

demographic profiles of Plymouth allotment tenants (Table 4.6) illustrate that gender roles in allotment food provisioning do not always follow conventions (male income-earner and female at home). These findings instead support the multiplicity of combinations of individual preferences; that attitudes towards taking on tasks related to allotment cultivation ranges on a continuum from welcoming to not wanting the opportunities provided. These individual and household variances also lie within wider settings, of employment patterns, technology (freezers, microwaves) and 'convenience' foods (Steel 2008, McIntyre and Rondeau 2011). Nevertheless, gender conventions do also remain, seen in this research to be mostly related to building infrastructures and heavy manual work by men, which are also patterns reflecting wider cultural factors.

6.4 Flows on and beyond the allotment: broadening social capital

Food relations on Plymouth allotments beyond the immediate household or family involve many non-monetized exchanges (Platten 2011), or 'transacting status through food' (Fajans 1988: 144) at widening and (trans)local spatial scales. Gifting between other tenants and wider family or social networks is an oft-told characteristic of allotments in popular literature (e.g. Sexton 2011) and discussed in academic research (e.g. Crouch and Ward 1997, De Silvey 2003, Buckingham 2005, Ellen and Platten 2011). These gifts and exchanges or flows include seeds, plants, harvests and other materials, as well as work ('labour'),

skills and knowledge. This section investigates the relations involved in these transactions, between individuals on allotment sites and 'beyond the gates' to wider social networks. It considers the extent and dynamics of flows that represent the building of social and cultural capital, with characteristics of 'strong' and 'weak' ties and of bonding or bridging (Granovetter 1985, Bourdieu 1986, Ferlander 2007; see also Section 2.6).

Relations between tenants on Plymouth allotments are often strong between those with nearby plots, but may also be strong through pre-existing relations outside the site (see Box 6.2 above), whether drinking partners, work colleagues, friends or neighbours (RL270611). Similarly, those who visit their site during workdays (retired or unemployed) may have closer companionship with each other than with those who visit at weekends:

> "I never see him (plot neighbour) on the site, though funnily enough I sometimes bump into him near my home." (M07)
>
> "Well we're here during the daytime, we never see anyone there [adjacent plot] but we know they exist, because we'll come back after the weekend and see they've been busy." (F14)
>
> "I sometimes wonder if the fairies do all the work. I'm here on a sunny afternoon at the weekend and there's only one or two other people here." (F06)
>
> "I can only get here at weekends, and he's here in the week ... Probably a good thing because we'd never get anything done, we'd be talking all day." (M09)

The above statements further support those discussed above (Section 5.5), that exchanges or spending time with other plotholders does not necessarily feature as a priority for all individuals. However, amongst those who do spend time together on the site, strong ties can develop throughout and over years,

involving relations of both leisure and 'work' (RL051111). The leisure relations are those of conversations and shared tea-breaks (RL160911). The 'work relations' involve time given watering others' plots, or harvesting of crops during holidays (the latter benefits both the plotholder by keeping crops productive and the time-giver through the additional produce), and are discussed in literature (e.g. Crouch and Ward 1997, Hope and Ellis 2009, Platten 2011, Ellen and Platten 2011):

> "We always keep an eye out for x plot when he's away on holiday. It sometimes feels quite a responsibility … but I don't really mind, happy to help out. They do the same for us, it's just a normal part of life here" (M11)
>
> "I just tell x to help herself when I'm away, and when she's going away she always tells me and says harvest what I can." (M06)

Besides these established relations and exchanges, some plotholders (mostly retired or unemployed (RL120312)) also offer their time in strimming a plot for a new tenant or helping to dig it over for the first time:

> "Well, I felt sorry for them, they'd never done any gardening before..." (M15)
> "I might as well help, I've run out of things to do on mine ..." (M27)
> "I like being able to help, it's hard when you're just starting" (M28)

The above statements indicate different reasons for offering help to tenants, but all involve goodwill and surplus time. As well as the time given, new tenants are generally offered knowledge and advice through conversations with established plotholders:

> "I really didn't know where to start, what should I put where, when should I lime, let alone what follows what, there's so many things to think about. It's like having free lessons from a real expert." (F21)
>
> "I just really want to get on and do my own thing, but he does know a lot ... though sometimes I don't want to do what he suggests so it makes

> it awkward really ... I don't want to use pesticides or do all that double-digging, I don't really mind if I don't get such a big crop." (F01)
>
> "I've spent years learning what I know, and a lot of that I learnt from my parents ... the young ones have lost touch with knowing how to grow things ..." (M02)

These statements illustrate different attitudes towards exchanges of knowledge and skills (cultural and human capital), and can be explained by differences in: individual inclinations in cultivation methods and modes of learning; motivations such as (non-)maximising of food production; capacities (for digging); as well as preferred communities of practice. However, gifts and exchanges of material inputs (natural and economic capital) are nearly always welcomed. These include plant material (seedlings, raspberry canes, excess seed potatoes or onion sets), or excess inputs such as manures or plant pots. For example:

> "He's good at growing cabbages and my beans always seem to do well, so we just do what we each do best…" (M28)
>
> "I don't know who left that here, but it was great to come and find a tray of little seedlings at the corner of the plot … it's just like people always say about allotments." (F08)
>
> "Some old boy gave us all those strawberries … that was really kind of them. It's really helped us start to feel like we're getting there." (F27)

The above statements suggest that besides being individual and personal projects, many allotment plots also represent collective efforts, of 'mutual aid' (Kropotkin 1902/2009). Some plotholders also 'gift' significant levels of time to the allotment site as a whole, for example through organising for discounted seeds, or arranging events. Over the period of this research, just three individuals (F11, M27, M10), transformed one site entrance building, planting

raised beds, setting up trading in compost and bean poles, and holding regular monthly prize draws and social events, as illustrated in Figure 6.3.

Figure 6.3 Allotment association relations in Plymouth *(Source: author)*

The outcome, as illustrated in Figure 6.3, has potential benefits for the economic and social capital of all of the tenants on a site. For example, one tenant (M04) buys seeds out of his own pocket and grows a variety of plants that he gives to be sold through the trading hut, resulting in funds for the site (RL100912). Other tenants may organise bulk deliveries of manure, which can involve finding out the level of demand on the site, identifying and contacting a source, arranging a time for a delivery, being there on the day to collect payment, and keeping an eye on how many barrowfuls people take (RL030910).

The time given to site-level activities strengthens relations (network ties) between wider numbers of people than can occur between individuals or small groups of tenants based around specific plots (RL150811). Events such as barbecues and plant swaps also provide an illustration of two-way mutual aid or reciprocity within and beyond allotment sites, when partners and friends bring, for example, cakes baked at home, or jars of jam and chutneys. The relations derived through these events and activities earn money for all on the site, and enable wider (marketised) relations in buying fencing to enhance security, or for saplings to plant around the edges. These examples illustrate further the fungibility between capitals (in this case from economic to social and back to economic), and is related to levels of surplus crops produced by individual tenants.

Giving away surplus produce to networks beyond the allotment site itself is a recognised, if not romanticised, aspect of allotment-holding and frequently 'crops up' in any conversation about allotments (e.g. RL 070911, 120112, 100912). The surpluses given include mainly runner beans, courgettes, broad beans, blackberries, and rhubarb all of which can give an abundance of produce. Less frequently given are those crops that store or preserve well or easily, such as potatoes, onions and parsnips, or alternatively those that are more difficult to cultivate or more highly valued, such as carrots and most soft fruit (e.g. currants). Recipients include neighbours, friends, and work colleagues as well

as clubs and organisations that plotholders are involved with in other areas of their lives:

> "I take all my surplus to the bowling club, and they sell them, they're always trying to raise funds for this and that." (M29)
>
> "It doesn't worry me if I don't use everything, it'll just go back as compost or for the birds." (F01)
>
> "He goes down to his club with bags of stuff to give away, they're waiting for him to turn up!" (M27)
>
> "There's lots of us in the family around here, however much I can produce it'll all get used up." (F16)
>
> "It really inspired me to try and produce bigger crops when [Mx] told me the potatoes I gave him were the best he'd ever tasted." (F23)

As the above statements show, gifting of food beyond the site or immediate household is multi-scalar and translocal, across neighbourhoods and organizations. Beyond networks of known people, tenants also give to charities: on Central Park site, produce is collected twice a week in a box by the entrance to be collected by the local food bank (see Figure 6.4 and Chapter 8).

Figure 6.4 Request for donations of surplus produce for site and charity *(Source author)*

The gifting coordinated at site rather than individual level illustrated in Figure 6.4 developed over the time of this research, with donations requested both for the site itself and for the local food bank (RL230212). Historically, allotments in Plymouth have been related more closely with wider city populations during wartimes: in World War 2, the Women's Institute collected excess vegetables from allotments for servicemen in the area, providing a 'welcome relief' from tinned rations (M01) (see Chapter 4). The above discussion suggests that the extent of gifting can be partly explained by individual attitudes and production levels, size of family who live locally, and levels of association with neighbours and work colleagues. However, it also requires consideration of wider social and economic settings, as seen during wartimes, and perhaps increasingly in the present day with increasing numbers seeking food from foodbanks.

The relations involved in these flows of time, knowledge and materials can be described as building networks and capitals whereby individual, cultural and natural capitals are converted to social capitals (Woolcock 1998, Mohan and Mohan 2002), and also on occasion to economic capital. The frequency and duration of these links, described in the literature as strong and weak ties, with 'density of networks' (Granovetter 1985) are characterised in Figure 6.5.

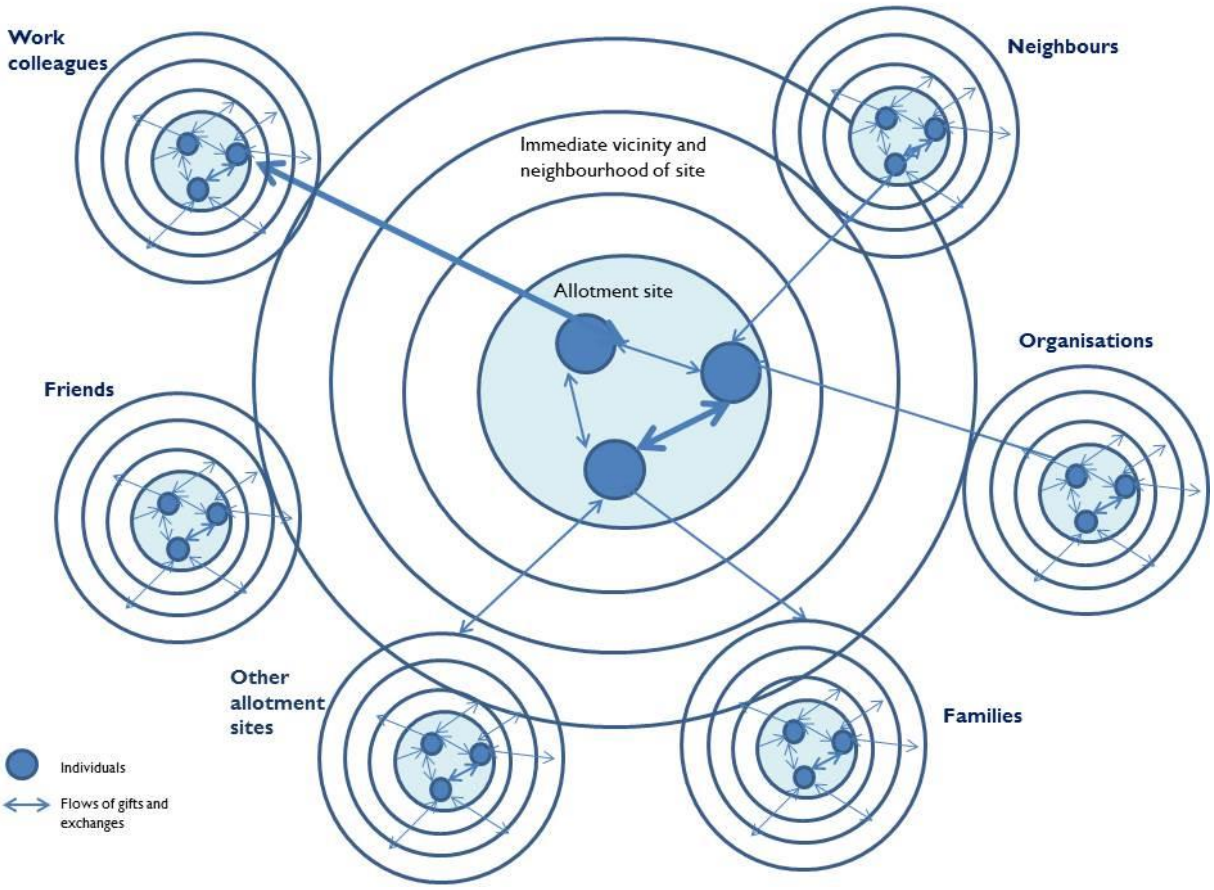


Figure 6.5 Strong and weak ties, dense and thin networks within, to and from Plymouth allotments *(Source: author after Cummins et al. 2007)*

As Figure 6.5 suggests, links exist at different strengths and densities between allotment holders on one site, between sites in the city (e.g. in use of each other's trading huts), and between tenants and their social networks of neighbours, families, friends, work colleagues and associations. The outlying polycentric orbs in Figure 6.5 above denote the similar links involving gifting and non-monetised exchanges between neighbours, colleagues, and associations independently in other settings, as described in literature (Kropotkin 1902/1913,

Smart 1993, Davies *et al.* 2010, Platten 2011). The social capital developed is both bonding (creating stronger communities) and bridging (creating links to other communities) (Ferlander 2007, Mohan and Mohan 2002), mediated through human, economic and natural capitals, as well as through cultural capital of knowledge and skills. (See Chapter 7 for discussion of relations that involve 'higher hierarchical levels, described in the literature as 'linking' social capital.)

The non-monetised relations within allotment practise documented and discussed above provide examples of communities of interest, practice and place as aimed for in urban regeneration programmes targets for social cohesion (e.g. Lawless 2007). The enhancement of status (cultural capital) through giving of food as documented in anthropological literature (Fajans 1988) also represents the building of an everyday culture, or 'habitus', amongst allotment tenants and their networks (Thrift 2000, Pratt 2000).

6.5 Conventions and communities of practice: norms, rules and sanctions on Plymouth allotments

The mainly non-monetized relations amongst the communities of practice on Plymouth allotments (the habitus) described above take place within the context of social norms and values. This section considers findings on the characteristics of these relations with reference to suggestions of the social norms operating

within AFNs compared to conventional food networks (Sage 2003) and research on common property and natural resource management, communities of practice, and diverse economies of care (Wenger 1999, Ostrom 2007, Gibson-Graham 2008, Manner and Gowdy 2010, Dowler *et al*. 2010).

The norms, or ethics and values inherent in the non-monetised flows described above (Sections 6.2-6.4), represent balances of competition and cooperation different to those in monetised food-related praxes. The characteristics of cooperation were described in Sections 6.4 above. However, some plotholders are also highly competitive. For example, some vegetable shows in Plymouth are taken so seriously that allegations were made of sabotage of potentially prize crops (cultural capital) in a competition to produce 'the best' fruit, vegetables and flowers (RL030910). As a result, some tenants are wary of these shows, not wanting to compete due to concerns of reducing levels of cooperation (RL130611). As evidenced through this research, and compared to descriptions in literature (Way 2008), far fewer tenants now participate in shows compared to (peri-)wartime vegetable growing, when greater incentives were offered in an attempt to maximise yields (*ibid*.). In the present day, competitiveness is more usually among plotholders in aspects of tidiness of plot, yields, varieties grown, and over growing techniques. These competitive tendencies are manifested in daily interactions on the sites, through passing comments and extended conversations (RL2010/2011), and can be explained by motivations to achieve 'best practice' (cultural capital), and due to availability of time or levels of skills

(RL271110). Conversely, levels of cooperation were widely evidenced, and both tendencies impact all dimensions of the capitals, assets and capacities of tenants (Figure 5.1 above). Table 6.2 provides illustrative examples of these effects of competition and cooperation, based on the discussions above.

Table 6.2 Potential effects of competition and cooperation between Plymouth allotment tenants *(Source: author)*

Assets	**Competition**		**Cooperation**	
	Positive	***Negative***	***Positive***	***Negative***
Human	Wellbeing from produce gained from good crops	Loss of crops	Food supplies from gifts	Individuals don't maximise crop production
Social	Maximising production activities	Theft, pilfering, vandalism	Pleasurable leisure times	Vulnerable to 'free riders' and one-way exchanges
Cultural	Enhanced status from high yields / best plots Faster learning	Reduced status / Witholding knowledge	Status from gifting plant material Sharing knowledge Learning new cultivation techniques	Unwillingness to experiment with new techniques that are outside prevailing norms
Political	The 'best' gardeners get to talk to politicians at e.g. Plymouth in Bloom awards	Lack of solidarity and lower effectiveness in lobbying	Possible increased influence in joining together to lobby for funding, fencing, etc.	Lowest common denominator of a consensus
Economic	Enhanced yields	Sabotage	Learning. Free produce and material	Lower potential for monetary returns
Natural	'One-up-from-the-Jones's' with better bird feeders etc.	Ultra-tidy, 'monoculture' principle plots	Enhanced biodiversity and soil, e.g. through manure deliveries.	Spread of invasive landraces

As indicated in Table 6.2, cooperation and competition each have potential benefits and drawbacks on all dimensions of capital. However, research suggests the key role of contingent factors of trust and goodwill in determining outcomes, rather than competition or co-operation *per se* (Ostrom 2007, Manner and Gowdy 2010). Levels of trust are suggested to be determined by frequency and longevity of human relations and it is also suggested that if trust is broken, levels of social capital can be depleted, to the point that conflict arises (LeVine 1961, Thomas 1992, Buijs *et al.* 2011). Occurrences of 'free-riding', or pilfering and theft of crops (as well as chickens and ducks) are reported frequently for some, but not all, Plymouth allotment sites. Crops have been taken both by other tenants and by intruders to the site, and many stories were told during this research:

> "There are a lot of long-fingered people about ... they even cut into the netting to get at my strawberries" (M02)
>
> "I went to pick the rest of my apples after the weekend and couldn't believe it, they'd all gone!" (F22)
>
> "My gooseberries all got taken a few weeks ago ... I think I know who it was, the usual suspect ... When my tomatoes all got blight I found myself thinking 'well, at least xxx won't be able to take them. That's awful, so sad, isn't it" (F01)
>
> "I was watching those raspberries ripen; they were there last night and this afternoon I went down to the plot and they'd been taken." (M08)
>
> "It makes me so annoyed. Any time something goes missing, I just think I want to move to a house with a garden and forget all this. It's just changed how I feel about the whole thing. It's like someone's invaded my space. It's trespassing. You know, you know your plants, and something didn't feel right ... now I know, it's because xxx, and perhaps others, was tramping all over it." (F07)
>
> "They're furious, say they know who it was, and saying they're going to trash his shed." (M27)
>
> "Yes, I've heard all the stories, but I don't want to get involved, I just want to do my own thing." (M30)

As the statements above describe, attitudes towards crop thefts are varied, ranging from desire for avoidance or revenge. Attempts to resolve conflicts due to theft and pilfering include 'name and shame' strategies, as analysed in anthropological literature (Thomas 1992) and exemplified by one event that occurred during this research, described (autobiographically) in Box 6.3.

Box 6.3 One (or more?) bad apple(s) (*Source:: author)*

During the 2011 season, I experienced an instance of theft. Having just picked a crop of runner beans (with glut destined for friends, neighbours and colleagues), I heard rustling in the apple tree on the edge of my plot. Going to take a look, I found Mxx from just four plots away from mine, picking the fruit. The exchange then went something like:

> "Hello...?"
> "Oh, my wife asked me to get some apples"
> "But they're my apples"
> "I'm sorry"
> "They're my xxxxx apples"
> "Do you want them back?"
> "Well, you've got them now"

After becoming furious, I sent an email to the Allotment Officer outlining the situation. The response was that if I named the person they would be sent a warning letter before termination of tenancy if it should happen again. Knowing that the person was retired, and not wanting to be responsible for ruining the socialising between 'old boys' on the site, I did not pursue that course of action. Instead, fury rose and subsided over the following weeks, with the growing realization that not only apples but also raspberries, courgettes, beans and peas had been taken. I found myself telling everyone I saw about the incident and through conversations became aware that there were both other 'perpetrators' and 'victims' of theft. My partner drafted a notice for me to put on the board at the entrance to the site (Figure 6.6).

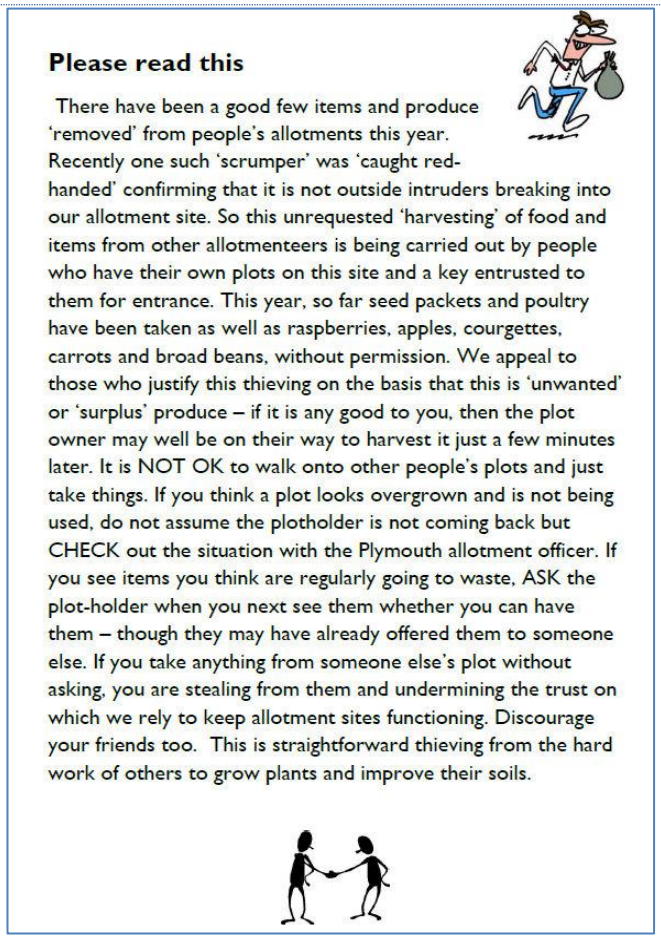


Figure 6.6 Notice about theft on allotment site
(Source: author)

Not wanting to 'ratchet up' the situation, I did not post the notice. However, I did read it out at the Association AGM at the end of the season, which led to an awkward silence, followed by suggestions that these incidents were perpetrated by 'outsiders', and one person saying that he didn't mind if people took food from his plot as there was always more than he could use. I left the meeting unsettled that I had introduced discomfort for people in an otherwise convivial meeting, despite being reassured by the association's secretary that it was a good thing to discuss this problem.

During the 2012 season, in conversations with C, who spent many hours improving the entrance to the site, building an arch, raised beds, and planters, it transpired that others were increasingly fed up with Mxx's behaviour, and although a drinking partner of Mxx, he thought that it would have been best if I had pursued a formal complaint. Near the end of the season, another event of Mxx seen taking pears from someone else's plot, and being challenged, led to a phone call from the allotment officer who was considering possible courses of action that included either a termination notice or a 'strongly-worded' letter. I deferred to others but the experience has changed how I feel about the allotment even two years afterwards, illustrating the idea that social capital can be quickly depleted and also very slow to re-build. It also gave me further impetus to seek a different piece of ground in which to grow food.

Postscript: Mxx received a warning letter from the allotment officer, protested that this was unnecessary, but was subsequently again observed helping himself to crops from others' plots.

In the instance described above (Box 6.3), 'naming and shaming' was not enough to regain levels of trust, and many tenants did not want to become involved in any sense of conflict (RL051111). However, the story illustrates that some were prepared to alienate a friend and supports literature that suggests that personal sacrifice is sometimes needed to solve free-rider problems or resolve conflicts (Thomas 1992). In this case, a sense of awkwardness was created amongst some people on the site. The culture on Plymouth sites where theft or damage occurs is not unusual, indicated by a Google search for 'theft on UK allotments,' which returned 486,000 results (RL120712). However, variable factors are at play in the norms, or habitus, on any one particular site, evidenced by the fact that no theft is reported to occur on some sites (RL210312). Furthermore, in Plymouth, to date, the breakdown of trust and social capital on allotments has not yet led to legal action as elsewhere in the UK.[30]

The traditional form of expressing disapproval for transgressing social norms in the UK was through humiliation, involving public processions known as skimmingtons or a stang.[31] The issue of honesty and moral behaviour was frequently raised in debates in early allotment provision during the eighteenth century, where allotment holding was viewed with suspicion by some landowners as providing an incentive for theft (tenants would steal inputs for

[30] Such stories were documented in the programme *Allotment Wars*, screened on BBC1 on 22 January 2013 [http://www.bbc.co.uk/programmes/b01q9d8b].

[31] Stevenson (1992) suggests that skimmingtons were strongly suppressed, thought to be because the lawmakers were also the rural 'gentry and lords' and amongst the worst transgressors of prevailing social norms through their progressive enclosing of common land.

their own plots) and shirking from paid work (tenants would 'skive off' from their paid employment to their plots) (Burchardt 1997).

This research has found that norms, rules and sanctions on present-day allotments are not always adequate to deal with theft or damage on sites, and instances are very rarely reported to the local authority or the police (RL051111, RL070211). On sites where it does exist the largely prevailing attitude was "you'll never stop it,"[32] and an (unhappy) acceptance of the situation: "I plant two for me, two for the thief, and two for the pests" (M28). The usual strategy for conflict resolution on allotments in the UK remains termination of tenancy by a managing committee or local authority, and is generally included in the terms of tenancy agreements.[33] However, tenancy termination is sometimes effected on first 'transgression', rather than with a prior warning letter as is the case in Plymouth. Other strategies include putting up or growing boundaries around individual plots, as was the practice in the detached gardens of the eighteenth century (Thornes 2011), and still seen in Nottingham (Way 2008) (and as I subsequently attempted with blackberries and roses around the plot).

In the UK and US, whilst some allotment sites and community gardens[34] are credited with reducing levels of crime in the wider neighbourhood (Armstrong

[32] It was later realised that this comment was made by the main 'transgressor' on one site.
[33] Many examples of (similar) tenancy agreements for different cities are available on the internet.
[34] Community gardens in the US are run along similar lines to UK allotment sites, with plots managed by individuals or households, rather than the sharing of cultivation practices.

2000), other community gardens (e.g. South Central Farm, Los Angeles[35]) have dealt with conflict or free-riders through more conventional means, with high-wire fencing around plots. The difference may be due to presence of people on a site and levels of watchfulness, supporting suggestions by Ostrom (1999) that employing guards in common forestry is more important than land ownership structures *per se*.

Aside from any depletion of social capital (trust) or reduced food self-reliance for tenants whose produce is taken, the insecurities caused by theft or vandalism are recognized to undermine the viability of allotment sites (DETR 1998). Solutions may be found through installing CCTV cameras. Another alternative may be a reduction in site sizes but increase in site numbers, so that they are nearer to housing enabling greater watchfulness. However, the larger the scale of food production, the greater the significance of theft or free-rider issues, for example, as reported to be an increasing problem for farms in Spain, especially given economic difficulties.[36] Successful solutions would ideally depend on strengthening values and norms of trust and goodwill that make theft or free-rider behaviours become more widely unacceptable. These values and norms are suggested for AFNs but examples of dealing with theft or free-rider behaviours are not yet reported in literature.

[35] http://la.indymedia.org/archives/archive_by_id.php?id=1176&category_id=3 [l.a. 080413]
[36] Tasty booty in Spain as crisis spawns crop theft, ' 19 June 2012, http://www.guardian.co.uk/world/feedarticle/10295740 [l.a. 130313]

6.6 Converting capitals: moving into the monetary economy with new organizational forms and ethics

Human relations evident in allotment praxis provide a window on non-monetized relations as aimed for in the voluntary sector. However, historically and consistently, some tenants have sought a land-based income or livelihood (e.g. Moselle 1995, Crouch and Ward 1997), and allotments were on a continuum with smallholdings, until the distinction (notably prohibiting sale of produce from allotments) was legislated for in the 1908 Smallholdings and Allotments Act. In the present day, within AFNs, potential for regional employment is suggested for community supported agriculture and production for local markets (Tregear 2011). This section considers the opportunities for income-generation from allotment cultivation through the concepts of convertibility or fungibility of capitals (Bourdieu 1986), and relates these to potentials identified for AFNs.

As considered above, tenants in Plymouth enjoy time on their allotments without any sense of seeking material 'returns'. On the other hand, some also see opportunities to earn income:

> "If I had more space I could take more cuttings, and sell them at a boot fair or something." (M23)
>
> "Well, X Restaurant make a big claim of serving local food from less than 5 miles away, I can't think where else they could get that if it wasn't from the allotments!" (M28) [*said with a wink and a nod of a gesture towards one well-cultivated plot]*

The last statement suggests that some monetary exchanges do still occur, as documented for other places by Crouch and Ward (1997). Although it is widely perceived that legislation does not allow sales of produce (RL210411), the prohibition is on 'growing for surplus', rather than selling 'unexpected' surpluses, and so leaves some room for interpretation. This confusion can be explained as an instance of the difference in legal definition historically between an allotment and an allotment garden: the former were part of the original intent of the Allotment and Smallholdings Act 1907, to provide larger land areas in rural areas and around cities for allotments of up to 3 acres (1.2 ha), as well as urban 'allotment gardens' of up to 0.5 acres (0.2 ha) (DETR 1998). As all allotments today in Plymouth and other UK urban areas are, in legal terms, allotment gardens, with an average plot size down from 2,000 m^2 to 250m^2 (and further, to 110 m^2 or 50 m^2), income-earning potential is limited, even if legislation on sale of produce were to change.

The relevance of exploring income-earning potential in this research is supported by estimates that 33 per cent of people would like to grow some of their own food and 50 per cent would like to live in the countryside (Halfacree 2006, Maxey *et al.* 2011; see Section 2.6). It is also supported by urban unemployment levels (Table 4.1 above). The Campaign for Real Farming (CRF) suggests that 10-20 per cent of the working population are needed in order to grow 'good food for everyone all of the time' (Tudge 2011a). The calculations for Plymouth outlined in Table 6.3 explore these potential demographies.

Table 6.3 Demographic calculations for Plymouth allotments and Campaign for Real Farming (CRF) targets *(Source: author, compiled from PCC 2012 and ONS 2012)*

	Number
Total households (average size 2.29 people)	102,540
Workless households (18-64yrs)	18,000
Total population	256,400
Workforce (16-64yrs)	117,647
Unemployed 16+	12,000
Retired	55,552
Working population needed for higher end CRF target (20% of total)	2,362
Working population needed for lower end CRF target (10% of total)	1,176
Allotment tenants (approx.)	1,300
Waiting for an allotment (approx.)	1,000
Agriculture, fishing, energy and water workforce[1]	60
50% (would like to live in the country)[1]	128,000
33% would like to grow some of their own food[1]	84,480

1. Percentage from national surveys (Taylor 2008)

As Table 6.3 illustrates, the lower-end CRF scenario indicates a figure of 1,176 people in Plymouth working in food production activities, which can be compared to the less than 60 working in agriculture (ONS 2012), and the 1,300 allotment tenants. To realise the CRF scenario, there could be an additional 2,372 available jobs, which equates to over a third of the 6,616 on Jobseekers Allowance or 20 per cent of the 12,000 'economically active' in Plymouth who are unemployed (see Section 6.2 above). Since the financial downturn, there is increased academic and policy focus on the potential of livelihoods through urban agriculture in de-industrialising cities such as Detroit (Choo 2011), and through counter-migration patterns (Halfacree 2006).[37] Although sometimes dismissed as Arcadian representations of 'rurality' (van

[37] See for example, Alvarez-Culdrado and Poschke (2009) for debates on the relative weight of 'push' or 'pull' in migration to cities.

Kloppen 2000, DuPuis and Goodman 2005), research also documents urban populations who seek rurality, whether as a bolt-hole, castle or life-raft or for new land-based livelihoods (Halfacree 2007, 2010). Ebenezer Howard's concept in 1898 of the Pull and Push magnets of country and city, led him to suggest an idealised ratio for urban areas of 32,000 people on a site of 6,000 acres (i.e. a population density of 5.3 people per acre), and to the establishment of Letchworth Garden City (Livesey 2011). This example, together with the outcomes of wartime legislation (e.g. Defence of the Realm Act 1914) that made land in and around cities available for food production when in the national interest, illustrates that land allocation is amenable to political decisions (see Chapter 7).

Literature on post-productivist agriculture, livelihood strategies and rural diversification indicates the potential of portfolio incomes, or pluri-activity (Wilson 2007, van der Ploeg 2008, Barbieri and Mahoney 2009, Marsden and Sonnino 2009). Factors at multiple levels determine demand for (realistically part-)time land-based livelihoods and include the status derived from food production (RL050112), availability and conditions of employment in other sectors and the broader economic and political settings. Nevertheless, as documented in this research, there are some in Plymouth who would welcome the opportunity.

6.7 Conclusion: new social norms lead to support and incentives?

This chapter addressed the second objective of this research, to identify and define the relations involved in activities on Plymouth allotments. Given the findings discussed above, examples of the labour, transactions and organizational forms on Plymouth allotment are compared to those within AFNs and globalised food networks (GFNs) in Table 6.4.

Table 6.4 Indicative examples of food economy relations within Plymouth allotment praxis with reference to globalising and alternative food networks (GFNs and AFNs)
(Source: author, based on Gibson-Graham 2008: 39)

	Transactions	**Labour**	**Organizational form**
	Market	***Wage (paid employment)***	***Capitalist***
Allotments	Rent. Buying inputs. Sales of outputs largely prohibited	Local authority allotment team	Private allotment sites
AFNs	Sales from community gardens	Project workers on community gardens	SMEs
GFNs	Supermarket retailing	Workers	Agribusinesses
	Alternative Market	***Alternative Paid***	***Alternative Capitalist***
Allotments	Fundraising for sites through trading huts and events	Occasional paid labour	Below-market rents paid to local authority
AFNs	Subscriptions within CSAs	Producers and retailers	CSAs and non-profits
GFNs	Co-operatives selling into transnationals	Co-operatives selling into transnationals	CSR teams of transnationals
	Nonmarket	***Unpaid***	***Non-capitalist***
Allotments	Gifting and exchange of produce	Individual/household food production	Largely autonomous Some site associations
AFNs	Food banks	Community food production and preparation	Land-based communities
GFNs	Farmer-to-farmer arrangements	Household food preparation	'Gang labour' characteristics[38]

[38] Although no evidence of malpractice was looked for or came to light during this research, use of gang labour at harvest time is reported to be prevalent throughout Devon and Cornwall (RL201011).

As Table 6.4 depicts, and discussions above explored, relations on Plymouth allotments in the realms of labour, transactions and organizational form are mainly located within nonmarket, unpaid and non-capitalist economies. The potential confusion caused by use of the term AFNs, as suggested by D Goodman (2004) is also shown by the examples used in Table 6.6, of community gardens, CSAs, foodbanks and land-based communities, which each have their own distinct set of economic relations (see Chapter 8 for further discussion).

The largely non-monetized relations and activities on allotments hold potential for convertibility or fungibility into economic capital, or enhancing livelihoods through income-earning potential. Contingent factors for these potentials to be realised include investments in time and skills (human and cultural capital); norms and trust, or an ethics of care (social capital); and access to land and change in legislation (economic and political capital). However, broken trust through theft or damage (depleted social capital) would have more significant implications if monetized relations were also involved, and indicates that the norms, rules and sanctions would require strengthening in some way, whether through increased watchfulness, CCTV cameras or fencing. The relations on Plymouth allotments supports Wiltshire and Geoghegan's (2012) contention of sites as a testing ground for social and ethical norms (or an ethics of care) within organizational forms as claimed for AFNs but not yet explored in literature

Scaling up from allotments to smallholdings, or incorporating functions with economic as well as social capital, as suggested by AFN schemes of community-supported agriculture was viewed from the perspective of 'Eight steps back to the land' (Tudge 2011b), and within patterns of counter-urban migration that include seeking a 'radical rural' (Halfacree 2007). The potential was discussed for allotment praxis to contribute to an 'asset portfolio' for tenants, that includes economic as well as human, social, cultural, natural or political capital, as analysed for post-productivist agriculture and diversification, or portfolio rural and peri-urban livelihoods (Bebbington 1999, Wilson 2007, Scoones 2009). The information presented above that helps to make these potential impacts visible has included calculations drawing on scenarios from the Campaign for Real Farming. However, in the present day, any transition from non-monetized to monetized relations is limited by land availability and legal restrictions on allotment tenancies. The ability to enhance capacities and build higher levels of capitals on allotments through incentives, or social entitlements (Sen 2005), was seen during inter-war years, with increased land availability, public information and education campaigns, and subsidised inputs (Chapter 1 and Crouch and Ward 1997, Poole 2006). In the present day also, existing potentials would need to be enabled by policy decision to make available the necessary assets.

Urban areas in the UK cover just 7% of land area but are home to 80% of the population. Without access to land for (wild-)food and fuel, households without

income are unable to attain self-reliance in food security, and are dependent on welfare benefits or charity. Identifying and levering the assets, support and incentives needed (political capital) to achieve any greater food self-reliance or land-based livelihoods for urban populations, requires exploration of the hierarchies involved in asset flows (materialities) and narratives (imaginaries), and these are discussed next in Chapter 7.

7. Allotment politics in Plymouth: participation, access and narratives

7.1 Introduction

This chapter addresses the third research objective, to identify the politics involved in Plymouth allotments (see Section 2.7). These are analysed on a continuum of scales from local to global, but also incorporate translocal factors (see McFarlane 2012). They are approached through stakeholder mapping and policy analysis, exploring the two-way flows of materialities and imaginaries as characterised in Figure 7.1.

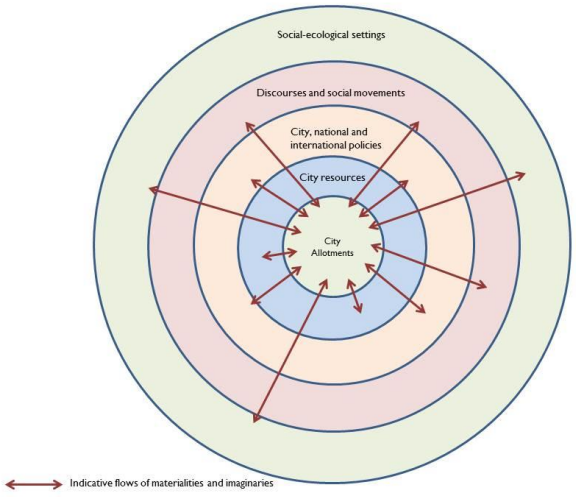


Figure 7.1 Plymouth allotments: from specific particularities to generalised movements
(Source: author)

As Figure 7.1 above suggests, flows of capitals/assets (economic, political, social) that affect access to allotments in Plymouth are discussed below by continuing the scheme of widening spatial scales used in Chapter 6. The ('micro-') processes involved in gaining access to allotments are explored (7.2) in light of

research on participatory governance (e.g. Michels and De Graaf 2010). The importance of allotments within city priorities is then investigated (7.3) with reference to literature on governance (e.g. Becher 2010). The socio-political settings at wider spatial scales, for example, food and agricultural resource allocations (e.g. Tansey and Worsley 1995, Lang and Heasman 2004) are also considered for their impact on Plymouth allotments (7.4). The alliances that affect Plymouth allotment praxes are then reviewed (7.5) for their potential contributions to spatial justice or access to public space (Soja 2008, Milbourne 2012) and for new 'storylines' (7.6) (e.g. Joseph 2002, Wainwright 2010). The chapter concludes (7.7) with a consideration of how the findings also apply to AFNs and could be strengthened through heterodox valuations (Ernstson *et al.* 2008, Barthel *et al.* 2010).

7.2 Accessing and sustaining participation in Plymouth allotments: effort, bureaucracies and legitimacy

This section investigates the processes that enable individuals to participate in Plymouth allotments, through individual access to plots, involvement in site management, and access to city-level allotment governance. It concludes by referring the findings to literature on bureaucracies, legitimacy and governance.

7.2.1 Accessing and maintaining an allotment plot

The rise in waiting lists for allotments in the present day within Plymouth, as elsewhere, is in contrast to post-war decades, but congruent with longer timeframes (Burchardt 2002, Poole 2006, Boyle 2012), as shown in Table 7.1.

Table 7.1 Waiting lists for Plymouth allotments (listed by postcode) *(Source: PCC 2012)*

Neighbourhood	Site name	No of plots May 2012	No of plots October 2012	Waiting List October 2012	Plot-to-list ratio	IMD
Pennycross	Fosters Field	21	24	45	1.9	38.0
Ford	Henderson Place	15	16	16	1.0	50.4
Beacon Park	Hermon Terrace	39	42	24	0.6	38.0
Keyham	Mays and Frys	46	53	4	0.1	51.1
Keyham	Parkside	27	30	24	0.8	51.1
Peverell	Barn Park Road	55	55	62	1.1	20.5
Efford	Brockley Road	62	62	10	0.2	57.7
Efford	Derwent Avenue	12	12	1	0.1	57.7
Peverell	Central Park	119	128	39	0.3	20.5
Lower Compton	Lower Compton	45	41	13	0.3	40.2
Milehouse	Penlee Valley	74	80	61	0.8	52.1
Peverell	Peverell Park Road	52	51	45	0.9	20.5
Efford	Pike Road	21	21	10	0.5	57.7
Milehouse	Rowdens Reservoir	64	72	48	0.7	52.1
Mannamead	Seymour Road	63	70	39	0.6	30.2
Laira	Embankment Road	44	45	72	1.6	40.8
Mutley	Swarthmore	138	145	87	0.6	20.5
Mutley	Ivydale Road	-	2	2	1.0	48.5
Weston Mill	Bridwell Road	20	18	16	0.9	51.7
St Budeaux	Eliot St	13	15	14	0.9	51.7
Honicknowle	Chaucer Way	23	25	17	0.7	57.7
Whitleigh	Kendal Place	25	26	19	0.7	60.2
West Park	West Park Terrace	28	33	21	0.6	57.7
Weston Mill	York Road	-	18	3	0.2	45.1
Estover	Blunts Lane	84	88	51	0.6	40.3
Southway	Southway Drive	50	59	21	0.4	48.5
Southway	Southway Lane	39	41	19	0.5	48.5
Plympton	Ditch Gardens	9	9	35	3.9	40.9
Plympton	Lucas Lane	21	22	41	1.9	30.8
Plympton	Newnham Park	55	60	36	0.6	31.4
Plympton	Stoggy Lane	29	31	47	1.5	31.4
Elburton	Dunstone Lane	20	20	50	2.5	37.6
Hooe	Hooe	35	45	59	1.3	28.6
Oreston	Oreston	19	19	25	1.3	28.6
TOTALS		1367	1478	1076		

As Table 7.1 shows, the ratios of current to waiting tenants, and so the likely length of time before attaining a plot, vary across Plymouth. The highest number of waiting tenants (87) exists for Swarthmore, which is the largest site and also most accessible from the city centre. Embankment Road has the next highest number waiting (72), with one of the highest list-to-plot ratios of any site near the city centre, and has an active community garden co-located on site. No clear relationship exists between popularity of site and its size, but these variances could be explained by the benefits of well-managed, secure sites and active allotment associations, as reported by DETR (1998). However, geographical location also appears to have a role, as the two sites with the lowest list-to-plot ratios are Mays and Fry's (Camels Head), situated near sewage works, and Derwent Avenue (Efford), described by residents as being out of the way: "I wouldn't want to go down there alone" (FN021010). (Although Efford was developed post-war at densities with domestic food production in mind, gardens there were reported to be 'full of old fridges, tip-heaps'.)

These variances support the suggestion of one LA officer (RL050711) that 'people in lower-income areas aren't so likely to have an interest in gardening or food'. This variation is well-researched for foodways in general (Goode 2012, Pilgrim *et al*. 2012), but less so for UK gardeners. The suggestion also contrasts with the original design of the allotment system for people with low income. Explanations can be sought through lower levels of gardening skills, or education, possibly derived from generational and household factors of greater

(spatial/temporal) detachment from a rural or natural environment (see e.g. Hartig *et al.* 2003). However, other potential explanatory factors exist: being less likely to have internet access (and so realise how easy it is to apply for a plot); lower wages and so longer household working hours; and/or lower inclinations to engage with the local authority, as found in urban regeneration research (Forrest 2008, Jarvis *et al.* 2011, Mitchell and Norman 2012).

The length of waiting time cited by new tenants in Plymouth during this research was, in many cases, longer than a year, and sometimes up to three years (the average length of time found in a study of allotment provision amongst 301 local authorities (LV 2009))[39]. One Plymouth tenant, on phoning up after a year on the waiting list, reported that "it sounded like I'd have to wait for someone to die" before a tenancy became available on one particular site (RL310511). Another said that he had been told when he applied that he was 37th on the list for a site. On phoning 14 months later, he had become 34th on the list, but was offered a plot on another site nearby, and was able to start cultivating this within a few months. The chairman of one allotment association recommended that people phone the Parks Department regularly to check their status on the list (FN271112). Varying willingness to do this again provides a possible point of differentiation between demographic segments, given the greater confidence amongst those with higher levels of education to negotiate with the local authority (Michels and De Graaf 2010).

[39] This resulted in the headline 'Forty year wait for allotments' (in Camden, London). http://news.bbc.co.uk/1/hi/england/london/8193100.stm [l.a. 291010].

The present-day popularity of allotments in comparison to post-war years leads to suggestions that they may be a temporary fashion, as lamented on one forum: "Unfortunately we are going through a period when to say 'I have an allotment' is some kind of status symbol."[40] This popularity amongst (socio-economically) diverse households was described by Way (2008) for the inter-war years, as 'allotmentitis', but also documented by Thornes (2011) as an enduring desire amongst diverse urbanising populations who rented 'detached gardens'.

Since the growth in waiting lists, PCC offers new tenants quarter, third, or half size plots (i.e. 50m^2 to 110m^2) rather than the usual 'standard' of 250m^2 (300 sq. yards or 10 poles). These smaller sizes enable access to tenancies for greater numbers, as well as reduced waiting lists, with the number of plots in Plymouth having increased from 1367 to 1478 in the eighteen months between May 2011 and October 2012 (Table 7.1 above), albeit with nearly as many (1,076) still on the waiting list. Even so, the length of waiting lists is belied by the appearance of some plots that look uncultivated, and this is a point of contention:

> "That's been sitting empty like that for over a year. We saw them once this season, they just came and strimmed it. But haven't seen them since ... why does it take so long [to let a plot to new tenants], when there's so many on the waiting list?" (FN071111)

The above statement perhaps indicates lack of knowledge about the process for offering tenancies. When the Allotment Officer (AO) knows a plot is available, he writes to the person at the top of the waiting list for the site, giving four

[40] http://www.allotments-uk.com/forum/pop_printer_friendly.asp?TOPIC_ID=8043 [l.a.151112]

weeks in which to reply. If no response is received, a letter is then sent to the next person on the list (and then the next, etc.), until a positive response is received from an individual, who will visit the site before taking on the tenancy. (If they do not like the offered plot for a valid reason, such as shading from trees, they will be returned to the top of the waiting list until another becomes available.). A source of delay in letting plots is when tenants do not tell the allotment team that they no longer want their plots. In these cases, unless another tenant on the site lets the team know, the situation is only realised on subsequent site visits by the allotment team when they note overgrown or neglected plots. In these instances, a letter will be sent to the tenant giving four weeks' in which to resume cultivation, offer an agreed valid mitigating reason (e.g. family member being ill), voluntarily end the tenancy, or be sent a notice to quit. As seen in Table 7.2, notices to quit (NTQ) for 'non-cultivation' are a frequent reason for tenancies changing.

Table 7.2 Reasons for terminations of tenancies on Plymouth allotments 2010-2011
(Source: PCC 2012)

Reason given	No.	% of total tenancies ended
Illness	36	18
Leaving area	29	14.6
NTQ for non-cultivation	35	17.6
NTQ for non-payment	22	11.1
Too much work	77	38.7
Total	199	100
% Leaving of total plots available	13%	

As Table 7.2 shows, the most frequent reason given for ending tenancies is 'too much work', which could be attributed to either the physical effort involved or 'not enough time'. Combined with notices to quit for non-cultivation (reasons for which are not recorded), it can be stated that 56 per cent of all tenancies ended were due to individuals not giving the time required for allotment cultivation. The reasons for turnover of allotment tenancies in Plymouth are as reported elsewhere (Hope and Ellis 2009) and are not new, as seen by records of notices to quit in minutes of the Allotments and Cemeteries Committee in 1922 (PWDRO 1718/2/2362). Possibly the best explanation as expressed by one tenant is that 'it's not for everyone' (FN051111).

While tenancies ended on around 13 per cent of plots during 2010/2011, nearly the same number of tenancies started. The gradual increase in new tenancies during the 1990s gathering pace in the 2000s is shown in Figure 7.2.

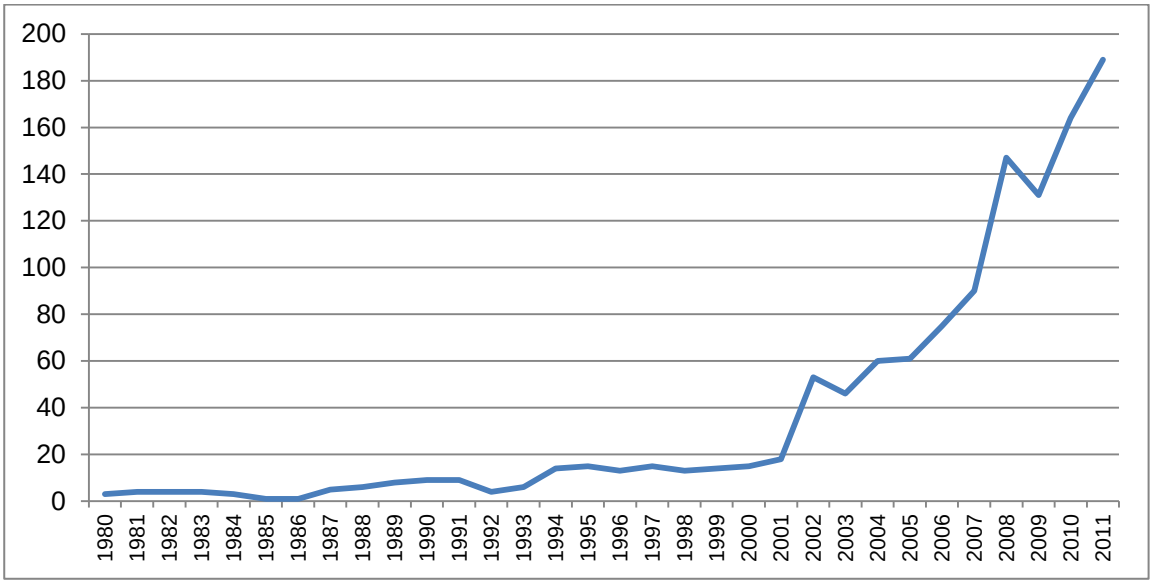


Figure 7.2 Numbers of new tenancies on Plymouth allotments 1978-2011 *(Source PCC 2012)*

The data in Figure 7.2 above is given with the proviso that administrative systems have changed over the years, involving migration to successive electronic systems and resultant loss of historical information. However, figures for recent years are more robust (LA1) and show a steep increase from 2008 onwards (with accompanying increased workload for the allotment team). This trend can be explained by the recession and accompanying rise in food prices, and the extent of popular media on growing food, but also, as suggested for increases in AFN activities (see Section 1.2), by people seeking 'good (tasty) food'.

Average length of tenancies is suggested to have decreased in recent years until offers of 'more manageable size plots' were made, with an estimated decrease of people giving up in their first year from 75 per cent to below 50 per cent (LA1). This approach is differentially validated or questioned by observations and comments from (mostly new) tenants during this research:

> "How can you be serious about producing enough food [on a third-sized plot], that's just for dabbling about ... they say allotments are for 'leisure', I want one for food ...." (F21)
> "I don't need any more than that, that's more than enough to keep me busy..." (M10)

However, after two years, the latter tenant sought and was given permission to expand his plot area by clearing brambles on the edge to make room for keeping chickens. The reason for the numbers that give up within their first year is blamed by some older plotholders on false expectations raised by the media:

> "It's all very well Alan Titchmarsh sowing some seeds and getting a lovely crop the next week, but they don't show you the teams of people who've

been weeding and preparing the ground for weeks before. These young people don't realise what it takes." (M28)

The statement above is representative of general perceptions of standards for allotment cultivation as shown in well-tended plots on TV programmes. The prevailing norms for many tenants are for 'a tidy plot' (RL051111), but for others, these represent a lost potential for biodiversity, a tension illustrated by Figure 7.3.

(a) Covered with mypex when food is not being produced

(b) A variety of herbs, comfrey, raspberries and 'weeds' growing on areas not being cultivated for food

Figure 7.3 Contrasting approaches to cultivation on Central Park allotments.
(Source: author)

Figure 7.3(a) indicates the prevailing norms, whilst Figure 7.2(b) illustrates a different gardening style preference (Van den Berg and van Winsum-Westra 2010; see Section 5.5) for greater biodiversity, but which includes Mabey's (2010) 'outlaw plants', or weeds (RL110711). Allotment tenancies include the agreement "to keep the allotment garden clean, free from weeds and well manured and maintained in a good state of cultivation and fertility." In practice, this requirement was observed to be often translated into expectations for keeping the plot 'well-manicured'. The norms for tidiness are maintained on a site by comments from skilled gardeners such as "still trying to catch up then ...?", and echoes findings on perceptions amongst farmers of the need to keep land 'tidy' (Burton 2012).

Such negotiations over legitimacy to retain tenancies are dependent on the hierarchies of individuals on each site, as well as on interpretations by the Allotment Officer (AO) in each local authority. The latter is illustrated by the statement of one AO in South West England that "I put anyone who wants to grow organically onto a separate site" (FN050711).

Discussions above illustrate the complexities of bureaucratic procedures and the importance of ('micro') daily practices, but within which broader goals may be lost (Winter 2002). The interpretations by individuals and by local authority officers confirms the key role of gatekeepers (Becher 2010; see Section 2.7), and in this case, on judgements of a tenant's 'legitimacy'.

7.2.2 Site politics and participation

Productivity and 'tidiness' of cultivation, as considered above, are the benchmarks against which tenants are legitimated by a site hierarchy of 'experts', and it is generally the tenants that maintain their plots to high standards who are involved in site-level activities and associations (RL171112). These processes can be conceptualised as producing and reinforcing the habitus or norms within Plymouth allotment praxis (see also Chapter 6).

Out of the 32 allotment sites in Plymouth, only 13 have allotment associations (Table 4.5 above). The three mainly visited during this research (Southway, Swarthmore, and Central Park), are run by tenants whose own plots are well-cultivated and tidy (RL070211). Whilst site activities were discussed above (Section 6.4) in terms of bonding 'social capital', they are investigated here from the perspective of site management, or linking social capital, described for Central Park Allotment Association in Box 7.1.

Box 7.1 Central Park Allotment Association (CPAA) (source: author)

Central Park Allotment Association (CPAA) was run for several years by a couple who worked at the university, with little more than an AGM to which progressively fewer numbers of people turned up. The couple then emigrated to Australia, and a long-time plotholder offered to take it on. At about the same time the Local Development Framework Area Action Plan (AAP) for Central Park was out for consultation, showing a potential loss of at least 10 individual plots due to a proposed new entrance to the Park. This galvanised members, and two female tenants in effect deposed the chair, who they felt was out of touch, liked the sound of his own voice too much, and had also personally alienated the Allotment Officer for various reasons.[1] They organised a protest against the plans, made banners and tens of site tenants turned out on several Saturdays and Sundays to draw attention to the problem (though received no press coverage). The subsequent iteration of

the AAP dropped the contentious proposal.

Arguably energised by the process, these two tenants applied and were successful in achieving lottery funding for a site hut to use for trading and meetings. They also took on organising a vegetable show two years running, bringing in the city's best-known show judge to present to members at an evening meeting in a local pub on the process of designing and holding a show, and on entering produce to the standard required. This included intricacies of tying onion tops in a certain way etc., which 'opened the eyes' of the twenty or so tenants present to the potential seriousness and complexity of vegetable shows. The following two years, by which time F14 and F28 had resigned from their roles as chair and secretary, the new chair (M21) organised shows, but with less contributing effort by those on the committee (for publicity, etc.), and lower numbers of entries. This was followed by a committee decision that the effort was not a best use of available time especially in light of lack of offers to take on the organizing role. All agreed for less ambitious goals for events in the coming year involving less effort required by members: to organise BBQs at the site hut, 'Open Plot' days where experienced gardeners would show others around, discounts for seeds, organising for bulk manure deliveries and a visit to a local seed company. (I helped with setting up a basic website, which the chair subsequently took on keeping up to date.)

In the following year, two new tenants on the site then became active and transformed the main site entrance through building archways, raised beds for flowers. They set up trading from the hut, organised collection and deliveries of excess produce to a local food bank, and generally turned the hut into a centre for the site communities (see also 6.4 above). AGMs saw increasing numbers of people turning up, from the three different fields that comprise 'CPAA': Barn Park, Peverell Park and Central Park.

1. Nevertheless, he was also the only individual who kept records of numbers of vandalism and theft incidents, citing 53 sheds burnt in 11 years. Since he left the area, no other record of these incidents is being kept (RL 071111).

As Box 7.2 above describes, levels of activities and participation in Plymouth allotment associations experience increasing and decreasing levels of activity, according to the characteristics, motivations and time commitments of participating individuals. Some associations exist largely in name only (e.g. Parkside and Kendal Place), but enable access to discounted seeds, available at 50 per cent off retail price to members (from Kings and Dobies). Only two have websites, whose News and Events pages are depicted in Figure 7.4.

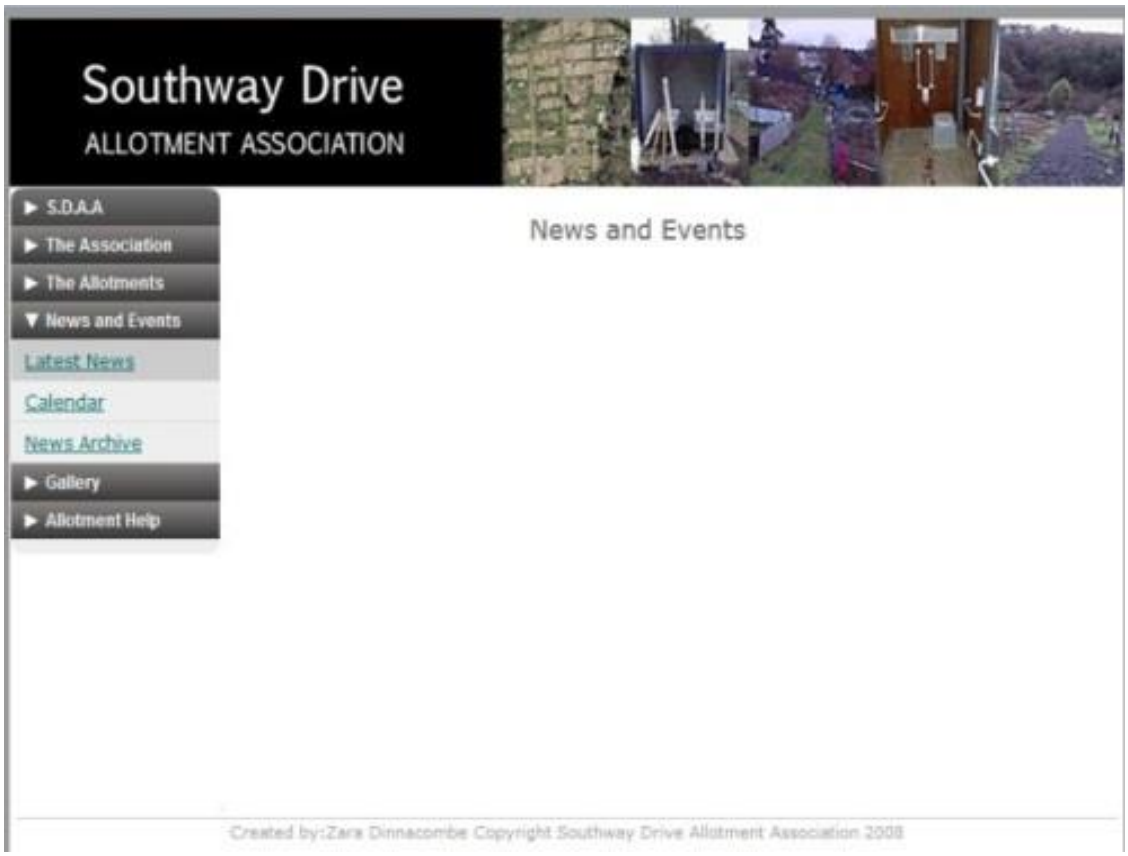


Figure 7.4 Allotment association websites
(a) Central Park [www.cpaa.org.uk] and (b) Southway Drive [www.southwaydriveallotments.co.uk] [l.a. 130313]

As Figure 7.4 shows, (a) a basic website can fulfil its function if an individual has the skills and can commit to its upkeep (cultural, social and human capital), or (b) a more professional-looking site can initially be informative, but not perform its intended function if no-one maintains it. (Southway Drive has an active site association, runs a chicken co-operative, and has regular social events.) A third allotment site did have a website at the start of this research (Rowdens Reservoir), with 'blog-type' posts and reflections on allotment gardening, but was no longer available when searched for at the time of writing. (These examples underline the fragile nature of dependence on electronic information, discussed in Chapter 3.) During this research, websites were often suggested to be a key means of communication and a characteristic of successful AFN activities (FN281011; see Section 8.9). However, use of other social media (Twitter, Facebook), as preferred by the newly active tenants in the CPAA, may provide greater accessibility and opportunities for participation, being less dependent on specialist skills (RL171112).

Amongst the different events that associations organise (Section 6.4), vegetable shows require more time, specialist knowledge and skills compared to others. They involve finding an available qualified judge, hiring a venue, producing a programme and entry forms, organizing supplies of display tables, cloths, plates and display vases, as well as winners' tickets and prizes and possibly getting cups engraved. In some outer areas of the city (e.g. Honicknowle), these vegetable shows remain central to allotment practice, but inner-city shows have suffered

from decreasing participation rates (Box 7.1). This trend could be explained as a result of changing demographics and higher levels of competing time commitments of tenants at these sites, but also possibly higher levels of crop sabotage in inner-city areas (Section 6.5).

The highest requirements in terms of sustained participation in allotment sites are in running the trading huts on nine sites in the city. One association member, who now runs a trading hut almost single-handedly as his former helpers have become more elderly, suggests: "The young ones are all very happy for someone else to do it, they like the discounts and everything, but they won't commit to helping out at all" (M02). An alternative perspective is provided by the comment that some of those who take on management of allotment sites, trading huts or associations can be "little Hitler's (though I know I shouldn't say that)" and by the collapse of another association being credited to the fact that the person who ran it 'got a bit big for their boots' (RL050711).

Although autonomy and individualism are proposed to be common characteristics of plotholders (Crouch and Parker 2003; see Section 5.3 above), tenants who contribute to active allotment associations are building different capitals (Figure 2.1), and especially political and social capital, through strong and weak ties (Prell *et al.* 2009; see Table 2.4). Conversely, individuals who become 'too big for their boots,' find support withdrawn from their position, or diminished political and social capital, with strong and weak ties broken. These

hierarchies reflect findings in research on differential participation by individuals in local communities as being a function of economic, social, cultural and human factors that affect the playing-out of governance structures (e.g. Davies 2002, Becher 2010).

7.2.3 Participating in Plymouth allotment management

Participation in allotment site management involves relations with the local authority. During this research period, some tenants on one site wanted to take on management of their site, mainly to deal with issues of security (fencing) and non-cultivation. However, not enough tenants offered help to enable a committee to be set up (RL070912). Some local authorities devolve management of sites to associations (DETR 1998, Hope and Ellis 2009,) but, historically, initiatives for devolved management have been taken by tenants in Plymouth rather than the local authority, as illustrated for inter-war years in Box 7.2.

Box 7.2 Participation rejected *(Source: author / PWDRO 1718/2 2362)*

The increased demand for allotments post-WW1, as across the country (Crouch and Ward 1997), led to attempts by allotment associations in Plymouth to become active in the management of sites:

- In Plymouth, in 1920, there was an application by the representative of the South West Federation of the National Union of Allotment Holders to sit on the city Allotments and Cemeteries Committee, whose membership consisted of 7 councillor members. This request was turned down, with the proviso that the Committee would consult the Federation 'from time to time as necessary'.
- In April 1921, the Plymouth and District Allotments Association applied to take control of 3 allotment sites, but this also was turned down.
- In December 1921, an application by the Three Towns and District Allotment Holders Society to lease a field at Penlee was turned down.

- An application in 1924 by the Plymouth and District Allotment Association for transfer of control of allotments in the borough was referred to the Allotments sub-committee, with the recorded decision to seek opinions of the Three Towns and St Budeaux associations. The request was subsequently rejected.

There remains no initiative by the local authority to devolve site management in Plymouth, unlike in some other UK cities, notably Coventry where all sites are managed by an association.

The three main allotment associations in the city in the 1920s (Box 7.2) were not able to affect city-level decision-making at that time, as is observed to remain the case in the present day. For example, an independent city-wide grouping of site representatives did exist, but it disintegrated during 2000, with rumours of internal disagreements (RL240211). The current city-level User Forum for allotment tenants is run by PCC Parks Department, and meets annually or biannually in a hut outside the Parks Department offices. However, representatives from only a few (five to seven) of the city's 32 sites attended meetings during the time of this research (Minutes July 2010 to December 2011). The agendas cover day-to-day management of sites and tenancies, such as number of notices issued for non-cultivations and length of waiting lists (see Table 7.2 above). Other items include security of sites, lack of resource for higher levels of maintenance (of paths, etc.), as well as the levels and costs of water use. However, there is little sense of ability to affect resourcing of allotments, aside from registering objections to, e.g. increased rents (RL240210).

Nevertheless, it is at the User Forum meetings that the Parks Department seeks volunteer judges for the annual Plymouth in Bloom competition, which provides

an opportunity to celebrate gardening across the city, whether in allotments, domestic gardens, schools or businesses. Allotment tenant participation in this event is in the role of 'volunteer judge', as described in Box 7.3.

Box 7.3. Hierarchies and champions, judges and teams: changing demographies *(Source: author)*

The annual Plymouth in Bloom (PiB) show has been run for several years by PCC Parks Department as part of a national initiative, and is judged by individuals who are acknowledged experts or champions for gardeners in Plymouth. These volunteer their time once a year, for generally a maximum of two days, to visit and judge displays in the different categories, of schools, community gardens, domestic gardens, businesses and allotments. Many of these judges are also allotment holders and often participants in the Allotment User Forum, are predominantly male and aged 70+ (Figure 7.5(a) below).

(a) Plymouth in Bloom judges 2011

(b) East End Community Allotment team

Figure 7.5 Plymouth allotment experts *(Source: PCC website www.plymouth.gov.uk l.a. 191112)*

The most renowned judge at many shows throughout the South West also runs judge-training courses for the National Vegetable Society. Others expert gardeners from around Plymouth include the ex-Head Gardener of a local National Trust property, Mount Edgecumbe, and a worker at a respected family-owned local garden centre. As seen in Figure 7.4a, the Judges' 'reward' is to attend an evening event at the Royal Cornwall Hotel where they are presented with a small prize for donating their time by the Mayor or portfolio holder of Environmental Services. The event is also attended by all the Parks Department management, the Allotment Officer, and is a celebratory occasion for those involved in gardening in the city, with resulting coverage in the local newspaper. Of the two females involved, one is in her 60s, and the wife of a 'local food champion' (RL200811), active in providing help for school and community gardens as well as organising food events in the city. The other is the lead initiator and gardener at the East End Community Allotment plot, which continually wins many prizes at Plymouth in Bloom (Figure 7.4(b)). However, there is an increasing involvement of (slightly) younger women. During 2012, as part of the initiative termed 'the Co-operative Council' the organising of the PiB show for 2013 was devolved to a new committee with members from 'the community', and comprised of 3 males and 3 females.

As Box 7.3 suggests, participation can be achieved in ways other than those of democratic requirements as with the Allotment User Forum, and through which bonding, bridging and linking ties in city gardening networks are strengthened. Plymouth allotment associations, as historically, remain without the leverage to affect issues such as secure fencing, which may explain present-day low levels of enthusiasm for participation in the User Forum. These may also be explained by lack of current threats to statutory allotments in Plymouth, which can galvanise activity levels (Crouch and Ward 1997). The situation of low overall levels of participation or ability to affect decision-making, supports literature on governance that suggests a focus on process rather than outcomes does not necessarily empower those who get involved (Perrons and Skyers 2003, Chilvers 2009, Prell *et al.* 2009, Raco 2009, Becher 2010). However it conversely also supports research that indicates the potential significance of strengthening civic skills and providing 'network' opportunities (Burns 2000),

despite lack of 'real power'. If local authorities seek to increase citizen participation in their neighbourhoods through the potential suggested by numbers on allotment waiting lists, they may need to resource the recommendations of the DETR report (1998), such as providing good security, enhancing site facilities, and putting in place arrangements for mentoring to help new tenants. As indicated by Becher (2010), successful participatory governance requires intermediaries who have the ability to move between the interests of both tenants and local authority, and it may be that the 'volunteer judges' at Plymouth in Bloom are more adept at these changing roles than other participants in the User Forum. However, many of the issues discussed above can also be traced to the limited resource within the Parks Department.

7.3 Access to city resources: linking capital, decision making and distributed power

This section considers the relative importance of allotments in relation to other strategies of the local authority in the study area, according to governance concepts (e.g. Moe 2005, Prell *et al.* 2009, Sonnino 2009; and see Section 2.7). Local authority allotment strategies, where they exist (as recommended by DETR (1998)), generally contain targets for social inclusion (DCLG 2006; see Section 2.7). However, allotment functioning as sources of food was not included in the DCLG survey (*ibid.*), nor are there any public policy targets by local authorities on food supplies for their populations (Steel 2008).

Plymouth does have a targeted (and achieved) allocation to space for allotments within its Greenspace Strategy (PCC 2009), as do other cities in the south-west and elsewhere in England. Table 7.3 gives a comparison of allotment provision in a selection of UK cities (a sub-sample of those presented in Table 4.1 above, according to similarities identified there).

Table 7.3 Greenspace and allotments in selected cities *(Source: ONS, FoI request by Margaret Campbell* https://www.whatdotheyknow.com/user/margaret_campbell#foi_requests*, updated from local authority websites)*

City	Pop^{n} '000	Pop^{n} density per km^2	Green-space[1] %	Waiting List No.	No of plots	No of sites	Plot to list ratio	Plot per 000 population
Leeds	751,485	1967	71.1	1853	3492	97	0.53	4.6
Sheffield	552,700	3949	71.0	2411	3114	76	0.77	5.6
Brighton	273369	3307	58.4	1664	3040	36	0.55	11.1
Newcastle	280,177	2470	58.3	61	2500	61	0.02	8.9
Exeter	117,773	2504	52.0	1431	560	26	2.56	4.7
Coventry	316,960	3213	44.2	322	2413	44	0.13	7.6
Plymouth	256,000	3214	42.2	1076	1478	32	0.73	5.8
Gloucester	121,688	3001	41.1	306	500	10	0.61	4.1
Leicester	329,839	4497	36.0	197	3154	45	0.06	9.6
Manchester	503,127	4351	35.1	N/A	2229	45	N/A	4.4
Nottingham	305,680	4097	34.6	2100	3300	50	0.64	10.8
Bristol	428,234	3907	34.4	1100	3800	108	0.29	8.9
Birmingham	1,073,000	4007	34.2	950	7112	115	0.13	6.6
Bournemouth	183,491	3974	31.3	64	562	7	0.11	3.1
Southampton	236,882	4752	25.5	2089	1700	23	1.23	7.2
Portsmouth	205,056	5081	23.9	939	1718	8	0.55	8.4
Liverpool	466,415	4170	23.0	467	1859	24	0.25	4

(1) According to planning guidance, this includes all open space, whether publicly or privately owned, and whether with public access or not.

Table 7.3 gives some idea of levels of provision of allotments and waiting lists. However, the data above shows no clear pattern emerging of a relation between level of allotment provision and either waiting list, greenspace availability or population density. Further, as analysed by Ginn (2012) for wartime allotment data, levels of uncertainty over accuracy of waiting list

information are high, and the number of allotments, as seen for Plymouth, changes from year to year. Without national-level reporting on land area allocation to allotments (another recommendation of DETR (1998)), and especially given variations in plot sizes, the true picture of provision is difficult to determine. The proposed development of a land-use database by DCLG may help fill some gaps in information,[41] and in the interim, some cities have information in the public domain (on the internet), for example, Bristol, Birmingham, Coventry and Newcastle. Others, including Plymouth, have shorter papers available under their democratic obligations.

In Plymouth, the accounting body for allotments, the Customers and Communities Overview and Scrutiny Panel, considered allotment provision in 2011 (20 January), based on a report from the Parks Department. The resulting recommendations from the Panel made to Cabinet are shown in Box 7.4.

Box 7.4 Plymouth City Council Scrutiny Panel recommendations on allotments January 2011
(Source: Minutes available at: www.plymouth.gov.uk)

(1) that the panel support all efforts being made to find additional land for allotment plots and recommend all channels are explored including direct discussions with public and private land owners e.g. the National Trust;
(2) that officers establish the funding available in the medium term to contribute towards the allotment service from capital receipts and Section 106 monies;
(3) that rents are reviewed on an annual basis but any rent increase should not be such to disadvantage enterprise and other groups using the allotments (for example schools, community groups, groups with special needs, those on low incomes and also making good use of the neighbourhood profiles);
(4) that a review of the plot sizes and associated costs, is undertaken.

[41] See http://data.gov.uk/dataset/land_use_statistics_generalised_land_use_database [l.a. 300513]

Box 7.4 portrays how the principle of finding new sites is supported within the local authority, with concerns for access to allotments for community groups, schools and those on low incomes, but that there is no suggestion of increased resourcing for this beyond that likely from Section 106 monies.[42] The subsequent response of Cabinet was to recommend that "Parks Services Officers progress development opportunities and seek funding for allotments from developments when they arise" (PCC Cabinet Papers 3 March 2011). Thus the responsibility for budgets and land availability remained the remit of the Parks Department. The available strategy for increasing access to allotments for those on waiting lists is of reducing plot size, also credited with increasing length of tenancies (Section 7.2.2), and which led to 111 new tenancies being available over 2011-2012. As suggested by DETR (1998), the statutory obligation for allotment provision is weakly phrased and open to interpretation. Current legislation states only that

> If the council of any borough, urban district, or parish are of opinion that there is a demand for allotments ... in the borough, urban district, or parish ... the council shall provide a sufficient number of allotments …
>
> *and*
>
> On a representation in writing to the council of any borough, urban district, or parish, by any six registered parliamentary electors … the council shall take such representation into consideration.

[42] Section 106, is the 'planning gain' levered from granting permission to development; the developer contributes either funds or facilities to the council. This is being replaced with the Community Infrastructure Levy (CIL).

Increasing land availability for allotments is just one of the competing tasks within the remit of PCC Parks Department. One site planned for up to 100 plots has been discussed for over seven years and depends on s106 funding being realized (RL050711). Some private landowners offer sites, recognizing allotments to be a potential source of income, but the land is not always suitable, as was the case with one boggy area offered in St Budeaux. The AO advises these on rent levels and practicalities. Yet negotiations with a landowner over one possible site took two years, cost £2,000 in legal fees, but failed to materialise (RL070912). However, as a result of a national strategy to allocate land to allotments, the National Trust opened a site for 50 plots at Saltram House in 2012, although these were all very quickly occupied and a further waiting list formed.[43] This offering of land by private owners is an interesting reversal of the trajectory of urban land being sold for building development, and includes brownfield areas being reclaimed, as for example seen in de-industrialising Detroit, US (Truehaft *et al.* 2009, Choo 2011).[44]

Aside from new private sites, extension of food growing opportunities within 'publicly-owned' greenspace might be envisaged; the potential for Swarthmore in Plymouth is illustrated in Box 7.5.

[43] http://www.thisisplymouth.co.uk/Saltram-House-50-allotment-plans-taking-shape/story-16010189-detail/story.html [l.a. 17.11.12]
[44] See www.detroitagriculture.net. The different legislative situation in the US makes it easier for groups of people to take on cultivation of derelict land, but still gives no security of tenure, as seen in the case of South Central Farm, Los Angeles [http://en.wikipedia.org/wiki/South_Central_Farm l.a. 17.11.12]

Box 7.5 Potential for expansion? *(Source: author)*

Figure 7.6 Potential extent of previous allotments at Swarthmore
(Source: Google Earth)

The satellite image of Swarthmore available from Google Earth clearly shows the previous greater extent of the allotment site. The Swarthmore site was donated by the Quakers for the purpose of allotments. Subsequently incorporated into Central Park, this area housed refugees during WW2. More recently, it was included as a prime location for proposed building development in the Central Park Area Action Plan. This may account for the appearance of under-cultivation of many of the plots despite the high numbers (87) on the waiting list: tenants do not want to give up their patch, but with greater uncertainty over the future of the site, there may be less incentive to invest greater time and effort in its cultivation. As noted by DETR (1998), vandalism and theft combined with uncertainty over a site's future are key factors that lead to a neglected allotment site, and all three are present at Swarthmore.

Whilst Box 7.5 above suggests a potential for expansion of present-day allotment sites (in this case back to their former extent), other interests in the city allocate land to building development, or to meet greenspace targets, the

latter being also the responsibility of Parks Department. Allocating land to allotments depends on its internal priorities as well as on negotiations with other departments in PCC, and the giving over of city 'real-estate' to vegetable growing needs to be justified to other PCC teams. As one LA officer explained:

> "When you talk to our economic development people where money talks in the economies of land putting it to allotment and food growing although it's very good for people and it's a lot of community benefit doesn't tick any of their boxes because you're giving good land over to £15 for 120m^2 whereas if they sold that they'd probably get thousands of pounds for 120m^2. The argument doesn't stack up financially for them." (LA1)

Besides having to justify land use for allotments to colleagues, the statutory status of allotment sites also affects attitudes, as stated by one LA officer, "There are lots of places that I could imagine being given over to growing food [for community projects], but setting up new allotment sites is rather a different situation". In other words, it is suggested that there would be expectations of longevity, and the possibility of unfavourable publicity if the site were to be wanted back, meaning that the land would be unavailable for other uses for the foreseeable future.

Demand for allotments can be compared with that of other competing interests for land in the city. Table 7.4 illustrates these different interests, through preliminary stakeholder analysis for the food sector.

Table 7.4 Preliminary stakeholder analysis for land allocation to food systems in Plymouth *(Source: author)*

Nature of interest	**Indicative stakeholder influence**			**Numbers involved**
	Interest	***Influence***	***Power (annual budget)***	
Allotments	high	low	low	medium
Community gardens	low	low	medium	low
Farmers markets	high	low	medium	medium
Independent retailers	high	medium	medium	medium
Supermarkets	high	high	high	high

Whilst the allocated categorisations of low and medium in Table 7.4 above can be contended, the characterization of influence suggests that land will continue to be allocated to supermarkets rather than allotments (in the absence of other strong policy targets such as seen in wartimes). Within city decision-making, the Parks Department is a 'minor player' compared to other departments such as Economic Development, which can lever higher revenues through planning permissions. The multidimensional capitals produced on allotments (see Chapters 5 and 6) are mostly non-monetized with the effect that allotment interests are not often represented in city policymaking and target-setting, although they may have 'multiplier' effects for Plymouth populations.

This research suggests that allotment praxis could contribute towards most of the Strategic Objectives (SO) set out in the Core Strategy for Plymouth (PCC 2007; see Appendix 19), notably, enhancing biodiversity (SO1: Strategic Role), and provision for people to meet and interact (S03: Delivering Sustainable

Linked Communities). However, the current Core Strategy does not include allotments or any form of local food growing in its concept of Sustainable Linked Communities, as Figure 7.7 illustrates.

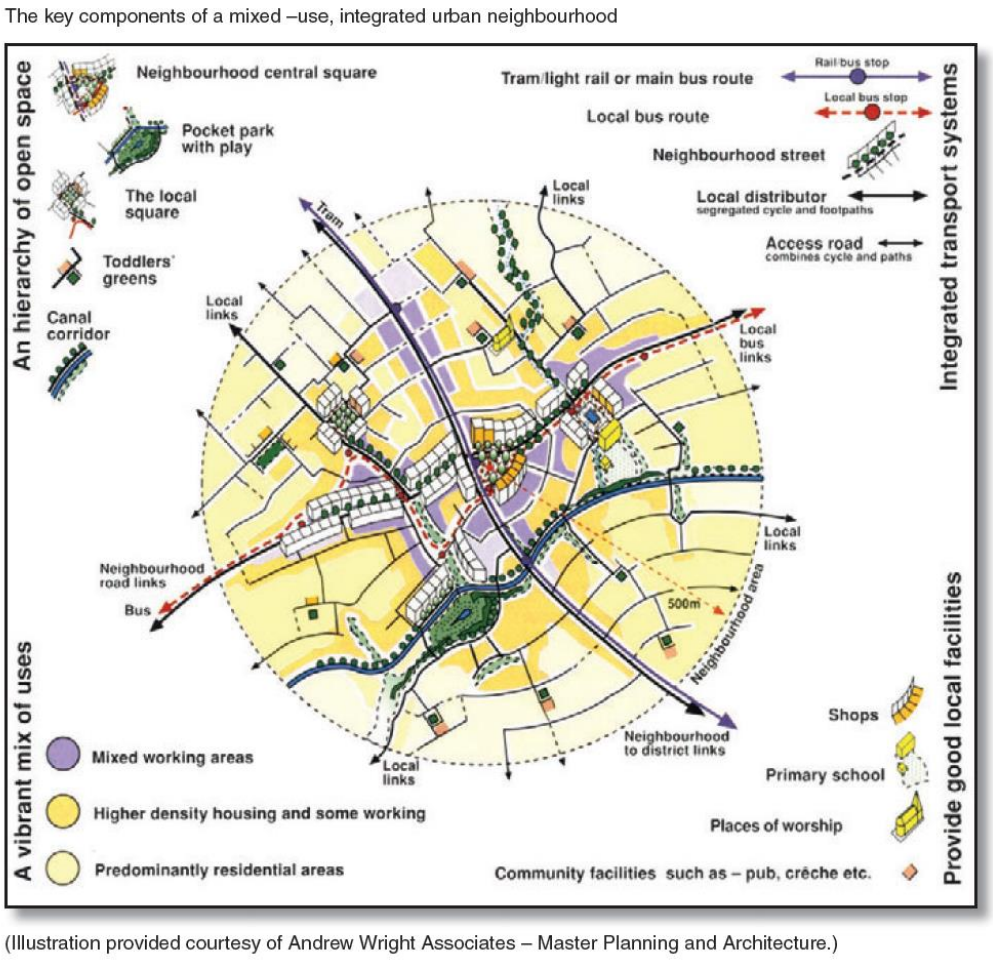


Figure 7.7 Key components of a mixed-use, integrated urban neighbourhood
(Source: Plymouth City Council Core Strategy 2007:21 used with permission of Andrew Wright Associates)

The Plymouth Core Strategy (the source of Figure 7.7 above) was developed over five years ago, since which time 'local food', framed as contributing to resilience and sustainability for urban populations, has risen up agendas (see Chapter 8). As a result, recognition of allotments and other food-growing

spaces could be included in the new 'Plymouth Plan' being developed. However, the limited ability of the Parks Department to acquire land for more allotments is to some extent accompanied by a sense that the current waiting lists could be a 'blip' in an otherwise long-term decline (FN050711). The national government's response to DETR (1998) contended that allotment provision is already well-subsidised compared to other 'just as worthwhile' leisure activities, and there is also a perception that sites restrict accessibility to greenspace for wider numbers of the city population (FN210312).

The narrative that allotments are available to fewer numbers of the population compared to other leisure facilities can be questioned, given that families, social networks and neighbourhoods also gain benefit from the pluri-activities of allotment tenants, discussed in Chapter 6. The Plymouth City Council budget book shows the annual allocation of resources to Culture, Sports and Leisure as a whole to be £10.8 million. However, this Department's budget in turn is smaller than other city budget lines (Table 7.5 and see Appendix 18).

Table 7.5 Plymouth city council budgets of selected departments
(Source: PCC 2012)

Department	2012 allocation (£million)
Social Care	27.3
Adult Health and Social Care	72.6
Culture, Sport and Leisure	10.8
Lifelong Learning	12.7
Safer Communities	1.6

As Table 7.5 suggests, resources for allotment provision within Culture, Sport and Leisure are minimal in comparison to other budgets that allotments could potentially help meet targets on (health, social, cultural and natural capitals; see Chapter 5). Resource allocations within the city are mediated by political input from the Cabinet portfolio holder for 'the Environment', a wide-ranging remit that includes greenspaces, as well as street cleaning and waste disposal. Whilst some allotmenteers within Plymouth were heartened after local elections in 2011 to know that the new holder of this portfolio was supportive of gardening (RL110712), the case for resource allocation remains at Cabinet level, competing with Economic Development and other statutory obligations (Table 7.8 above).

During 2010, a new site of approximately one hectare with 39 new allotments was opened in Plymouth. This area of new allotments is compared with land area estimates for other uses as given in Table 7.6.

Table 7.6 Relative land allocations in Plymouth *(Source: PCC 2012, 2009)*

Land allocations	**No of plots equivalent**	**Land area (ha)**
New land brought into allotment cultivation 2010	39	1
Allotment land requirement for waiting list (half plot size 125m^2)	500	12
Current allotment provision (2012)	1478	23
Allotment land requirement for waiting list (full plot size 250m^2)	1000	25
Employment land requirement identified in Core Strategy (PCC 2007)	2480	62
Parks Department managed greenspace	38,000	950
Domestic gardens	70,560	1,764
Plymouth land area of greenspace (except domestic gardens) – 42%	141,120	3,528
Nat Ag Labourer's Union, 0.17 ha per person	160,000	4,000
Plymouth land area	336,000	7,930

As shown in Table 7.6, the additional urban land required to meet demand expressed by the waiting list of 1000 more plots would total 25ha (or 12ha if half size plots). This area compares to the allocations for employment land of 62ha, which could benefit PCC budgets via s106 agreements or the Community Infrastructure Levy (CIL), as well as from higher income in rates or taxes than could be gained from allotment rents. The Parks Department manages 950ha of greenspace, some of which is being planted with some food-bearing trees. However, in a further comparison, the National Agricultural Labourers' Union, supported by parliamentarians Jessie Collings and William Pitt, called for 'three acres and a cow' for each household (Chase 1988, Way 2008, Boyle 2012,). This three acres equates to 0.17ha per person (average household size 7; see Chapter 6), and compares to the 0.12ha per 1,000 of current provision, and represents a decrease in targets for land availability 'at reasonable rent' of 1000% between the 1800s and 2000s. The total land area suggested by these historical campaigns, of 40,000 ha for the Plymouth city population, is less than the total of present-day greenspace and domestic gardens combined (52,950 ha), but such calculations are presented to aid new imaginaries rather than likely near-futures, given current social, economic and political settings. Nevertheless, these explorations make visible past benchmarks and potential trajectories such as those that inspired Letchworth Garden City (see Section 6.6).

Whilst the number of uncultivated plots on Plymouth sites may give the impression that there is more than enough available land for allotments within

the city, if all plots were let and actively cultivated, then the demand for allotment space by the 1000-plus individuals on the waiting list would be more highly visible. The position of PCC is that there are no 'publicly-owned' open spaces within Plymouth managed by the local authority that could be converted to allotment land (Box 7.4), as also documented in the 1920s in reports to the government during WW1 (see Chapter 4). However, the lack of allotment provision can also be explained as arising from competing policy priorities (Raco 2009) and stakeholder interests (Heynen *et al.* 2006, Chilvers 2009). The discussion above supports Raco's (*ibid*) contention that, in reality, city plans often rely too heavily on market investments, and policy priorities in Plymouth, as for other cities, are dependent on the socio-political settings involved at national and international levels.

7.4 Regional, national and international settings: policies and agreements

Tansey and Worsley (1995) contend that food and agriculture policies in general favour corporate interests, and Steel (2008) notes how food interests also generally remain outside the remit of public policy. This section investigates how allotments and AFNs within Plymouth are affected by multilevel and multidimensional political factors, and the implications for their future development.

The national policy context for allotments remains the now dated Thorpe Report (MLNR 1969), and the DETR (1998) investigation. A search of the House of Commons Hansard from 2008 to 2012 returned 1676 results on allotments, which includes debates on the four Early Day Motions since 2010 that had potential implications for Plymouth allotments. For example, EDM 1778 tabled in May 2011:

> "notes that there are currently around 300,000 allotment plots in England but recognises that there is a serious shortage with an estimated 100,000 people on waiting lists; and urges the Government to uphold the Smallholdings and Allotment Act 1908 which requires local authorities in England and Wales to provide sufficient plots for residents."

This EDM only attained 22 signatories, and does not suggest allocation of finance towards local authority budgets. Nevertheless, discussions above (Chapters 5 and 6) indicate that clear synergies exist with some other national policies which do have funding streams, such as obesity and healthy ageing agendas and lifelong learning, as well as carbon emissions and biodiversity (see Chapter 8). Some AFNs in other UK regions are making links with these, for example through commissioned services for education or health (RL060710), but non-monetized allotment activities have no opportunity for this.

The visibility of allotments in national level UK political debates is mainly a result of individuals from across the spectrum. For example, one Conservative MP's blog celebrated the defeat of a Labour administration's plans to sell off half of the allotment land in Bexley for development in 2006. Of the national political parties, unsurprisingly, only the Green Party (in which I have been involved) has

a detailed commitment to allotment provision. Its Manifesto for a Sustainable Society (MfSS) recognises the unique ('non-portable') nature of land as an asset, citing Mark Twain: "They don't make it any more". However, the prospect of national legislation for enhanced resourcing of allotments, as called for in debates and by DETR (1998), appears unlikely to be realised without a national-level change as a result of threats to food security, for example, increasing scarcity of traded food (see Chapters 1 and 8). This low level of political attention and traction contrasts with those historically, where 'the land issue' was central stage, to the point that nation-wide council elections in 1889 were known as the 'Allotment Election' (Way 2008:12). As Crouch and Ward (1997:16) state, "It may have been a political accident that the allotment question brought down a government a century ago, but it was no accident that allotments had become a political issue".

Transnationally, policies affecting allotment praxis in Plymouth are summarised by Lang *et al.* (2009) as having either localising or globalising tendencies. Analyses of the supporting lobbies and resource allocations to large-scale agriculture and supermarket provisioning (Tansey and Worsley 1995, Pretty 1995, Millstone *et al.* 2009, Gilmore *et al.* 2011), lead some (e.g. Hawkes *et al.* 2012) to support the suggestion that local markets could mean more affordable fruits and vegetables because value is not being captured by as many supply chain actors. In the meantime, the exemplars of commercial urban agriculture that exist globally (e.g. Detroit) must be explained through a combination of

multiple historical and geographical contexts, and strong local or regional initiatives, rather than international policy settings (Truehaft *et al*. 2009).

As seen in discussions above, the duty to provide allotments in current UK legislation remains weak and demand continues to exceed supply. However, the routes for new asset allocations to be negotiated outside the formal political process can be explored through evolving alliances and coalitions.

7.5 Challenging representations and changing governmentalities through social movements

The increasing demand for urban allotments is concurrent with increased use of often marginal public spaces for community gardens, with different levels of access rights. For example, Occupy Plymouth set up camp on a patch of land adjacent to the main city shopping centre, Drake Circus, in winter 2011. The group had started to grow vegetables before they were evicted (with subsequent planting of wildflower meadows by the landowner reportedly aided by their digging (RL200712)). Many community gardens are dependent on 'meanwhile'[45] leases, grant-funding and/or ad hoc local authority permissions (FN210313). However, as seen for allotments, these 'experiments' otherwise have very little leverage to access to the necessary resources. Nevertheless, many alliances, coalitions and collaborations, both locally and translocally, aim to

[45] Meanwhile leases are the issuing of 3-20 year leases for land that may be required in the future for another purpose.

increase access to land for populations. Those that could provide support to Plymouth allotments and AFN initiatives are considered in this section (see Section 8.5 for further discussion).

The extent of potential support from organisations for allotments and AFNs in Plymouth is compared with other food interest groups, in terms of membership numbers and budgets of organizations, in Table 7.7 (see also Appendix 4).

Table 7.7 Social groupings relevant to allotments and AFNs *(Source: various/author)*

Group	**Nature of support / Impact/ Relevance to Plymouth**	**Budgets *(most recent available)***	**Membership/ Supporters**
Allotments, AFNs and smallholders			
Individual UK allotment holders	Mutual aid mostly via blogs	personal	300,000
SW Allotment Officer Forum	Information and best practice shared	Expenses paid by LA	14
National Society for Allotments and Leisure Gardeners (NSALG)	Lobby and information, discounts on seeds	£348,596	125,000
Allotment Regeneration Initiative (ARI)	Legacy information from 5-year lottery funded project	£1 million over 5 years	LA allotment officers
National Vegetable Society	Information. Trains vegetable show judges. Magazine.	£154,000	2108
Federation of City Farms & Gardens (FCFG)	Lobby, advice and support to community groups	£1,487,064	500 community gardens (UK)
Campaign for Real Farming	Organises Oxford Real Farming Conference / blogs	Event income	200 conference attendees
Online gardening forums	Information	-	international
Urban Agriculture	Magazine	-	international
GFNs			
NFU	Lobby for member interests. Whitehall and Brussels offices.	£28,000,000	155,000 farmers, 55,000 countryside members
Country Land and Business Association	Lobby for Landowners. Members own or manage over 50% , or 5 million ha., of the rural land in England and Wales	~£3,000,000*	40,000 members

* *Full data not in public domain, but budget estimated from cash in bank and current assets [www.duedil.com la150313]*

In the present day, associations available to Plymouth allotment holders (Table 7.7 above) are non-confrontational, and aim to achieve their aims through negotiation and information, for example the National Society for Allotments and Leisure Gardeners and the National Vegetable Society. Others (e.g. Campaign for Real Farming) can be represented as seeking social-ecological and spatial justice (*cf*. Soja 2008) in terms of access to land (Halfacree 2007), or Rights to the City (RTTC) (Harvey 2003).

National and transnational non-profit organizations (such as Friends of the Earth, Oxfam) also work more broadly with these values of justice in a way that furthers the interests of allotments, through a diversity of different narratives involving food security, health and wellbeing, or ecological sustainability. While some people may view access to land as a distant prospect, as described by one participant in an urban food buyers coop meeting as "I dream of having a place where I could keep a pig and some chickens" (RL170311), others independently group together to afford and access land (for example, in Devon, LandMatters [www.landmatters.org.uk], and the Ecological Land Cooperative [www.ecologicalland.coop]), in patterns of counter-urban migration (Halfacree 2006, 2007), and illustrate variances in outcomes of the interplays between agency and structure (Sewell 1992)

Historically, allotments were viewed as having the potential to 'dampen down' political opposition for resource allocations (of land and income) by keeping tenants (tired after gardening) from the alehouses (see Section 2.4 above). However, the right of access to land was a key component of the narratives of earliest national social movements in the UK which can be traced back through the seminal work of a few notable authors, such as Marion Shoard (1987), Simon Fairlie (2009), Kevin Cahill (2002) and Malcolm Chase (1988). The many organizations that historically sought access to land food-provisioning across the UK include the Diggers, Levellers, Spenceans, Chartists, National Agricultural Labourers Union (NALU), and the Labourer's Friend Society. The Chartists were formed specifically to challenge the system of private land rights, and had concluded that parliamentary reform was needed before land reform could be achieved, as the lawmakers were also the large landowners so would not pass any legislation against their own interests (Chase 1988).

The remit of this research does not include investigation of historical activities in the study area, but meetings of the NALU in Exeter are recorded in local media from the 1820s (Dunbabin 1968), and calls for provision of allotments (of a size that would be viewed as a smallholding in the present day) were aligned to the campaigns of radicals (e.g. Thomas Paine and John Spence), as well as those of the Liberal Party in late eighteenth century elections, with Colling's slogan of 'three acres and a cow' for agricultural labourers (Boyle 2012). More recently, throughout the UK and for many years, groups such as Friends of the

Earth, in less controversial campaigns, have lobbied several local authorities with some success resulting in increased statutory allotment provision.[46] However, no such campaign has existed in Plymouth in recent decades, and the main formal alliances available to allotment holders (e.g. NSALG, FCFG) do not actively pursue a remit of increased provision.

The purpose of the above discussion is to enable the reflection that protests against land-grabs in the UK dating at least back to the twelfth century are now being mirrored in international movements, such as the 'international peasants' movement', Via Campesina (see Chapter 8). Combined with national-level campaigns such as Reclaim the Fields, these organizations highlight aspirations of rights of access to land that could yet have 'ripple' effects on land availability for Plymouth allotment provision. However, as Harvey (2008: 40) suggests, there remains to be seen a coherent opposition to the allocation of land to economic interests and elites. The above analysis supports the insights and information from The Land is Ours' campaign:

> "In Britain, land passed into the hands of a tiny minority of owners and decision-makers centuries ago. The enclosures and the clearances were the culmination of a thousand years of land alienation. The UK has 60 million acres of land – 70% of this is now owned by 0.26% of the population. The English agricultural plot is owned by just 144,000 people or families, and costs the taxpayer about £2.2 billion a year to support. So, whilst just 6,000 or so landowners own about 40 million acres, two thirds of the UK - 60 million people - live in 24 million 'dwellings' on approximately 4.4 million acres (7.7% of the land)." (TLIO [http://groups.yahoo.com/group/TheLandIsOurs/ l.a. 171012])

[46] For example, in Bude: [http://www.foe.co.uk/groups/ bude/376.htm la30/03/12]

This analysis reaches back to before the times of Marx, and provides 'the long view' which Gramsci suggested was needed in order to create new conceptions of the world (Wainwright 2010). A graphic presentation of the data in this analysis provides a further illustration of the extreme inequality in land distribution, in Figure 7.8.

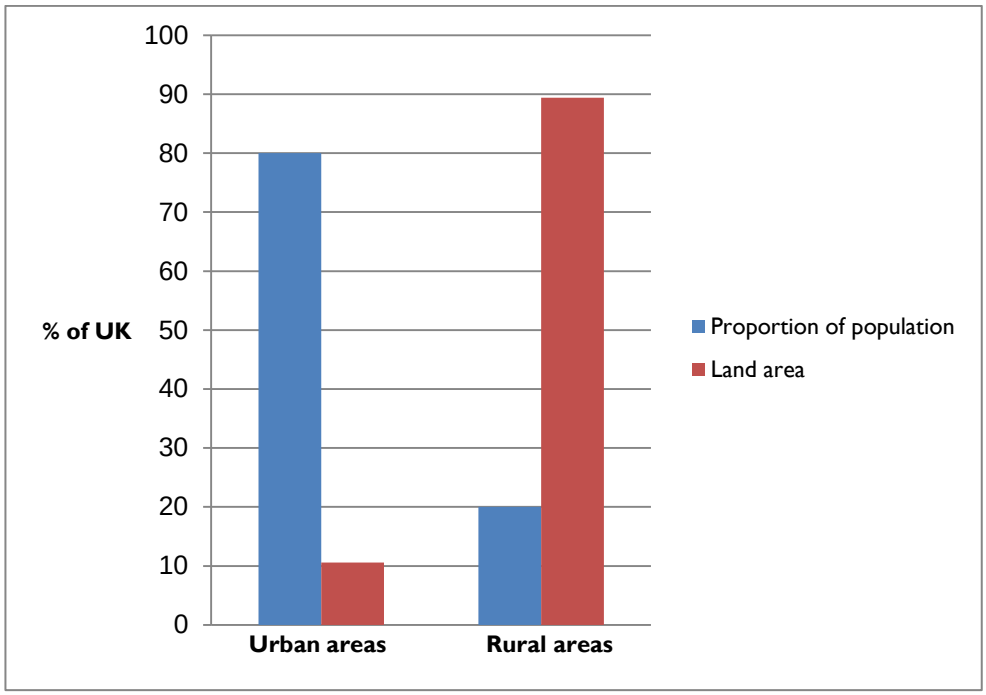


Figure 7.8 Rural and urban population distributions in England (Source: *derived from ONS)*

The data presented in Figure 7.8 supports the suggestion that allocations of city assets (natural, economic, and social capital) result from 'whose voice is heard', or the extent of distributed power (Davies 2002), rather than available land *per se*. The social movements described above lie at the intersection of agency of individuals with the structures of 'states', markets or bureaucracies; these intersections are key sites or 'network nodes' where current policy and

narratives are challenged and new norms are negotiated (Ruggiero and Montagna 2008). As claimed for community garden projects (Seyfang 2006, Pudup 2008, Staeheli 2008), 'eco-citizens' can be created through participation in growing food. However, as investigated above, Plymouth allotments and AFNs are often not yet linked into the groupings and movements described here that could provide support for their activities.

7.6 Liberating rules and storylines: escaping hegemonies with irresistible invitations[47]

As Wainwright (2010) reports, Gramsci graphically suggested that 'the helm of history' needs to be taken in order to steer a course. This research has explored the value of taking the long view, and exploring 'superstructures', or cultures, states and institutions (Joseph 2002), that have affected allotments over time, in order to provide a temporal perspective on their trajectories and commonalities with AFNs. This section evaluates the long-standing conceptual framings, or representations, of allotments. These continually evolve, but retain echoes of earlier storylines, and can be grouped according to function in the food cycle. Table 7.8 gives some attributions for these different discourses.

[47] Use of this phrase here is credited to Andrew Simms, Policy Director of the New Economics Foundation, who stated that he would like to devote the rest of his life to developing an 'irresistible invitation' to new ways of valuing human activities and attaining wellbeing. (FN 291012)

Table 7.8 Examples of narratives applied to allotments *(Source: author)*
Provenance in italics

MSM/GFN narrative	**Rebuttals**
You can't produce much food from allotments. Small-scale is not efficient *(Government Foresight, Private sector)*. No less than 50ha farm is viable *(NFU)*	Examples from different locations show yields from small-scale production up to 15x those of large-scale *(IAASTD 2008)*. In the SPIN system[48], livelihoods are said to be feasible on 1.5 acre (0.6ha) plots *(www.spinfarming.com)*. Viable livelihoods from less than 10 acres (4.1ha) are documented throughout the UK (*Maxey et al. 2011*). Do we want supersized or human-sized, with more jobs for more people *(Campaign for Real Farming)*.
Wasteland improvement *(Nineteenth century enclosure proponents)*	Not wasteland, but a source of leisure, and wild foods, e.g. blackberries and pheasants (*Chase 1988*).
Harking back to the past (*Academic)*. Just a bit of fun *(Local authority, Media)*	Evolution from simplistic chemical uni-dimensional explanations to complex ecological understandings (*Academic*). A reservoir of skills and knowledge that may be required in the future *(Green Party, Transition Towns, Friends of the Earth)*.
You can't save much money' by growing your own fruit and vegetables *(Academic, Media)*	In the face of rising prices, it is becoming more obvious that money can be saved (*Academic. Media. NSALG)*.
'Pile 'em high and sell 'em cheap – with some niche products (*GFN*)	Social and ecological embeddedness is important (*Farmers Markets, Kirwan 2003*). Quality of food through GFNs is harmful to human health and environment *(NGOs)*.
Hard work (*Private sector, Media)*	Depends on viewpoint and cultivation methods (*Permaculture*). A reclaiming of social culture rather than hard work (*Pretty 2002, Slow Food Movement*) (*Academic*). Health-giving exercise (SDC 2007). Cultural celebration (*Cobbett 1812/1920)*.
Subsidy of scarce city real-estate (*Planners and policymakers)*	Benefits are not acknowledged; social capital is built within wider networks and neighbourhoods at minimal cost (*Author)*. GFN advantages have been gained through theft[49] (*The Land is Ours. Commoners)*.
Restricted access to otherwise public open space *(Local authority)*	Co-location of community gardens and open day events on allotments provide demonstration and learning sites for urban food and medicinal plant cultivation (*Author*).

[48] This gives estimates of $24-72,000 income from half an acre (in the USA), equivalent to £6,000 worth of produce from a standard 250m^2 size plot [http://www.spinfarming.com/ l.a. 13jan13]
[49] As per an oft-told 'commoning story': Walking on land one day, a man is asked by the 'landowner' to get off the land as it was his. He asked where he got it from, he said his father. Who gave it to him? His father did. And who gave it to him? He fought for it, "Swell, I'll fight you for it".

As Table 7.8 suggests, a Malthusian tone dominates in narratives over food production in conventional food networks and the mainstream media (MSM), of the need for 'sustainable intensification to feed the world' and scarcity of urban land. This narrative opposes the concept of 'good food for everyone forever' (Tudge 2007) and 'agroecology' as the guiding principle for food production (IAASTD 2008). For demand or retail, the narrative is of supermarket efficiency, opposed to the valuation of reconnecting producers and consumers. For consumption, storylines in the media are of 'cheap' and 'convenient', compared to those of 'slow' and 'celebration' in AFNs. Addressing the opposing concepts of 'hard work' or 'creative culture' is perhaps central to a re-valuing according to 'economies of care': valuing community, nature, and wellbeing, instead of the economics of marginal utility and neoliberalism (Castree 2005; see Chapter 8). The counter-narratives are promoted by some who desire to pro-actively reduce their demands so that others may have a respectively larger share, for example, by not buying foods that are grown in water-scarce regions. Although drawing on cultivation techniques used over long periods of time, rather than a 'hark back to the past', counter-representations are of valuing different knowledges and incorporating complex biological and agro-ecological understandings, rather than a simplified chemical-based approach to outcompeting 'nature'.

For small-scale production, such as on allotments (or within CSAs and producer co-operatives), historical and present-day literature documents a high

productivity potential (IAASTD 2008). In a re-framing, or re-representation, the issue thus becomes one of the cost of, and rewards to, labour. The contention that small-scale labour-intensive production is hard work is rebutted through reference to the culture of food, as celebrated by Cobbett (1830/1912) and in the present day by the Slow Food Movement. As Pretty discusses in *Agri-culture* (2002), and widely documented in anthropological literature (Fajans 1988 and 6.2 above), food is a central part of social life. The 'invitation' is to enjoying passing time in social culture and celebrations, rather than of chores and chains. Liberation from the kitchen (and fields) through convenience foods is a trumpeted achievement of oligopolistic food systems. More recently, however, preparing and eating food has become the focus of a reversing trend, with celebrity chefs in the media, and the scratch[50] cooking seen within AFN activities. There provides an interesting resonance with academic research that is re-visiting Marxist analysis and re-presenting the emphasis on 'work' or paid employment in less restrictive interpretations, as 'activities' and creativity (Ekers and Loftus 2012).

Economic critiques of oligopolistic food systems suggest that they are 'cash efficient but cost inefficient' due to their externalities (Pretty *et al.* 2005a, Tudge 2007). As reviewed above (Section 2.7), complex social realities allow economic analyses to dominate policy context. It is suggested here that a new narrative needs to be created in this domain, and that this is perhaps best told as the

[50] 'Scratch cooking', is the term for cooking from whole unprocessed ingredients, 'from scratch'.

story of 'Economics for a Full World' (Daly 2005), highlighting the fact that capitals are not always convertible or fungible. In contrast to the discussions of conversion between food and money at micro-level of household capacities, this suggests the need for a strong sustainability, or questioning the substitution of economic for natural capital, given that the latter has become the limiting factor (Daly *ibid*.).

7.7 Conclusion: distributed and distributing power and assets, rights and responsibilities

This chapter addressed the third objective of this research, to define the factors involved in the politics of Plymouth allotments. It discussed how gaining and maintaining access is negotiated through interaction with other tenants as well as city administration, and how levels of provision are determined by priorities within the local authority as well as the socio-political contexts that affect these. It supports the existence within allotment praxis of roles of co-ordinator and gatekeeper which affect access, as in Becher's (2010) analysis of participation, as well as Moe's (2005) of the contingent factor of ability to influence agendas. It found that alliances and organizations that support allotment and smallholding praxes have little power or influence compared to that of large-scale agriculture and supermarkets. Further, although wider social movements are constructing new narratives, these are yet to carry any weight in affecting resource allocations.

Provision of allotments in Plymouth, as elsewhere, is viewed by some as a subsidy, but this chapter has suggested that they can be also seen as a source of savings on a number of other budgetary lines (e.g. adult social care / benefits / health). These potential savings are due to their role in maintaining and building reservoirs of human, social, cultural and natural capitals that may be required in the future, as they were in the past for reasons of national food security. However, given budgetary and decision-making silos, support for greater access to urban space requires aligned recognition of these potentials at multiple scales in order to affect policy action and fiscal incentives. As discussed in Chapter 4, AFN groupings such as FoodPlymouth illustrate efforts to re-value the multi-dimensional capital assets involved in diverse and place-based food networks, and increasingly draw on heterodox economic techniques (e.g. SROI, LM2).

Harvey (2008) contended that the right to the city is far too narrowly confined, and dominated by economic forces. Policymaking at local authority level is described in literature through concepts of distributed governance and participation (e.g. Perrons and Skyers 2003) and it is suggested here that resource allocations, where successful, are dependent on strong champions in different socio-economic and political contexts that have ability to set agendas (Moe 2005). Champions for Plymouth allotments include the Allotment Officer and individuals active in site associations, but to date they have not managed to achieve significant extra resourcing for new sites, or for additional security

fencing around existing sites. Conversely, champions in FoodPlymouth have achieved significant levels of resourcing (although, to date, not to the extent of land allocation).

The key differences between the present-day proponents of increased resourcing of allotments and those historically in the UK or elsewhere in the present-day 'peasant agro-ecology' groups such as Via Campesina, lie in the wider economic and political settings. Notably these include welfare systems and/or the potential to earn income. Without these, as clearly elucidated by Boyle (2002), those without assets are left to be always dependent on 'charity'. Harvey (2008: 34) suggests, in relation to access to public space more generally:

> "… a far more insidious and cancerous process of transformation occurred through fiscal disciplining of democratic urban governments, land markets, property speculation and the sorting of land to those uses that generated the highest possible financial rate of return under the land's "highest and best use."

Such discussion and analysis of resource allocations and governance requires recognition of the difference between and access to portable and non-portable assets. It further points to the need to develop new storylines, or issue 'irresistible invitations' to create shared visions of different imaginaries and materialities if it seeks to provide any meaningful insights into narratives on justice, whether on rights and responsibilities, 'deserving' or 'underserving' (rich and poor), or levels of welfare benefits. Not least, it also needs to make visible the non-monetized activities and relations that have impacts on all dimensions of capital through presenting new information.

The narratives and representations related specifically to calls for domestic food provisioning, or urban agriculture, are often portrayed as backward sentimentality for an Arcadian past (Hardy and Ward 1984), but are being challenged by new social movements and concepts of spatial justice (Wekerle 2004, Soja 2008). Allotment and AFN praxes can play a key role in challenging the opposing representations of efficiency and scale, through an opening-up of the concepts of effort involved (work and labour, or play and creativity), and the values being created. In political terms, contingent factors for allotment provision are the power and influence of the different alliances and social groupings. Of interest to this research is 'whose voice is heard', and who makes the decisions. In the present day, many different components of AFNs are getting media coverage, and the synergies of allotments with these different networks are explored further in Chapter 8.

8. Plymouth allotments and alternative food networks

8.1 Introduction

This chapter addresses the fourth research objective: to determine how allotments and AFNs represent linking, learning and diversity within emerging social-ecological food systems in the study area and their potential to contribute towards resilience and sustainability. In the process, the chapter synthesises findings presented in the preceding Chapters 5-7, and further examines the relationship between allotments and 'AFNs'. This research suggests that strong, but simple, framings of multi-dimensional multi-scalar social-ecological systems can help to define and organize understandings of identifiable food networks situated within their wider contexts (8.2). The findings have implications for the contributions of allotments and AFNs to resilience and sustainability for urban populations (8.3), and the links (8.4) and learning (8.5) involved, and which are taken to be defining characteristics for resilient and adapting, evolving systems. The 'initial starting conditions' that affect future food system trajectories towards norms of social-ecological justice are analysed through the capital assets and capacities found to exist. In systems terminology, these then enable: the material function (8.6), in terms of portable and non-portable assets; the psychological function (8.7) through values and place attachment; and the social function (8.8), through cooperation, participation, and narratives. The potential of these materialities and imaginaries within allotments and AFNs to 'scale up and out' from niche to mainstream is then discussed (8.9). The chapter

concludes (8.10) with the contention that food systems can be approached through perspectives of political economy, socio-economic development, and networks/governance (*cf.* Tregear 2011; see Section 1.1), but that the concepts can be organised more clearly through political ecology framings of social-ecological systems (e.g. Armitage *et al.* 2008). Figure 8.1 below presents a combined political ecology and capitals framework (from Figures 2.2 and 2.3) in light of this research.

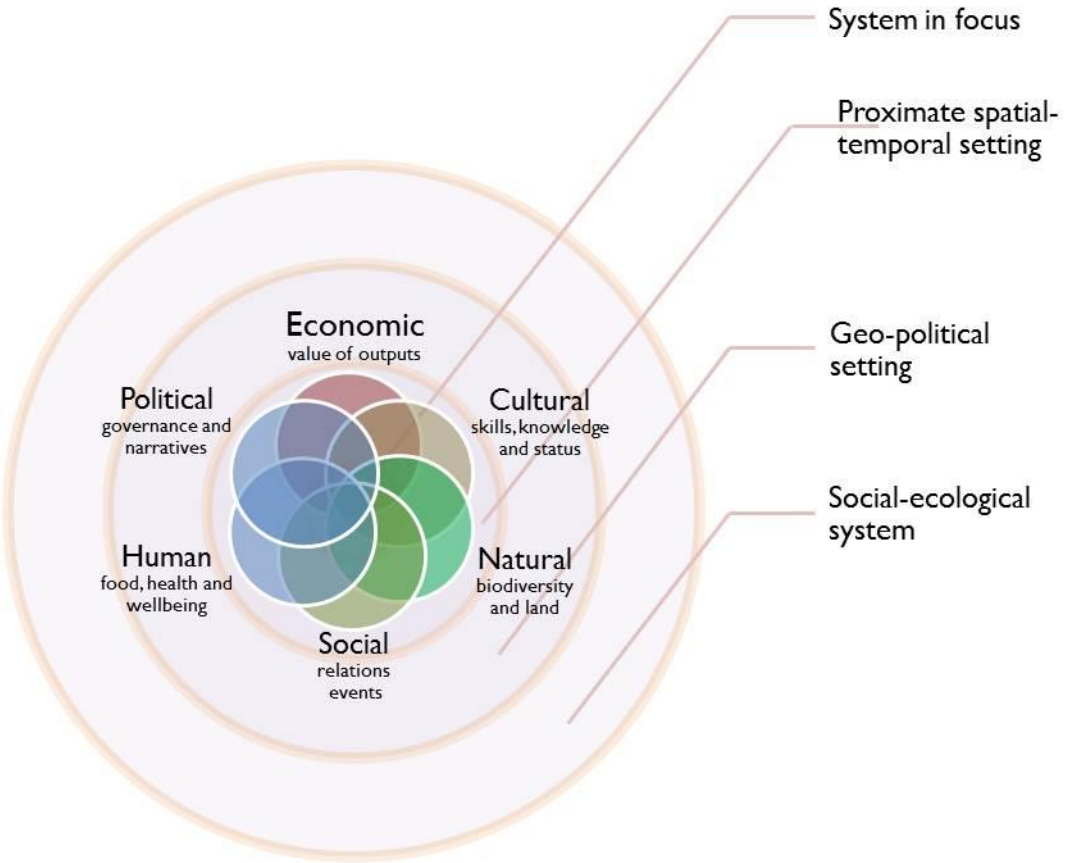


Figure 8.1 Political ecology framework applied in this research
(Source: author after Jasanoff 1987 and Ostrom 2008)

The above framework for analysis (Figure 8.1) includes the concepts of complex nested open systems (see Section 2.8). It aims simply to illustrate multiscalar

/multilevel linked 'holons' (or 'components') within unifying and identifiable multidimensional/multifunctional food systems in time and place but with translocal links beyond the system in focus, and compares with modelling carried out by the UK Foresight project on Land Use Futures (GOS 2011; see Appendix 3). This schema is instead offered as a means of making findings accessible, and in light of the contention that understandings move through cycles of simplicity-complexity-simplicity whereby patterns are elicited that indicate a newly-defined system (Skolimowski 1994). Conversely, this conceptualisation (Figure 8.1) is used in this chapter to enable a deepening of understandings in literature on allotments and AFNs, such as quality turn, livelihoods, metabolic rift, place-based and resilience/sustainability (D Goodman 2004, Scoones 2009, Schneider and McMichael 2010; see Chapters 1 and 2).

8.2 Allotments and AFNs: defining place-based social-ecological food systems

Multidimensional social-ecological systems (SES) are identifiable through distinctive patterns of activities and relations (See Section 2.8). These have been investigated as capital assets on allotments and AFNs in Plymouth in Chapters 5-7. These patterns of 'different food praxes' indicate interactions of agency and structure (Abel *et al.* 2006, Cash *et al.* 2006 and Folke *et al.* 2010) and aligned values as within social movements and illustrated by, for example, a commitment to agro-ecology (Jarosz 2008; see Chapter 7).

The definition of a specific system involves exploring boundaries. Yet, as in other localities, multiple layers co-exist in Plymouth and surrounding region, of (bio)geographical, administrative/political, historical/economic and social-ecological networks (see Veldkamp *et al.* 2011). These act at multiple scales, from street, neighbourhood to city/region and beyond. A comprehensive 'mapping' of all of these links or networks, as a snapshot at place and time, is soon outdated in a fast-changing field and would tend towards the complexity evidenced in the Foresight Report (GOS 2011; see Appendix 3). However, despite continuous change, this research has illustrated the emergence of a coherent system at city-region level in Plymouth, whereby individuals and organizations from allotments and other AFN activities have been brought together within a public umbrella, FoodPlymouth (Section 4.3).

FoodPlymouth represents an emergent system with patterns of links at many scales between otherwise disconnected systems related to food (allotments, community gardens, public sector procurers, restaurants, retailers, wholesalers, food banks, and producers co-operatives), in the domains of government, commercial, and social interests. Figure 8.2 sketches some of the multi-sectoral (or multifunctional) actants involved.

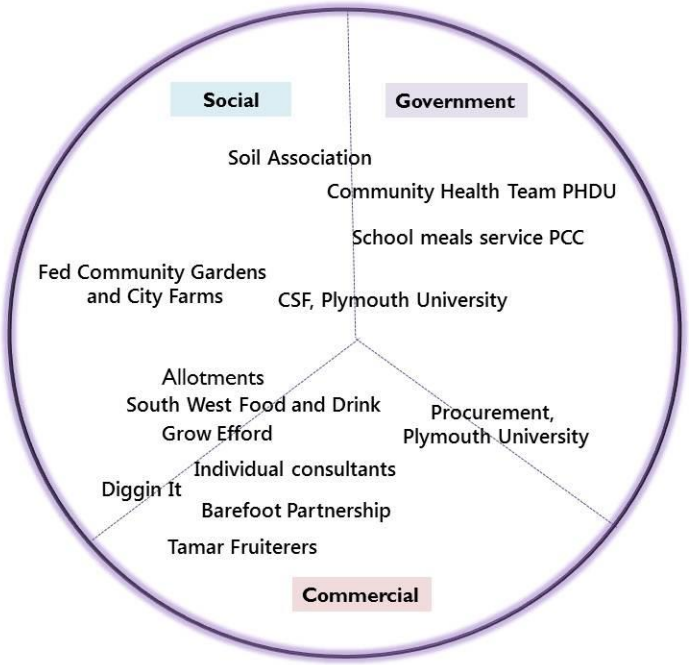


Figure 8.2 Organisations and individuals involved in initial stages of FoodPlymouth *(Source: author)*

Analysis of systems and networks through the categories of government, commerce and society as shown in Figure 8.2 above indicates the difficulty of defining clear boundaries (for example, universities increasingly function as 'private enterprises'), and it also represents a tendency to foreground structure over agency, in not denoting the many key individuals involved (Box 4.1). However, individuals act both as a representative of their organisations, as well as through personal interest (for example, giving time beyond their paid roles, as evidenced by FoodPlymouth meeting minutes[51]), echoing the blurred boundaries between self- and dis-interested motivations discussed for allotment cultivation (Chapter 6).

[51] See notes from meetings, dates given in Appendix 5: Schedule of research activities.

Over two years, from 2010 to 2012, the numbers involved in Food Plymouth grew (see Chapter 4), with a broadening of actant scale and function and an increase in level of activities and relations, indicating the evolution of a system and changing boundaries with external changing environments. For example, allotment praxis was not represented officially at the initial stage of FoodPlymouth, although some actants were individual allotment tenants. In the formation of FoodPlymouth, individuals and organizations interacted (intermittently) across previous boundaries to form a new coherent 'whole'. Both personal and professional roles played a part in this process (RL 110111, 070411; see Box 4.1), demonstrating the interplay of agency and structure in creating new formations (Sewell 1992).

The multilevel and multifunctional actants who became involved in FoodPlymouth, from neighbourhoods across the city and in the wider region of Devon and Cornwall ('local'), synchronise with allotment interests. Patterns of activities and relations that represent aligned values (as grouped in Table 4.4) were evident in meetings, events and publicity, and represent the operation of a distinct system. Whilst these involve monetised commercial and government praxes compared to those found on allotments (Chapters 5 and 6), significant similarities exist in the guiding norms of building multi-dimensional assets and social-ecological justice. However, the majority of AFNs (community gardens, producers cooperatives) do not incorporate any sense of rights to land access

that was implicit in the formation of the UK allotment system (and largely forgotten in the present day); instead, the primary consensual motivating objectives for FoodPlymouth are the five themes, or values, of the charter (Box 4.1): a thriving local economy, health and wellbeing for all, close-knit communities, lifelong learning and skills and a reduced ecofootprint. As discussed throughout this thesis, these are values represented also in allotment praxes. Yet these values cannot be read as a defensive or unreflexive localism (DuPuis and Goodman 2005): although the primary focus is on benefit to the particular local(e) they inherently contain an outward-looking awareness and recognition of the translocal, as well as potential synergies for multilevel polycentric social-ecological food systems (Ostrom 2010), or translocal alliances and collaborations.

The image of a fresh-faced-boy eating an apple on the Food Charter (Box 5.1) depicting innocence as well as delight, has increasingly been distributed throughout the city, region, country and internationally.[52] It provides an artefact, or 'text', against which values can be referenced, within a consensual and outward-looking, rather than oppositional or defensive, approach. The activities, relations and narratives of Food Plymouth reach beyond the city (local authority) boundaries to the wider region of the Tamar Valley, Devon and Cornwall, and the alliance involves actants from the Tamar Valley catchment area, the Plymouth Travel-to-Work area, and the 50-mile radius of the farmers'

[52] For example, through presentations given at national and international conferences by FoodPlymouth participants.

markets (Figure 4.2). This combination of city-based and rural-based participants perhaps confirms the potential for AFNs to act in bridging multi-scalar and urban-rural divides (see Sonnino and Marsden 2006), and indicates a role for bridging organizations. According to Rathwell and Peterson (2012), bridging organizations can facilitate coordinated and consistent management action between actors/actor groups who lack resources, mandates, or interest in connecting directly with each other. FoodPlymouth is an illustrative example of the focus on place or territoriality, as well as the quality turn, discussed in literature on AFNs (Tregear 2011). However, rather than the emphasis on 'place' representing a 'defensive particularism', or 're-localisation', it can be instead understood through the capital assets framework in terms of maximising the social, economic, and natural capitals available to local populations, through linking communities of interest, practice and place (Harrington *et al.* 2008).

Plymouth has become recognised as a pioneer amongst others cities with active food networks for urban populations (Chapter 4), and is reportedly likely to be amongst the first for any future accreditation as a 'Sustainable Food City'[53] (FN 060611, 280312). Other cities include notably Bristol, Brighton and Hove, and Cardiff, out of a total of around twenty cities throughout England, Wales, Scotland, and Northern Ireland who are developing similar programmes of action and charters, some of which are based on the experience in Plymouth

[53] This is the proposed organising term used by the Soil Association for their initiative on sustainable urban local food networks. See: http://www.soilassociation.org/sustainablefoodcities

(FN121012). Representatives of these cities have demonstrated both cooperative and competitive tendencies (e.g. in wanting to share learning, but also to be recognised as a leader in developing sustainable food systems; RL121012). The benefits of both cooperation and competition discussed in Chapter 6 for individual allotment tenants, is thus also illustrated at city level, as documented in research on regional development (Hawkins 2010).

In comparing Plymouth and other cities reconstructed post-war, the unique character of individuals (agency) and institutions (structure) have been evidenced as contingent factors for the similarities and differences, with other cities, for example, Coventry (Essex and Brayshay 2008). In this research, although similar on some demographic and economic parameters, Coventry differs from Plymouth, in that no identifiable city-level food network yet exists, and its allotment management is devolved. In essence, the active food networks in Plymouth, as in other cities, represent aligned place-based food systems. However, alignment and mismatch of social and ecological boundaries (e.g. administrative functions and scales) is identified as a key issue in literature on adaptive management for resilience and sustainability of urban populations (Armitage *et al.* 2008).

8.3 Allotments and AFNs: complementary contributions to resilience and sustainability

The concepts of resilience and sustainability have many different facets and representations, and are subject to varied critiques (e.g. Pretty 1995, Eriksen 2008a, 2008b, Morgan 2010, Wilson 2012; see Section 2.8). This section investigates the contention that allotments and AFNs contribute to resilient and sustainable food systems, through further analysis of the findings on allotments presented in Chapters 5-7. The focus is on contingent factors for resilience and sustainability on which there is widespread agreement: those of diversity and flexibility (Adger 2000, Folke *et al.* 2002, Gallopin 2006, Armitage *et al.* 2008, Wilson 2012, Wilson 2013). Sections 8.4 and 8.5 then discuss the related processes of linking and learning.

Potential contributions to resilience and sustainability for Plymouth populations by allotments and other AFN actants can be investigated through the rubric defined for food security by Defra (2010b, 2010c). This Defra framework is represented in simplified form in Table 8.1, alongside potential roles of AFNs and allotments in Plymouth as suggested by this research.

Table 8.1 Possible challenges and responses on food security *(Source: author / Defra 2010b)*

Theme	Example challenges	Potential roles of AFNs and allotments in Plymouth
Global availability	Wars, trade breakdown. Harvest shortages. Rising demands. Extreme weather overseas	Increased food production in the UK
Global resource sustainability	Oil shocks. Increased commodity prices. Phosphate, nitrogen and soil depletion	Labour intensive production with reduced reliance on fossil fuel / other inputs. Increased recycling (composting)
UK availability and access	Breakdown in EU trade. Limits to yield growths. Need for national self-sufficiency. Environmental contamination	Increased food production in the UK
UK food chain resilience	Strikes, protests, regulation. Just-in-Time. Absenteeism due to pandemic flu. Risks from low biodiversity	Increased biodiversity, levels of participation and skills in food production
Household affordability and access	Access to affordable healthy diets. Lack of transport. Unemployment. Extreme UK weather	Non-monetized food. Risk from local extreme weather
Safety and confidence	Regulatory failures. Contamination. Costs of ensuring food safety. Pests and diseases	Increased traceability

The potential responses by allotments/AFNs to challenges of food security for (local) Plymouth neighbourhood populations for whichever of the reasons identified in Table 8.1, can be discussed in terms of direction of travel towards (global) boundaries (Rockstrom *et al.* 2009). The implications for the two main breaches already identified (nitrogen flows and biodiversity loss; see Figure 2.10) are discussed below.

The main response of disrupted globally-sourced food supplies would be to increase production in the UK, as already called for by some (Hines 2000, Morgan 2010) due to reasons of environmental sustainability and social justice. Without policy interventions to bring land into public use for food production

such as seen during wartime (Way 2008), agrifood corporations have greater potential to increase production compared to AFNs or allotments due to their financial asset-base that would enable increased acquisition of land around Plymouth and other urban areas (Home 2009). However, their cultivation techniques of productivist, high-input (nitrogen, phosphate etc.) and low-biodiversity production, compares to small-scale labour-intensive but otherwise low-external-input production, as practised on most allotments and through many AFNs such as CSAs or smallholders (e.g. IAASTD 2008). However, resource use (e.g. nitrogen) varies according to individual and organizational preferences at all scales of production (see Chapters 5 and 6). Nevertheless, allotments and AFNs have capacity to act as a local reservoir of skills and biodiverse landraces to seed production at wider spatial (regional) scales (Ellen and Platten 2011, Wilson 2012).

Diversity provides a characteristic of 'redundancy' in current systems that may be yet required at some point in the future (Grabher 2009). The above discussion support suggestions (Halweil 2002, Hopkins 2008) that the diversity of responses derived from local food (in part, simply due to a greater number of people involved) increases the likelihood of being able to meet certain challenges to food security. This likelihood derives from diversity on dimensions (capitals/assets) of biodiversity, soil fertility, and skills and compares to the solely economic dimension of increased number of trading partners worldwide as relied on in UK agrifood policies.

Despite many uncertainties, it can be suggested that, on current trajectories, GFNs are likely to challenge boundaries of biodiversity loss and nitrogen cycles further. Based on findings of levels of productivity of agroecological food systems (IAASTD 2008), and the calculations in Chapters 4 to 7 on land areas and allocations as well as on demographics, allotments and AFNs hold potential to contribute significantly to food requirements, given supportive contingent factors (incentives, skills development, etc.).

What remains missing from the Defra food security analysis is a key characteristic for system resilience and sustainability, that is, the need to 'close the loop' at different scales (e.g. Holden *et al.* 2002, Daly 2005, Desrochers 2009), and involves the conceptualisation of food systems as food cycles, rather than food chains/webs (Sundkvist *et al.* 2005, Green Alliance 2007). The closing of the loop is illustrated by composting on allotments or return of sewage sludge to farmland, and compares to externalities (outputs) to the wider social-ecological systems from conventional food systems (Pretty *et al.* 2005a). Figure 8.3 depicts a rudimentary illustration of the food cycle, in order to aid conceptualisation of the potential contributions of heterogeneous food networks, including allotments, to resilience and sustainability of urban and rural-urban regions.

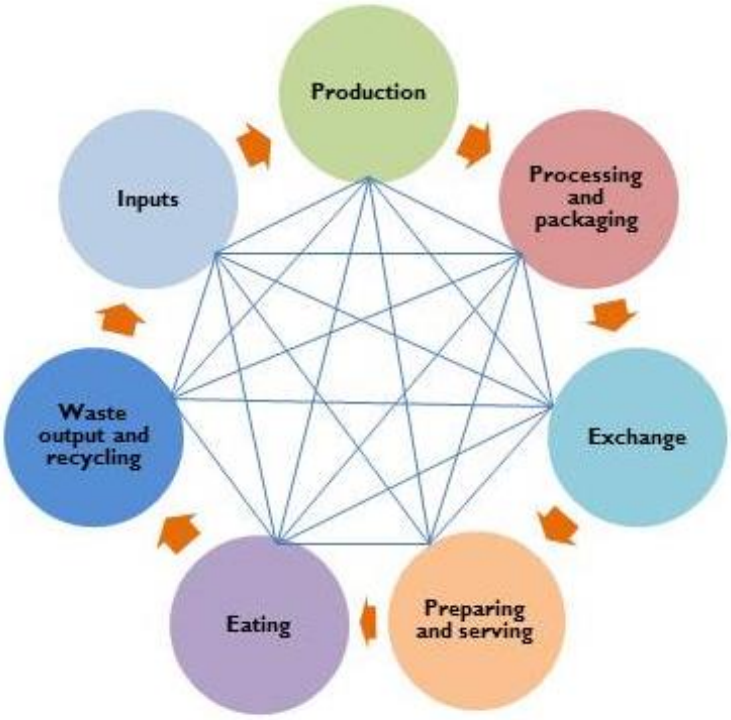


Figure 8.3 Simplified conceptualisation of the food cycle *(Source: author)*

A quantitative assessment on the many parameters of the current and potential contributions of allotments/AFNs at each stage of the food cycle (Figure 8.3) could be carried out through scenario modelling. However, as for national-level work, such modelling results in complex risk assessments (Chatham House 2008a, 2008b, GOS 2011), which act as foci for protracted academic and policy debates on uncertainties over specific 'tipping points' or thresholds for ecosystem services or system boundaries. These debates are described in social studies of science as the ratchet effect whereby remaining lacunae act as reasons for policy delay until gaps in knowledge are filled ((Jasanoff 1987, Eden *et al.* 2006, Millstone *et al.* 2009), as seen over the (disputed) environmental benefits from AFNs (e.g. Coley *et al.* 2009, Desrochers and Shimizu 2008).

This thesis suggests instead that the primary feature of a place-based food system that may enhance resilience for urban populations is aligned norms, or values, of social and ecological justice, that attract increasing participation through building and distributing assets (Chapters 5-7), and result in greater diversity, flexibility and cooperation. The aligned principles expressed throughout the FoodPlymouth process lay within these norms (see Appendix 11), and can be linked to reducing inequalities at all scales and in all the multidimensional capital assets. As Meadows *et al.* (1976) concluded, the 'limits to growth' are likely to be 'inner limits', of greed or lack of care, highlighted by food justice movements as a feature of conventional food systems. These norms, of care, trust and cooperation (social capital), discussed for allotments (Chapter 6) in gifting of time and other non-monetized exchanges, could also be contingent, if not defining, factors in individual and social resilience in the face of challenges to food security.

In essence, the capacity of a (food) system to cope with change is seen to depend on successful adjustments in, or synchronising of, relationships between different (social-ecological) system constituents (Meadows *et al.* 2004). Such synchronisation holds potential to speed responses, and draw on a greater diversity of social and ecological knowledge in adaptive co-management, with characteristics of linking (8.4), and learning (8.5), which indicates (food) system evolution.

8.4 Linking, connecting and participating: building coalitions with many voices for imagined food futures

Multilevel connectivity is a key characteristic of adaptive social-ecological systems that enables definition of a functioning 'whole' (see Section 8.2 above). This connectivity was explored for allotment communities in Chapter 6 in terms of bonding and bridging social capital with strong and weak ties, and in Chapter 7 as linking or political capital. More broadly, literature on adaptive organizational practices, stresses the importance of building alliances, cooperation and collaboration (see for example Clarke and Fuller 2010). This section considers the means of connection and the ability of local and translocal communities of practice, place and interest (Harrington *et al.* 2008) to link at multiple scales, through the coalitions and collaborations that do (and do not) exist within Plymouth allotments and AFNs.

The links (levels of participation) within most aspects of AFNs, at present, are more sporadic and are minor compared to flows within GFNs (Chapters 4-7), through which an estimated 85% of household food supplies are obtained. The extent of participation in local food activities for the majority of Plymouth population (apart from the 0.5% of the population and their families who cultivate an allotment) is limited, for example, to visiting events such as Flavourfest once a year. For increased levels of links to occur, as discussed in Chapter 7, narratives also need to enable new conceptions of the world amongst new social groupings.

The extent of existing links or co-operative alliances and coalitions within AFNs can be documented by the (mostly non-profit) representations of actants through the logos presented in network activities, or the 'attractive labels' suggested by Leach and Mearns (1996).[54] The form of collaboration indicated by these representations range from support in principle to long-term partnership working and funding, the linked logos can be taken as a first indication of strength of alliances for any one organization. The collaborations and alliances in Plymouth food networks are shown by the examples in Figure 8.4 for (a) the FoodPlymouth Action Plan launch and (b) a Tamar Grow Local event.

(a) Food Charter Action Plan launch event programme, February 2012

(b) Tamar Grow Local Community Show 2010 publicity

Figure 8.4 Logos depicting alliances in food networks

[54] This echoes the work of the Situationists (see e.g. Marshall 1992), who contributed to Klein's assessment of the power of logos (Klein 2010) and suggests the strategy of 'detournement', or turning expressions of the capitalist system against itself.

As indicated by Figure 8.4 (and Fig 8.2 above), although multiple sectors of public, non-profit and private sector actants are involved, there are no representations of allotment praxis included in collaborations in the study area. This lack of representation is perhaps unsurprising given that their activities involve non-monetised ('no logo' *cf.* Klein (2010)) relations of producers meeting consumers and they have minimal budgets. It could also be explained by the fact that the allotment system sits (historically) more closely with confrontational rather than the more consensual AFN movements (Chase 1988, Crouch and Ward 1997, Boyle 2012; see Section 8.8), but also that they are managed by local authorities who may find them an 'awkward' duty. If allotment interests link with these new groupings to achieve strength of voice, as suggested by Crouch and Ward *ibid.*), they may achieve greater visibility without the 'baggage' of, for example, local campaigns against building development on local greenspace (Section 6.4).

The potential for linking through multi-scalar levels in order to achieve a stronger voice is indicated through the existence of the Soil Association logo both on Food Plymouth literature and on that of the International Federation of Organic Agricultural Movements (IFOAM) in Figure 8.5.

Figure 8.5 IFOAM collaborations (*Source: Presentation to Soil Association conference March 2012, London)*

Display of organizational logos on any actants' publicity or literature,[55] (Figure 8.5) is only one illustration of possible links (representing both strong and weak ties), yet it does demonstrate the existence of translocal connections in diverse food networks. Nevertheless, these collaborations have nowhere near the weight in determining allocation of resources as GFNs, which have no need to indicate any collaboration, as their one logo is often displayed and known globally.[56]

[55] In order to display an organization's logo, consent must be achieved, and involves at minimum (usually electronic) transfers of images between the actants.
[56] Greenpeace or Oxfam may launch a 'sustained' PR campaign around a specific issue, however CocaCola (for example) advertises in nearly every country of the world, every day of the year, and over many decades.

The alliances illustrated through the agglomeration of logos in AFN publicity is one indication of a developing international narrative, if not political strength (Joseph 2002, Wainwright 2010). The UK allotment system developed with, at most, national links through groupings such as the Spenceans (Chase 1988). It arguably benefited from the symbology used in the Dig for Victory campaign during WW2 (Ginn 2012), but since then allotments have had no unique identity. No allotment associations in Plymouth have their own logos, although, during the time of this research, at national level, the National Society of Allotment and Leisure Gardeners has renamed itself the National Allotment Society and enhanced its website. The situation for allotments compares with FoodPlymouth, which has its own logo and PR (literature and website (Box 4.1)). These links in turn facilitate learning, seen next as a process of adapting and self-organizing.

8.5 Learning, adapting and evolving within allotments and AFNs: manifesting different food futures

The debates on enhancing food security through allotments and AFNs are often made on the basis of the learning and adaption needed for resilient and sustainable social-ecological (food) systems to survive, 'get-by', thrive or evolve within settings of (continually) changing external and internal environments (Section 2.8). This learning involves information, feedback, and multilevel

governance (Meadows *et al.* 2004, Armitage *et al.* 2008, Pahl–Wostl 2009), depends on key individuals or leaders (e.g. Gladwell 2000, Adair 2006), and is reliant on whose knowledge is legitimated (Escobar 1998; see Chapter 7).

Allotment holders develop their knowledge on cultivation (flowers and food) from many different sources (Chapter 5); within AFNs, project or enterprise employees are more likely to have professional levels of knowledge, whether horticultural, food preparation or financial (fundraising) and organizational skills (RL070910). Concurrent with development of AFNs, the quantity of learning resources on the internet has transformed learning opportunities, facilitating (translocal) exchange of knowledge. However, a different (embodied) quality of learning comes from linking allotments and AFNs in place-based direct experience and face-to-face communication, or strong ties (discussed in relation to allotments in Chapters 5 and 6). For example, Plymouth community gardens which are co-located on allotment sites, have professional gardeners and mutual exchange of knowledge takes place with individual tenants who have reservoirs of place-based knowledge and plant material, some with continuity from many previous decades (RL251012, RL061212). Further, Plymouth CSAs and community gardens provide opportunities for other urban residents to become 'apprentices' to professionals with food growing skills (RL070711). The multi-sectoral partners in Food Plymouth also have opportunities to feed into policy

initiatives[57] thus adding to learning at multiple levels in the city-region. All the above instances give rise to the potential benefits of social embeddedness as recognised in literature on regional clustering, and add to potential for economic capital in the study area (Berry 2008, Marsden 2010).

The privatization and channelling of learning within food and agriculture research into conventional systems, of productivist, biochemical and geneticist approaches that privilege large-scale oligopolistic operations, has been well documented (Tansey and Worsley 1995, Pretty 1995, IAASTD 2008). However, changing external contexts and epistemic communities within allotments and Plymouth food networks demonstrate evolution of niche food systems with different, agroecological, knowledge being recognized and communicated (Escobar 1998, Gaventa and Cornwall 2006; see Chapter 5). Such knowledge, or cultural capital, represents reservoirs of skills that may contribute to the sustainability and resilience of Plymouth populations, and which have been valued as in the national interest during past wartimes (Tilley 2008).

The extent of the links and learning between allotments and new food networks are affected by their capital asset base (starting conditions) on multiple dimensions. The relative strengths of these that can help to maintain material, social and psychological food functions for urban populations are discussed next.

[57] E.g. FoodPlymouth participants shared their knowledge of dynamics and ecosystems in the Tamar Valley with a professional brought in by Defra on a project to help meet EU Water Directive requirements.

8.6 Maintaining the material function of food networks

The capital assets that would be needed to retain material functions of food supplies for urban populations (Section 2.8) are key to claims for AFNs of their social and ecological benefits. The primary starting requirements are for land (space), soil (or substrate and inputs) and plant material, with finance (economic capital) an enabler due to its convertibility into these material assets. This section discusses these observed and potential resource allocations to allotments and AFNs.

Food-related activities all require physical locations and spaces for food production on allotments has been analysed above (Chapter 7). Within AFNs in Plymouth, several community and school projects have spaces for growing food (on allotment sites or other public or private land), with a very few groups of individuals also taking on some small open areas for growing (FN210312). However, the 'guerrilla gardening' movement seen elsewhere[58] has had no presence throughout the neighbourhoods of Plymouth, apart from one short-lived attempt, ironically on a site owned by one of the major supermarket chains, as illustrated in Figure 8.6.

[58] For example, Incredible Edible Todmorden, http://www.incredible-edible-todmorden.co.uk

Aldi told to make occupied site safe

SUPERMARKET giants Aldi have been ordered by city council chiefs to make safe a former derelict prison, renowned for attracting trouble to the area, after squatters moved in at the end of last week, *writes Sophie Taylor.*

The Greenbank Greenspace community group took over the Longfield House site, also known as the old ambulance station, on Friday and have since vowed to "turn the area into a thriving community space" by creating a safe environment in which to grow fruit and vegetables.

Following a number of visits to the site from council officials, local police officers and fire fighters, Plymouth City Council has now confirmed they are in discussions with the German supermarket giant over the state of the site.

Although the council say discussions with Aldi began before the community group squatters moved in, health and safety officials are now concerned with ensuring the site is secure enough to be lived on.

A spokesman for the council said: "The Greenbank site has been a problem for a number of years and the council has been in touch with the owners Aldi about its condition.

"The council's planning and building control compliance officers have been in discussion with the company about action it needs to take to make the site tidier and safer.

"This latest round of discussions began several weeks ago, before the current occupation of the site.

"Officers from the Public Protection Service had also recently directed Aldi to take all necessary steps to secure the site on safety grounds, prior to the unauthorised occupation.

"We have also had Public Protection staff talking to those currently on the site to make sure that they are not burning anything that causes a nuisance to people living nearby.

"It must be stressed that this land belongs entirely to Aldi and they are solely responsible for its upkeep, and to ensure it is not used in a way that is harmful to neighbouring residents.

"The council will take all appropriate action to ensure that they meet these important obligations."

Sub-contractors from Bristol were yesterday ordered by Aldi to carry out an assessment of the site to evaluate the cost of making it safe.

It is thought work to secure the site could begin as early as next week.

Andy, 25, one of the squatters leading the Greenbank Greenspace, said: "All we want is for the site to be cleaned up and secure - it's what we have been trying to do ourselves anyway.

"Since Monday we have managed to clear even more rubbish from the site, tidy it further and a local gardener has been so kind as to donate a polytunnel to allow us to grow small crops, and six apple trees to plant."

The Herald contacted Aldi's representatives for a comment but they have yet to respond.

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Figure 8.6 Greenbank Greenspace Community Garden project evicted
(Source: The Herald, Plymouth, 26 Jan 12)

As Figure 8.6 illustrates, any use of city space requires agreement with a legal landowner (private or 'public'), and oppositional, 'squatting', groups are portrayed as 'anarchists',[59] involving claims that go beyond food-growing to 'reclaiming the commons'. Despite the author of the best-known book on the

[59] E.g. Grow Heathrow, who lost in the High Court against an eviction order http://www.bbc.co.uk/news/uk-england-london-18892056

subject being born in the city (Reynolds R 2009), these guerrilla gardeners have been evicted in Plymouth but other public space initiatives by individuals or neighbourhood groups in alliance with the local authority have been allocated temporary space, as documented elsewhere (Milbourne 2012). The potential for scaling up opportunities, as identified for allotments (Chapter 6), is illustrated by the pioneers in the UK public space gardening movement, Incredible Edible Todmorden,[60] are now running a market garden to help fund its operations.

Rathwell and Peterson (2012) state (*ibid*: 24) that cross-scale linkages, horizontally across landscapes and vertically through functions, are especially important for shared resources. In this case, the FoodPlymouth coordinator was able to lever funding to support the economic aims of the FoodPlymouth Action Plan through an EU Interreg partnership programme between ten French and English organisations, called DEAL[61] and launched in March 2013 in Plymouth. These governmental, commercial and social funding streams for AFN activities compare to the minimal monetary flows involved in cross-scale linkages for allotments, in the Allotment Officer Forum, and the membership of associations and tenants of the NSALG (see Chapter 7). However, the increased co-location of AFN activities, such as community gardens on allotment sites, indicates a future potential for flows of economic capital, as well as those of human, cultural and social capital that already takes place.

[60] http://www.incredible-edible-todmorden.co.uk September 2012 newsletter.
[61] DEAL is a French acronym; 'Development Economique Par L'Alimentation Locale', meaning the economic development of local food.

Less 'demanding' material requirements, such as buildings, seeds or tools, can be obtained for AFN and allotment activities through donations, fundraising and grant programmes. For example, the Co-Op supermarket has a programme of community support and in Plymouth has donated funds to Grow Efford, as well as to Friends of Devonport Park, as depicted in Figure 8.7.

Fund forks out for tools

Co-op donation helps gardeners

by NICOLA TAPP

A VOLUNTEER community gardening team now has somewhere to store their tools thanks to a grant.

Green Fingered Friends of Devonport Park have been awarded £400 to purchase a new storage shed for all the equipment that they have accumulated over the years.

The money was received from the Co-operative Community Fund.

The Friends have between 15 and 20 volunteers who work in partnership with Plymouth City Council gardeners and Groundwork South West.

They meet every Monday at Devonport Park, maintaining and restoring beds and shrubberies within the park.

This work has been undertaken for the past four years and many of the volunteers have gained NVQ qualifications as part of the project.

Mike Gallagher, chairman of the Friends of Devonport Park, said: "We are absolutely delighted to have got the grant which will enable us to increase the number of tools for the gardeners and provide secure storage space. The Co-op are very, very good to us."

GENEROUS: Front, from left, chair of the Friends of Devonport Park Mike Gallagher, David Stanbury, from the Co-op, and Gerald Goss with volunteers

Just

30 Valley Road, Plympton

Acc

Figure 8.7 Example of CSR activities of supermarkets *(Source: The Herald 27/01/12)*

As Figure 8.7 suggests, donations of minor assets can be 'enrolled' into AFNs. However, although largely neglected in academic literature, land is the primary material asset requirement for any food producing activities and its scarcity and/or price limits activities within allotments and AFNs.[62] In essence, apart from good relations with a (public or private) landowner who will allocate

[62] In the case of an outlet for local food in Plymouth city centre, this resulted in contemplation of market rents of around £60,000 and rates of around £50,000 per year for a shop in a location with adequate footfall.

space, economic and political capital (finance or political influence) is required to enrol land into allotment and AFN activities. As seen for allotments historically, this could require national level political debate and initiatives as seen in wartimes for any large-scale changes to occur. However, examples from other urban areas in other countries, such as Detroit in the US, have shown how areas of land can be incrementally brought into AFNs (Truehaft *et al.* 2009, Choo 2011), drawing on framings of environmental and social justice. Even so, outcomes will be dependent on the political and economic settings, as well as alignment of administrative region, bioregion, and catchment (watershed or travel-to-work (TTW)) areas at multiple scales, see e.g. Silver (2008). The ability of these multi-scalar and overlapping systems to lever assets depends on and is in turn contingent on, maintaining or developing psychological functions, of 'care' for the locality, and is explored next.

8.7 Fulfilling the psychological function: attachment to the patch in neighbourhoods, city and region

The psychological function within AFNs (as explored for allotments in Chapters 5 and 6 in terms of human and cultural capitals) is contingent on attachment to a locale and is compared to the placelessness of conventional food systems (Dale *et al.* 2008, Morgan 2010). Values in AFNs in the study area related to place are represented by the names of initiatives, such as Dig for Devonport, and Grow Efford and these have generated new neighbourhood interactions and

strengthened sense of place for individuals as also shown for allotments (Chapters 6 and 7; FN160911). The wellbeing generated through these interactions, as found on allotments, is evidenced in an exploratory evaluation of a collaborative programme between two FoodPlymouth partners working with elderly single and young unemployed males which found enhanced self-esteem and confidence amongst participants (Pettinger 2012).

Dale *et al*. (2008) suggest that a strong sense of place increases the likelihood that community based projects will succeed, and Chapters 5-7 illustrated impacts from allotment praxes. However, there is a constant change of external environment (e.g. Cutter *et al.* 2008), represented by the changing city identity/ies of Plymouth in response to changing policy agendas, economic contexts and 'zeitgeist': from 'Plymouth, City of Discovery', to 'Destination Plymouth', 'Positively Plymouth', and, more recently, 'Plymouth, the Ocean City'. The inclusion of food in the strategy of Destination Plymouth indicated potential for future expansion of AFN activities, albeit in terms of food tourism and seen to date in the locating of new outlets of 'food celebrities' such as Hugh Fearnley-Whittingstall and Gary Rhodes. The ability to draw on past heritage and the city environs, notably the city's traditional link with fish,[63] also provides a role for AFNs in the psychological functions of food systems. However, this aspect of AFN activities does represent the exclusive (monetised) 'quality

[63] There is now one fish stall in the pannier market, compared to a reported 27 stalls in the past (FP4). The potential to regain this connection was confirmed during this research by comments in workshops, at meetings and by visitors to FlavourFest. The opportunity provided by having the National Marine Aquarium located in Plymouth, and a Sustainable Fish Festival held for the first time in 2012, linked in with national campaigns by Sustain and in the media.

turn' described for AFNs, in comparison to the (non-monetised) attachment to place evidenced in allotment cultivation (Chapters 4 and 7) and social food projects within AFNs. Further, as suggested above, allotments are perceived as either irrelevant, or a minor remit for Plymouth city planners, or even as a challenge to building a city brand (for example, through opposition to building development).

Moving scale (of operation, institution and geography) to peri-urban areas, regional-level organisations, such as Tamar Area of Outstanding Natural Beauty (AONB), are supportive of AFNs due to their potential contributions to regional development and environments. The multiple loyalties that cross urban-rural divides, from neighbourhoods, cities and regions, are illustrated by the Sail Trade initiative that brings food from the valley into Plymouth city via the Tamar, which historically linked city and region. In another example, the central importance of strawberry production in the area's economy, is drawn on by a local wholesaler active in FoodPlymouth (Figure 8.8).

Figure 8.8 The central strawberry *(Source: www.tamarviewfruiterers.co.uk*

Figure 8.8 shows the continuity between the historical and present-day identity of the valley. It is within this regional identity that 'locality' food, i.e. the value-added '*terroire'* or quality turn described for AFNs, is seen (other examples being Cornish pasties and Devon cream teas to ('positional'[64]) yarg cheese). However, it is also at this regional level that Plymouth competes with neighbouring cities (notably Exeter and Bristol) and that governance has been 'hollowed out' (or emasculated) by national government (see Chapter 7).[65]

[64] The term 'positional good' is ascribed in economics to goods which are in demand due to quality and the 'statement' that is conveyed in their purchase, linking with geographical concepts of 'social and ecological embeddedness', 'quality turn' and marketing concepts of 'USP' or Unique Selling Point.
[65] This process was reflected in a statement made at the RSA Winter Conference 2011: "under the current government, people in Whitehall are effectively banned from using the word region" (FN 251111). The replacements for Regional Development Agencies, in the form of Local Economic Partnerships, cut across defined

Mitigating the depletion of regional level governance by national government, funding streams from Europe to peripheral regions have arguably helped to maintain a sense of identity for the South West of England.[66] This discussion suggests the potential for both inclusionary and exclusionary functioning of allotments and AFNs. However, as Harrison (2013) asserts, at issue is how and why particular identities are privileged over others.

Although food as a sector is viewed as peripheral compared to high-manufactures and IT/creative sectors for the city economy, it has been contended that FoodPlymouth provides an umbrella for the psychological functioning of a place-based (social-ecological) food system that people and organisations can focus through (RL170211). However, while some aspects of AFNs draw on place identities in a 'regional offer' (the Tamar Valley' brand'), allotments are largely unrepresented, beyond the site and neighbourhood level. This lack of 'visibility', as suggested above, may lie in their roots in a more contested issue of access to land, but their existence represents a deep attachment to and knowledge of place (nature-culture), as seen in domestic gardens (Bhatti and Church 2001, Brook 2003, Crouch and Parker 2003), and which is drawn on when allotment tenants are involved in AFN activities, such as helping to plant a community garden (FN070411).

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economic, cultural and heritage regional identities, such that Plymouth is part of a LEP that links a new grouping of cities and includes Taunton, Torbay and Devon, following failure of a cross-Devon and Cornwall bid

[66] FoodPlymouth having secured funding for projects through the Cordiale and REACH programmes, involving mutual learning with Brittany, France.

This place attachment could be explained as a 'defensive localism' (Winter 2003a), analysed for domestic gardens as a mimetic sense of attachment in wanting 'a small plot of land at all times' (Stenner *et al.* 2012), or as a bolt-hole, life-raft or castle as discussed for counter-urbanisers (Halfacree 2010). The same sense is also strongly expressed in the face of loss of the semi-private space of allotment sites (DETR 1998). However, rather than a narrative of this sense of attachment as defensive or protectionist (Lang and Hines 1993), with implications of autarky and self-interest, it is arguably better expressed as self-help (Chapter 6), and of overcoming the metabolic rift that has accompanied commodification of food (Chapter 5), as well as a springboard, or base from which to build capital assets 'from the centre outwards' (Kingsley *et al.* 2009; see Figure 8.1). Further, as discussed above, the concept of 'defensive localism' appears to come from a perspective that under-privileges values of solidarity between local and translocal communities of interest.

8.8 Fulfilling the social function: cohesion and solidarity

As analysed in this research, the cohesion (social capital) sought more widely in urban policies is built through allotments and other place-based food-related activities in and around Plymouth, as reported elsewhere (Armstrong 2000, Pudup 2008, Sherriff 2009). Their narratives or storylines are of meeting targets for all the capital assets, as seen for Food Plymouth. Political capital is also involved, for example, whereby groups of people, especially of schoolchildren

cooperating in growing fruit and vegetables, represent opportunities for local politicians from visits to projects and resultant publicity of good-news stories in local media[67]. In return, participants get to meet and talk to politicians who will then arguably be more aware of local needs when in their policy-making roles. Food 'events', often presented as a celebration (e.g. of harvest), provide similar opportunities (RL261011), and can be explained as present day revalorization of natures, and cultures of food-related skills and knowledge (e.g. Bessiere 1998, Sugiyama 2001, Yarwood *et al.* 2008; see Chapters 6 and 7).

It has been suggested that participants in mainly urban local food activities become increasingly aware of the social-ecological impacts of food behaviours (Seyfang 2006), largely independent of incomes (Sherriff 2009). However, participation in other commodified AFN activities, such as farmers' markets and box schemes, remains largely restricted to advantaged communities (Spiller 2010). The development of the UK allotment system exemplifies aspects of the newer AFN groupings and social movements that are seeking social and spatial justice (Soja 2008). These food democracy movements employ powerful iconography building on themes with deep resonances to other 'solidarity' movements depicted in Figure 8.9.

[67] Resulting in headlines such as 'Children grow own food for homeless', Plymouth Herald 19 October 2010.

(a) www.earthfirst.org.uk *(b) www. reclaimthefields.org.uk* *(c) www. occupyourfoodsupply.org*

Figure 8.9 Logos used by food justice movements

The iconography in Figure 8.9 represents a blending of human and nature, as well as revolutionary and classic 'workers' struggles,' analysed in Gramscian terms as 'new conceptions of the world' (Wainwright 2010). These solidarity movements are supported by new information being created on land grabs (enclosures) that echo the historical development of the UK allotment system. Movements, such as Via Campesina or MST (Caldeira 2008), with concepts of food sovereignty and food democracy are supported by people in the UK and Europe by, for example, signing an e-petition. However, few may make the connection between present-day landlessness abroad and the situation in the UK: of conflicts over land access hundreds of years ago, the high price and scarcity of (peri-)urban land, the waiting lists for allotments, or the access to (marginal) public space through AFNs.

The storylines around AFNs generally remain at 'micro-politics' level, or individual change towards sustainable behaviours (Defra 2011), which can be explained as working with what is possible, but alternatively as an ignoring of deeper structural mechanisms and potentials (the domain of the 'real'). The internet has been acclaimed as a means of re-balancing attention, independently of wealth, enabling different groups to forge translocal alliances and gain strength (Bodin and Crona 2009). However, as considered in Chapter 7, the extent of influence or power that AFNs have levered to date is minimal and coverage of contested discourses and groups remains marginal in mainstream media (MSM). For example, there was just one story in the local media of long waiting lists for allotments during the period of this research (given as context to the new National Trust Saltram site[68]), and the calculations of heterodox economies suggested to be useful (Chapter 7) are only known to a small minority of the population.[69] The UK allotment system exemplifies the outcome of historical claims for social-ecological justice that some present-day groupings call for: of access to land or 'the womb of wealth'. These claims for access to land were the prime motivation for the earliest social movements (Chase 1988), but were lost through an increasing focus on parliamentary reform and Malthusian economistic narratives (Kovel 2007, 2008).

[68] http://www.thisisplymouth.co.uk/Saltram-House-50-allotment-plans-taking-shape/story-16010189-detail/story.html [l.a. 17.11.12] see p309, Fig 7.5

[69] These receive minimal coverage, with concepts of 'holistic economics' or 'eco-psychology' generally restricted to readers of magazines such as Resurgence (30,000 circulation monthly), compared to the Economist (around 1.6 million weekly), or even newspapers as the Sun (2.6 million daily),

In the interim, some organisations and projects involved in Plymouth AFNs can be described as aspects of a 'shadow state', taking on functions of social welfare provided previously through 'the social contract'. However, as Perkins (2009:403) suggests, through negotiations and consensus-forming activities, "formerly marginalized groups of people are now constructing new urban environments with spectacular results". In essence, the pragmatic need to co-operate, co-manage and co-ordinate, may be the most critical aspect of policymaking for allotments and place-based food networks to flourish, "through the everyday politics of land in the making - the articulation of the local with the national and global, of the past with the present, and of the pragmatic with the passionate" (Perkins 2009: 595-596).

Nevertheless, many (peri-)urban initiatives working within neoliberalized hegemonies (Joseph 2002, Kovel 2007), are reliant on short-term funding, rather than representing a strategy with coherence, consistency and comprehensiveness, participants may thus be consenting to, and failing to alter, wider market systems that generate inequality in the first place. As discussed above, some local food activities, such as guerrilla gardening, can be compared to campaigns for the commons (by the Levellers or Diggers), but which resulted in the allotment system with widespread perceptions of a 'sop' being offered by those with influence and power. They involve a more direct challenge to the viewpoint of city land as real estate, as seen in present-day 'landless peasants' movements. The keyword representing the principles of these movements is

'solidarity' and is used in literature on European AFNs (Brunori *et al.* 2011). Building on the strength of these groupings that draw on the narrative of solidarity may provide potential for overcoming the perceived divide of some currently niche praxes of and those representing social justice initiatives, as seen at the inception of the allotment system in the UK. Such a reading is also worth exploring given the (divide and rule) political narratives of the deserving and undeserving poor as was seen in the first allotment acts (Appendix 1), and the need for future livelihoods in the face of current economic and political contexts.

8.9 In the real world: scaling up and out with narratives and governmentalities of translocal realities and imaginaries

This section brings together findings from Chapters 5-7 in order to represent histories and futures and add weight to narratives of more socially and ecologically just 'life-ways' through diverse food provisioning systems with potential to scale up and out from niche to mainstream. As explored in Sections 8.2-8.8 above, praxes within Plymouth AFNs and allotments represent linked social-ecological food systems with largely aligned (multidimensional) values for 'just' futures. AFNs are building strength in numbers, and influence, through alliances and collaborations with shared norms of resilience, sustainability and social-ecological justice. In linking and learning to adapt (to changing social-

political settings or zeitgeist), they illustrate potential to evolve and self-organise, and to fulfil material, psychological and social functions, but are reliant on contingent multidimensional assets and capacities. The speed and direction of trajectories for allotments and AFNs is dependent both on (historical and geographical) initial starting conditions, and the ability to lever assets into their networks. The strategies of the different actants for increasing flows (participation) within Plymouth allotments and AFNs are seen to be similar, as illustrated in Table 8.2.

Table 8.2 Examples of strategies for 'scaling up and out' for Plymouth allotments and AFNs
(Source: author)

Strategy	Allotments	AFNs
Discourse and 'weak ties'	Site, neighbours, social networks	Charter
Events	BBQs, vegetable shows	Harvest Festivals, Flavour Fest, FoodPlymouth events
Collaborations	Between city associations, NSALG, ARI, etc.	Producer co-operative
Informal negotiations	Over plot and site use	Over land and assets
Legal arrangements	AO negotiates with private landlords	Varied land tenure agreements
Fundraising	Grant applications by allotment associations	Lottery grant, service commissioning, share offers
Publicity	Websites, notices on site gates	Radio interviews, local press coverage, websites, advertising
Communication, aligning values	Linking with social movements	'Speaking the right language': developing evaluations relevant to different audiences

Table 8.2 shows actions and strategies in Plymouth allotments and AFNs. The same strategies are seen in the increasing levels of activities within AFNs and urban agriculture in many other localities in different global regions (Chapter 1), and bridging the gap from household food provision to income-generating

activities or livelihoods (Chapter 6). However, as Gibson-Graham (2002) document, it is a challenge for narratives of local to match those of global; by the very nature of the concepts (and even affects) involved: one is small (David) and the other is huge (Goliath). Yet, seeing one within the other (*cf.* Massey 2007 and Chapter 2), these different multilevel scales can both be 'de-throned', for example as suggested by Ostrom (2010), through concepts of polycentric systems. As Daly (2005) has written persuasively, 'Economics for a Full World' indicates a need to look at meso- and macro- level at optimum scales for enterprises and the market economy, yet economic theory has not recognized this need and does not extend analyses beyond firm-level optima and national or regional indicators. Conversely, protagonists of place-based food systems can appear to be retrogressive and proposing a return to an imagined Arcadian past (Wysocki 2012), that seems inward-looking, parochial and autarkic, or a 'defensive localism' (Winter 2003a). The food sovereignty and solidarity movements, in contrast, create imaginings of local as being already a diverse, vibrant, and 'cultured' majority activity, with progress towards enhanced and sophisticated, knowledge-intensive, twenty-first century agro-ecological production (Tudge 2012), and in a desired internationalist and cosmopolitan future, as indicated by the logo for Via Campesina (Figure 8.10).

Fig 8.10 Logo of Via Campesina: a new internationalism (*Source: www.viacampesina.org****)***

As the symbology of Via Campesina illustrates (Figure 8.10) through its portrayal of different stances of the different nationalities, new groupings around food justice illustrate an ethos of a 'new internationalism' at play (see De Angelis 2000). These characteristics of local and global co-existing were observed often during this research, notably at regional scale where AFNs may be able to link into local as well as wider national and international markets through 'bulking up' or joining-together small-scale producers, for example in producer co-operatives such as Tamar Grow Local, to reach necessary continuity and levels of food supplies (FN021110). One representative of a major international caterer supplying to the public sector in Plymouth expressed indignant feelings at the lack of recognition that their company was able to open up the national market to local (South-West) producers (RL021110). A sausage-maker with strong allegiance to the 'local' had also made sophisticated efforts to market his products abroad (as Bhangras, instead of bangers, to India) (RL011210). These examples are both contradictions to suggestions of a defensive

localism, and supportive of literature on solidarity food movements and diverse economies (Gibson-Graham 2002, Caldeira 2008). It is not one or the other (local or global) but both, i.e. post-, trans-, and inter-national acting through polycentric multi-scalar but place-based systems (Massey 2007, Ostrom 2010).

8.10 Conclusion: social-ecological place-based food systems

This chapter discussed how allotments and different aspects of AFNs can be viewed as component parts of place-based food systems. It is possible to generalise that their relative contributions to resilience or sustainability of urban populations may be of value in the sense that they provide reservoirs of skills (cultural capital), and landraces (biodiversity, or natural capital) in the case of failure of the monocultures of conventional food networks. The specific challenges or political settings (e.g. fiscal incentives, land allocations) need to be further defined before outcomes could be further predicted beyond this broad conclusion. However, the place-based characteristic of allotments and AFNs (e.g. co-location of community gardens on allotment sites), as illustrated in this research, enable links and learning and indicate greater potential for maintaining material, psychological and social functions in the face of change. Nevertheless, the capacity of maintaining functions in social-ecological systems on all the dimensions of capitals/assets considered in this research (Figure 2.6) is determined by initial starting conditions.

Rather than the storyline of allotments and AFNs as a privilege, or defensive localism, they have instead been seen as means of enhancing different kinds of assets amongst people and places that may not be particularly advantaged within the monetary economy. These narratives are the same as those in historical socio-political movements out of which the UK allotment system arose, but in the present day can benefit from increasing collaborations and alliances with transnational movements. As Peck and Tickell (2002: 399) state:

> "the foundations may be inadvertently created for new forms of translocal political solidarity and consciousness amongst those who find themselves marginalized and excluded on a global basis..."

The aligned values or norms represented in activities, relations and discourses within AFNs and allotments illustrated in this research (Table 4.4) represent narratives of food provisioning systems with outcomes of social and environmental justice. These are aligned more with the imaginaries of Via Campesina and food sovereignty than Defra's (2010a, b, c) analyses of food security, and suggest that 'another world is possible' (Smith 2007).

9. Conclusions

9.1 Chapter introduction

This chapter summarises the findings from this research (Chapters 5-8), and discusses how, using the case study of Plymouth (Chapter 4) and a pragmatic critical realist and political ecology approach (Chapter 3), it fills the gaps in literature on AFNs identified (Chapters 1 and 2). It first considers how the research fulfilled its objectives and adds to knowledge and understandings of AFNs (9.2). It outlines remaining gaps and suggestions for further breadth and depth of research arising from this exploratory and illustrative case study (9.3). It then considers how conceptual coherence and aligned practice, research and policies can mobilise contingent factors for the normative aims of this thesis, and reviews potential implications for future development of empirical, conceptual and theoretical understandings in related research (9.4). The thesis concludes (9.6) by re-visiting the ('meta') narratives involved in research: on attaining 'good food for everyone for ever' (Tudge 2011a).

9.2 Contextualising findings for this research: from observed and actual, to real and potential

This research used the illustration of allotment praxes (Crouch and Ward 1997, Wiltshire and Geoghegan 2012) to help clarify the debates identified by Tregear (2011) over whether AFNs represent an exclusionary 'quality turn' and a

defensive localism (Winter 2003a, D Goodman 2004), their impacts on the environment and local economies (Goodman and Goodman 2009, Jarosz 2008, Levkoe 2006, Marsden 2010), as well as their contribution to resilience and sustainability for urban populations (Bakker *et al.* 2001, Morgan 2010). It took the focus suggested by political ecology: on multilevel spatial and temporal interactions of structure and agency, on nature and culture, situated within wider social-political settings and with outputs to social-ecological systems (Zimmerer and Bassett 2003, Goodman M 2004, Walker 2005, 2006, 2007, Ostrom 2008, Mann 2009). It organised findings through the multidimensional capital assets involved in allotment and AFN activities, relations and governance and documented the normative narratives that challenge the injustice of outcomes of plentiful low-cost food for one billion, but shortages and exclusion for another one billion (Lang and Heasman 2004, Tansey and Worsely 2005, Patel and McMichael 2009).[70]

The food and non-food production activities defined within Plymouth allotments (first research objective, Chapter 5) within the framework of a capitals/assets model (Morgan and Ziglio 2007, Bebbington 1999) confirmed the multidimensional functions involved. As claimed for both allotments and AFNs, crops grown in (peri-)urban place-based food networks contribute to food security (affordability and access) for urban populations and also have the potential to contribute to human health and wellbeing through 'good food' as

[70] Described classicly by Tolstoy as: "My piece of bread only belongs to me when I know that everyone else has a share and that no-one starves while I eat" [cited on *www.stockfreeorganic.net* la30/03/12]

sought through the 'quality turn' by AFN participants (Ilbery and Kneafsey 2000). The non-monetised food produced indicates that conflation of good ood or a quality turn with privilege is untenable for many (peri-)urban activities of AFNs. Allotment cultivation also has (under-used) potential to contribute to human capital through physiological health from plant medicine (De Vos 2010), outdoor exercise, as well as through psychological and emotional health from the natural setting, sense of place, self-reliance and having a personal project (learning). However, many of these potentials apply to other activities, e.g. gardening in general (Bellows *et al.* 2003, Bhatti and Church 2001, Brook 2003, Vacek *et al.* 2012), and conversely, many AFN activities do not offer the same opportunities.

The actual impact on participants and on local environments in allotments and AFNs was seen to be dependent on individual preferences, as suggested by Van den Berg and Van Winsum-Westra (2010). The social interactions provided by community gardens (AFNs) and allotments (DeSilvey 2003, Buckingham 2005, Hope and Ellis 2009, Platten 2011), are not always sought by allotment tenants and instead, as Wiltshire and Geoghegan (2012) suggests, some tenants seek the opposite, whether described as solitude or 'the restorative natural setting'. Illustrations of the different capitals/assets involved in allotments and AFNs supported the framings of multifunctional (Wilson 2007), multidimensional (Pearson 2010) and heterogeneous (van der Ploeg 2008) food production, as described for rural agriculture, with the primacy of any one function or

dimension is dependent both on agency (individual preferences) and structure (wider socio-political settings).

In the context of present day issues of food security for low-income households due to rising unemployment and cuts in welfare benefits, of the desire for a healthy aging population, and of the requirement for biodiverse urban habitats, both allotment cultivation and other (peri-)urban food activities (e.g. community gardens) can contribute to building different dimensions of capitals. The research has also supported contentions in literature that place-based food production activities for overcoming nature-culture binaries (Castree 2005) or a metabolic rift (Schneider and McMichael 2010), through the everyday practices of engaging in gardening (Bhatti and Church 2001), and as suggested in anthropological literature (Fajans 1988). It further suggests liberating the concept of food gardening from the concepts of work as waged effort (Ekers and Loftus 2012), to a concept of convivial activities that can build human, social, cultural and natural capital assets.

The relations determined within Plymouth allotment and other food network praxes (Chapter 6, second research objective) illustrated the framework of diverse economies (Gibson-Graham 2008), with demonstrated characteristics of building social capital (bridging/bonding, strong/weak ties), and non-monetised flows within and between networks and communities (Granovetter 1985, Mohan and Mohan 2002). However, instances of depleted social capital were

also documented, suggesting that social norms require strengthening and that current rules and sanctions are not adequate to deal with instances of conflict compared to relations within the monetary economy (through contracts and fines, etc.). This inadequacy can be attributed to loss of the means of community-level conflict resolution described in anthropological literature (Thomas 1992) and compares to former sanction practices, such as skimmingtons in the UK (Stevenson 1992). Suggestions for possible solutions in current UK context included greater numbers of smaller allotment sites, and the potential of co-location of community garden projects, ensuring a more continual presence on sites. The multiple motivations involved demonstrated the blurring between self-interest and altruism as documented (Thoits and Hewitt 2011, Wilson and Musick 1997, Salamon *et al.* 2011), but illustrate a means of self-help and autonomy from waged labour relations within the monetary economy. The many non-monetised transactions or exchanges involving gifting of time and skills, found both on allotments and other place-based food networks, largely represent ethics of cooperation (Gibson-Graham *2008*), and when in balance with competition can represent economies of care (Dowler *et al.* 2010).

The possibility for moving into the monetary economy (converting human, natural and cultural capital into economic capital) was found to exist within Plymouth allotments, but has been restricted by the 1908 legislation, and more recently by diminishing size of plots. Some allotment tenants do express interest

in gaining more access to a rural setting, for larger-scale production activities, for food or wood-fuel, and also for reasons that can be represented as bolt-hole, castle, or life-raft as suggested by Halfacree (2007, 2008, 2010). The category of 'springboard' could be added to these representations, as a description for the increasing number of people seeking land-based livelihoods demonstrated in patterns of counter-urbanisation (Halfacree 2007, Maxey *et al.* 2011). The historical continuum from allotments to smallholdings (Burchardt 2002, Crouch and Ward 1997, Poole 2006) illustrates the potential for the Campaign for Real Farming scenario of 'Eight steps back to the land' (Tudge 2011b). As claimed for CSAs, and in literature on diversification and rural socio-economic development (Barbieri and Mahoney 2009, Marsden and Sonnino 2009), the 'distance' between producers and consumers is reduced in AFNs and to the greatest extent in allotment and other domestic food provisioning, compared to conventional food networks. CSAs further demonstrate the potential for a certain extent of fungibility, or convertibility, of capitals through non-monetized exchanges, supporting analysis by van der Ploeg (2000) that no broad generalisation can be made on whether 'AFNs' can be viewed as exclusionary or inclusionary (D Goodman 2004), but that European farming is instead heterogeneous. This research further suggests that a more useful distinction of different food systems may be found through analysis on the dimensions of capital assets, as recently also employed by Kneafsey *et al.* (2013) in work on European short food supply chains. The categories of capitals highlight the dimensions needing investigation before any claims on AFNs can be

made, and notably include natural (land availability, biodiversity), cultural (agroecological production methods), and political (narratives and influence).

The politics and governance of allotments defined (Chapter 7, third objective) illustrated hierarchical relations and dominant narratives. Participation in the management of Plymouth allotments is limited to very few tenants and actants within the local authority, as reported for participation in neighbourhood projects elsewhere (Davies 2002, Kearns 1995), and power and influence to lever resources for allotments and AFNs is minimal, though can be enabled by events as was illustrated for Plymouth in Bloom. The roles (positions) of key actants in networks (communities) (Becher 2010, Prell *et al.* 2009) affect their ability to set agendas (Barbaras and Jerit 2009, Moe 2005) within the social-political neoliberal settings, and so to lever resources. However, new groupings of actants develop (e.g. FoodPlymouth) and help to highlight the lack of balance in policymaking based on commercial and large-scale food provisioning. New conceptions of the world are being created (Wainwright 2010) by 'peasant agro-ecology movements for social-ecological justice', such as Via Campesina. These echo the socio-political debates in the UK, but which resulted in the allotment system alongside continued enclosures, rather than wider-scale land reform, and can be framed as seeking environmental and social justice (Moe 2005, Soja 2008, Mitchell and Norman 2012). In the UK, allotments and AFNs largely work within current structures to make changes incrementally through individual agency, albeit with (increasing) unmet demand for allotments and

dependence on short-term grant funding for many urban AFN projects. Alliances and collaborations between allotments and AFNs were suggested to enable a stronger voice to be heard in policy decisions and resource allocations, but are dependent on key champions, as illustrated by FoodPlymouth.

Translocal and 'transtemporal' social movements, exemplified by Via Campesina (Desmarais 2008), and historical research on the centrality of 'the land issue' in UK politics (Stevenson 1992, Boyle 2012, Chase 1998, Mingay 1997, Readman 2008a,b) are creating new information that can inform decision-making. As suggested by Gibson-Graham (2008), new information can help to make the extent and impacts of activities visible. In this case, without new information that takes non-monetized factors, for example health and ecological impacts, into account, the current levels of political and economic capitals within allotment and AFN praxes are unlikely to lead to increased provision of allotments, given budgetary silos.

The city- or regional- level social-ecological systems that Plymouth allotments and AFNs represent (Chapter 8; fourth research objective) were seen to be definable. The potential for enhanced resilience and sustainability through these praxes, although unquantifiable, is supported given literature that suggests features of resilience to include links, learning, and diversity (Wilson 2012, Eriksen 2008a,b, Bristow 2010, and Folke 2006). These features were demonstrated through the time period of this research by the evolution of

FoodPlymouth, which brought together increasing numbers of individuals and organisations within the city-region who had an interest in food. It is suggested that the learning, adaptation and evolution characterising such cross-functional systems holds potential for enhanced food security for urban populations. The co-siting of allotments and community gardens in Plymouth indicate diverse place-based reservoirs of knowledge and plant material, with potential for exchange: between allotment tenants and professionally-trained employees of community gardens. The contingent factors for this to occur include initial starting conditions, or baseline assets, capacities and resource flows on multiple dimensions.

This research highlights how AFNs are also dependent on the capitals/assets or starting conditions, that can maintain material, social and psychological functions in the face of continual change. Material functions for food production systems are clearly dependent on land, but both allotments and AFNs demonstrate low asset bases compared to conventional food systems. Psychological functions are performed by strengthening place attachment (Birkeland 2008) through neighbourhood, city and regional identities involved in AFNs. The social functions, discussed in literature on cohesion and sustainable communities (Uzzell *et al.* 2002), are performed through the many events on allotments and within AFNs, but also wider social movements.

Starting with an exploration of allotments as a means to clarify understandings of AFNs and their claims has led to the issue at the root of the UK allotment system: that of access to natural capital, or 'the People's Farm' (Chase 1988). Drawing on historical and translocal imaginaries in the present day leads towards the transformative power of new conceptions of the world (Wainwright 2010). As Stengers (2005:163) describes, citing Deleuze, 'To think is always to follow the witch's flight.'

9.3 Remaining gaps and suggestions for further research

The conceptual framings that are employed in this research have been applied to Plymouth allotments and AFNs in an exploratory and illustrative case study in which the researcher is embedded. To further clarify these issues and advance understandings, several key avenues of further research are suggested, whether focused on Plymouth or other urban settings. These include investigation of:

- The most effective tools to gauge the relative importance of each capital asset in determining extent of participation in allotment cultivation or AFNs, drawing on literature of post-productivist, multidimensional food production and the quality turn described for AFNs (Ilbery and Kneafsey 2000, Wilson 2007, Pearson 2010)
- Gender patterns of tenancies, and attitudes towards food preparation within AFNs, according to variables such as childhood learning, education,

employment, or garden-size, developing gender analyses from current time-use surveys (Washbrook 2007)

- Investigation of the geographical characteristics of the site, and demographies of the tenants to unpick contributing or contingent factors for the development of the different cultures and norms surrounding pilfering and theft with consideration of links at wider scales of 'fairness throughout the food chain', or a new 'moral economy' (Brenner 2001, Peck 2002, Gibson-Graham 2008, Dowler *et al.* 2010)
- Factors affecting agenda-setting in local authority in relation to leisure service provision and land allocations and heterodox valuations that can raise visibility of issues (Moe 2005, SDC 2007)
- Cross-city comparisons of city-wide food initiatives to explore potential roles in feeding urban populations (Morgan 2010)
- Intersubjective understandings of different actants in different sectors (in Plymouth or elsewhere) e.g. evolving or emerging, resilience or sustainability, and diverse, alternative, different, or local networks for food.
- Application of the merged capitals/political ecology framework presented here to other sectors (e.g. alternative (heterodox) economics, alternative (holistic) health).

This research started by defining four research objectives, and has concluded with many more avenues for future investigations with those listed above as a starting point.

9.4 From academia to policy: speaking many languages and issuing invitations

The benefit of further research depends on consensual conceptual clarity (Ostrom 2008). This research supports the recognition of place-based food networks as multilevel polycentric social-ecological systems (Ostrom 2010) with potential to contribute to the sustainability and resilience of urban populations (Heynen and Perkins 2005, Bickerstaff and Agyeman 2009). It posits that the urban-rural continuum, as seen historically between allotments, smallholding and larger-scale farming, as in Tudge's (2011b) suggestion of 'Eight steps back to the land', enables more comprehensive future food scenarios than either urban planning or rural-focused policy can attain separately. At many points during this research, the value of 'speaking different languages to different audiences' was raised, notably at the Bristol meeting on a potential UK Sustainable Food Cities coalition (RL121011).

The term alternative food network (AFN) has been used throughout this study for the sake of consistency. However, as research progressed, it became clear that other conceptualisations may also be helpful, dependent on context and as seen in literature that uses terms of urban agriculture, local food networks, and heterogeneous farming systems (van der Ploeg 2000, McClintock 2010, Morgan 2010). This thesis supports D Goodman's (2004) assertion that the term AFN is so loosely defined that it may not serve a useful purpose if applied to all

contexts. It may remain useful for commercial rural food production and retailing, as a direct comparator to praxes within conventional food systems. However, generalisations applied to or extended from non-monetised and urban projects, such as community gardens, are unlikely to be useful and risk conflation of concepts, as suggested by Tregear (2011).

The thesis supports contentions that 'another world is possible', or that potential exists for different food futures with enhances social-ecological justice and sustainability. However, many concepts drawn on in this research would benefit from further clarity in definition and specification in order to align practise, policy and research, with suggestions offered in Table 9.1.

Table 9.1 Clarifying inter-disciplinary concepts *(Source: author)*

Concepts	Academic debates and potentials for clarification
Sustainability and resilience	Intersubjective consensus between disciplines on sustainability and resilience, using on the capitals/assets, ecofootprints and system boundaries (Rockstrom *et al.* 2009) frameworks to clarify social-ecological models
Food security and social justice	A grounding of social justice through the benchmark of food sovereignty principles
Biodiversity and ecological justice	A grounding of ecological justice through landspare and landshare (set-aside or conservation/agroecology) assessment
Social and ecological embeddedness	Refer to capitals framework, ecofootprints and boundaries
Efficiency and comparative advantage	The multi-scalar capitals/assets model can contribute to understandings on externalities and hidden subsidies
Ecosystem services	Consensus on methodologies for proxy valuations
Global and local	Further investigation of the term translocal
The value of values	Acknowledgement of the impossibility and undesirability of value-free research

As Table 9.1 suggests, many key concepts in academic literature remain to achieve inter-subjective or inter-disciplinary consensus, and could potentially be achieved achieved by greater cross-disciplinary workings (Dalrymple and Miller2005), and is encouraged by the UK research councils. However, the benefit of flexible definitions as a means of enabling participation of greater numbers also needs to be acknowledged. The concepts of planetary boundaries and ecofootprints enable both scientific and popular understandings about the resilience and sustainability of social-ecological systems. For example, these two concepts framed the lecture by Tony Juniper, ex-Director of Friends of the Earth, to the Institute of Sustainability Solutions Research at Plymouth University in December 2011. This research has attempted to develop theoretical, conceptual and empirical knowledge in a way that is policy relevant and accessible, with the covalent aim according to the participatory action research approach, of a beneficial impact for those at the centre of this research, the residents and environments of Plymouth, as well as beyond, to other urban and rural settings.

Tansey (2012) suggests that the biggest challenge for academic geography is to make itself better understood in order to stay relevant to present day challenges and policy-making. Efforts in conceptual grouping (and continual re-grouping) in this research have aimed to respond to the calls for clarity (Treager 2011, Ostrom 2007) and common frameworks that can help both to align policy and academic research, rather than defining disciplinary territories. The branches of geography drawn on in this research have included urban, rural,

participatory, cultural, and political, and the value of including heuristics and empirical data from other disciplines (e.g. economics and environmental science) illustrated through calculations (Chapters 6 and 7; and see Appendix 21) and consideration of food provisioning social-ecological systems viewed as cycles rather than supply chains (Chapter 8). Food as a research issue has potential as an integrative theme across disciplinary and functional boundaries (Renting and Wiskerke 2010), so enabling collaborations that could enable expansion of the reach of academic research into policy considerations. Further, through drawing on formulations of critical realism, the naming of the 'actual' realm as 'potential' was perceived throughout to make findings more accessible and meaningful.

The similarities between debates on allotments in the eighteenth and nineteenth centuries and present-day allotments and food justice movements found in this research support the value of the Gramscian political ecology approach taken, of 'taking the helm of history' in order to create 'new conceptions of the world' (Wainwright 2010). This long view has enabled interrogation of the concept of AFNs through the illustrative and benchmarking example of allotments and resulted in suggestions that the variance in different activities (CSAs, community gardens, farmers markets, vegetable box schemes, organic agriculture) merit more a terminology of heterogeneous or diverse instead of alternative food networks.

Finally, the pragmatic intention of meliorism taken through the normative position of participatory action research in this study is suggested to be a transparent and ethical approach when compared to a purported objectivity which can be instead read as the value of self-interest, or 'lack of care'. As Barnes (2010: 670) states:

> "At the heart of pragmatism is the belief that ideas are like knives and forks, implements to accomplish particular tasks and not transcendent truths. This is what makes pragmatism pragmatism. It is a philosophy of practical achievement. Ideas are labelled true when they enable us to get things done."

9.5 Conclusion

In summary, through the illustration of allotment praxes and food networks in Plymouth, this research has investigated debates on AFNs: of an exclusionary quality turn with impacts on inequalities; of defensive localism, and reconnecting consumers and producers in short supply chains; of benefits on 'the environment'; and on sustainability and resilience of food supplies, or food security, for urban populations. It has suggested that through 'speaking many languages' and aligning values between different actors, in policy, research and practising food initiatives, that diverse local, urban and regional food networks hold significant potential to enhance multiple capital assets: health and wellbeing, communities, economy, environment and governance. A summary of what allotments and diverse place-based food networks currently offer Plymouth

in 2013, in order to meet stated policy objectives, are summarised in Table 9.2 below.

Table 9.2. Summary of what allotments and diverse food networks offer Plymouth in 2013

Plymouth City Council policy objectives	**Contribution of Plymouth allotments and DFNs**
Health and wellbeing (*Human capital)* • Reduce health inequalities • Promoting the health benefits of green space	• Increased supplies of fresh food • Physical activity and personal projects • Restorative natural environment (stress reduction) • Phytomedicine for a range of health conditions
Inclusive communities (*Social capital)* • Distinctive cohesive neighbourhoods • Sustainable linked communities	• Building communities on sites and within neighbourhoods and wider city networks • Positive place attachment and place-making
Incomes, livelihoods and self-reliance (*Economic capital)* • Ensure that opportunities for employment are provided within each neighbourhood • New opportunities and activities in natural spaces	• Potential for enterprises, although legislation prohibits sales from allotments • Reduced dependence on foodbanks and other charitable assistance. Self-reliance through building and convertibility between capitals.
Learning and skills (*Cultural capital*) • Delivering educational improvements: enable the city to excel at all levels of educational provision and achievement	• Learning opportunities at all stages of the life and at all stages of the food cycle • Enhanced status through skills development in growing and cooking food
Local and global environments (*Natural capital)* • A 'multifunctional' green infrastructure that delivers a broad range of quality of life benefits • Work towards carbon neutrality, safeguarding natural resources and seeking new opportunities for enriching the city's biodiversity	• Reduced food miles • Enhanced soils and biodiversity especially pollinators, maintaining and developing landraces suited to local environments • Sites of experimentation • Reduced food packaging
Governance (*Political capital)* • The co-operative council: working in equal partnership with local people to shape and strengthen communities • Enable involvement in civic life	• Opportunities for engaging in local and city-wide activities
Resilience and sustainability • Preserve and enhance a variety of environment assets and protect the carrying capacity and qualities of both local and global environments	• Increased food security for urban populations, dependent on contingent factors, e.g. land allocations, time

As Table 9.2 suggests, this research has demonstrated the existence of a desire for quality food on allotments and in local food networks that can be called 'the new food agenda'. Much activity is non-monetised and gifted and so can help to reduce inequalities. The place-based localism can be seen as a positive attribute, and is sought in the sustainable cohesive communities of urban regeneration language. The research has supported the potential of (peri-)urban AFNs to reduce inequalities in health and wellbeing through increased access to 'good food' and the potential of benefits from outdoor exercise in activities that involve food growing. However, any reduced healthcare and social care costs, or benefits to ecosystem services, are not yet incorporated into siloed budgets of government, although increased effort is evidenced in development of social and environmental accounting (SROI and ecosystem services assessments (ONS 2012)).

Significantly, as seen historically in debates over access to allotments, the contingent factors for potentials to be realised are access to the 'initial starting conditions'. These can be formulated as the 'land and labour' of economic language. However, the formulation of the capitals/assets framework used in this thesis, with the inclusion of political capital as suggested by Scoones (2009), is contended to enable broader imaginaries and enables broader recognition of the potential for fungibilities.

The conception of allotments and AFNs as diverse economies of care, representing a not-necessarily monetized quality turn that can reduce inequalities, has been illustrated using the example of the UK allotment system in Plymouth. This approach has been informed by taking the long view to clarify processes in the present day. The key arguments in the 1820s for land re-allocations (a jubilee in the Hebraic sense, as suggested by the Spenceans or Levellers) were threefold (Chase 1988: 145): (1) self-dependence for the household (so reducing Poor Relief Rates), free from vagaries of employment and downwards pressure on wages; (2) scale of settlement that was conducive to 'communities', with opportunities for families to enjoy leisure time together; and (3) enjoyment of a 'natural setting' in a way that also gave health-giving exercise and kept the land 'in good heart,' rather than passing time in ale-houses fomenting political oppositions[71]. These three factors have been illustrated throughout this research as being still valid in the present day.

The size of allotment plots has diminished from between 0.1-1.2ha in nineteenth and twentieth centuries, to a present day 'standard' size of 0.02ha, and increasingly 0.01-0.007ha. Further, from their beginnings, demand for allotments has exceeded supply, apart from during two post-war decades. Landowners have historically been reluctant to release land for 'rent at reasonable rates' historically and in the present day, land on city edges to buy or to rent rarely

[71] Making gin, was at that time using up half of the annual grain crop, rather than being made into bread (Stevenson 1992).

becomes available, and generally goes at auction to the highest bidders.[72] In an echo of the early debates over parliamentary reforms, the majority of those who make the law still have their own estates of land (whether to garden, earn income through food production or CAP payments, hunt or enjoy the (unpeopled) landscape)[73]. Nevertheless, social movements such as Reclaim the Fields and Via Campesina are 'congregating' around these issues in demands for social-ecological justice (George 1998, McCarthy 2005) with the new food agenda appearing increasingly as a new 'attractor' of this zeitgeist in different countries. Especially in urban areas, these can be aligned with values of rights to the city (or land more generally) and spatial justice (Harvey 2003, Soja 2008).

The narrative or storyline of 'eight steps back to the land' (Tudge 2011b) is not necessarily retrospective or Malthusian, for the sake of maximising food production involving 'hard work', but rather one of satisfying multi-dimensional/functional purposes as well as perceived future needs. It illustrates an interlinking of human and natural systems at multiple scales, analysed as overcoming a metabolic rift (Schneider and McMichael 2010) and as polycentric systems (Ostrom 2010). This interlinking indicates a new 'solidarity' and internationalism which offers potential to enhance the future resilience and

[72] Members of the Diggers305 email list document price rises for land of >1,000% over recent decades (http://groups.yahoo.com/group/diggers350/)

[73] See for example, http://www.monbiot.com/2013/07/10/the-landed-mafia/ or http://www.monbiot.com/2013/07/01/robber-barons/ which details how the government minister who is responsible for cutting income support for the poor lives on an estate owned by his wife's family which received €1.5m in income support from taxpayers over ten years.

sustainability of urban and regional populations (Fiksel 2006, Wilson 2012; see Chapter 8).

A comparison can be made between the narratives of allotments as an activity subsidised by tax-payers, and the efficient agricultural production of large enterprises. The former are subsidised to the extent of relatively small land allocations and administrative resource whilst the latter are highly subsidised through CAP payments, and receive other fiscal incentives. This research has shown that the capitals/assets model used in livelihoods approaches helps to clarify resource allocations and so to develop materialities and imaginaries of more socially- and ecologically- just places in future. The imaginaries behind the opposing storylines propounded at the time of the inception of allotments and enclosures, of scarcity and deprivation or natural bounty can also be compared: the debates of Malthus versus Thomas Paine who wrote that '*The Rights of Man*' included access to the 'bounty' of People's Farm (Chase 1988).

Whilst policies ubiquitously draw on rhetoric of sustainability, the local ('alternative') food networks discussed in this research are limited and there is continuous need to justify the use of urban land for food growing or retailing activities. The economistic narratives remain visible throughout. This concluding chapter has underlined the need for a holistic view that takes multiple-perspectives (see also Miller 1996), and the thesis has drawn on heuristics and conceptual framings from multiple theoretical frameworks. The multilevel

contexts of industrialisation, commodification and financialisation within which allotments and other food networks operate has been seen through the perspectives of political ecology (Ostrom 2007) and diverse economies (Gibson-Graham 2008), What has been observed is that, while praxes in allotments and other place-based food networks fulfil the sustainability rhetoric, the actual levels of activity are limited to a minority of (peri)urban populations in the present day and 'free' market policies and narratives continue to favour oligopolistic globalising food networks, notably through financial capital assets ('real estate'). The findings and analyses suggest that a new city, regional or national interest narrative is required before levels of place-based (urban and rural) food activities widen to the majority of populations. Even so, in the present day, diverse food-related activities are significantly diffused throughout all demographics of urban populations through the allotment system. These diverse food activities hold potential to contribute to the resilience and sustainability of food security for urban populations on a continuum from baseline food provisions to a quality turn. Both allotments and other local food activities currently help to meet multiple policy objectives and could scale up if facilitated by wider social, political and economic settings, in Tudge's (2011) terms, to 'provide good food for everyone forever'.

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Appendix 1 Legislation and reports on access to land, wildfood and allotments

(Source: compiled from Boyle 2012, Cook, 2006, Thornes 2011, Way 2008, and http://www.bkthisandthat.org.uk/ShortHistoryOfAllotmentshtml.html (anonymous researcher's website l.a. 190113)) LA = Local authority

Year	Name	Content and effect
1532	Preservation of Grain Act	Legislated for killing wildlife, blamed for stealing food and spreading disease (Henry VIII). Reduced wildfood (meat) availability.
1566	Vermin Law	Further incentives for killing wildlife (Elizabeth I). Further reduced wildfood availability.
1572	Vagrancy and Poor Law Act	Prohibited wanderers.
1601	Act for the Relief of the Poor	Established the church and parish as responsible for welfare of the poor. Delineated between deserving (householders) and undeserving (idle/vagrants) poor.
1700s-1800s	Over 3,500 Enclosure Acts	Over 5 million acres of common land enclosed, with an estimated less than 0.5 per cent set aside for use by the poor.
1715	Riot Act	Prohibited joint action by three or more people. Used against protestors over access to food and land.
1782	Poor Law	Guardians of the Poor could voluntarily enclose up to 10 acres of land around the poorhouse for food.
1799	Combination Act	Outlawed trade unions. Used to prohibit social movements campaigning for access to land. Repealed 1824/5.
1819	Select Vestries Act	Churchwardens and Overseers of the Poor could buy or rent up to eight ha. (20 acres) and let it to the poor in the parish. First public act to specify provision of allotments for the poor.
1824	Vagrancy Act	Prohibited sleeping on the street or begging.
1831	Allotment Act	Limit increased to 50 acres where demand exceeded supply.
1832	Allotment Act	Wardens of fuel allotments could break them into smaller units and let to individuals for cultivation. Size of allotment set between 0.25 and 1 acre. Prohibited building on allotments. Repealed 1993.
1834	Poor Law Amendment Act	Parish Poor Law Unions set up to administer Poor Law Relief.
1845	General Enclosure Act	Commissioners could allocate allotments for the labouring poor as 'field gardens' of up to 0.25 acre. 1845-1869 an estimated 2223 acres set aside for allotments out of total enclosed of 614,800 (0.4%). (1846 potato blight spread across England).
1860s	Royal Commission on the Employment of Children, Small Persons and Women in Agriculture	Stressed benefits of allotments on living standards.

1873	Poor Allotments Management Act	Amendments to 1845 Act.
1875	Sanitary Districts	Set up to improve public health.
1876	Allotment Act	Amendments to 1845 Act.
1882	Allotment Extension Act	Trustees of charity land for the poor required to allocate portions for allotments. Led to 394,517 smallholdings of less than 4 acres and 272,000 garden allotments (Boyle 2012: 37).
1885	Allotment Extension Act	Land in parishes could be let as allotments at the same rate as surrounding agricultural land.
1887	Allotment Extension Act	Sanitary Authorities could provide allotments and acquire land by compulsory purchase if needed. Six registered electors could appeal for land for allotments. First attempt at legislating for the public provision of allotments.
1888	Act establishing County Councils	Gave duty to local Sanitary Authorities to provide land for use as allotments.
1890	County Council Edict	County Councils had to set up Standing Committees on Allotments, with duty to hold enquiry if Sanitary Authority failed to provide allotments.
1892	Small Holdings Act	Differentiation between small holdings as a means of livelihood and allotments as spare time activity.
1894	Local Government Act	Rural and Urban District Councils replaced Sanitary Authorities and given power to provide allotment land, if voluntarily acquired, plots up to 1 acre. If compulsorily acquired, up to 1 acre arable and 3 acres of pasture.
1907	Smallholding and Allotment Act	Clarified responsibilities of parishes, boroughs and urban districts. County Councils were given duty to determine what land was required for allotments. Board of Agriculture (BoA) became central authority for allotments and to hold enquiries if it considered CCs were not providing adequate land.
1908	Smallholdings and Allotments Act	Repealed and consolidated 1907, 1887 and 1890 Acts. The basis of present day allotment system. Section 23: LA must take into account written representations on the need for allotments by any 6 residents on electoral register or people liable to pay council tax, assess demands for allotments and provide sufficient number of allotments and let them to persons residing in its area who want them. (No time limit for provision if need identified.) Councils could make application for compulsory hiring if it had no spare land. Councils had to recover costs. Required notice to quit for tenants. Defines allotments as mainly cultivated by the occupier for the production of vegetables and fruit crops for consumption 'by himself or his family', i.e. precluded use for trade or business but not use as leisure garden, keeping livestock or limited sale of surplus produce. 1912 survey by BoA showed
1912	Board of Agriculture Survey	Reported that around 25% of councils supplied allotments, totalling 31,000 acres. Approximately 23% purchased and the

		rest leased.
1914	Defence of the Realm Act (DORA)	Emergency powers, enabled food rationing, brought in in 1916.
1916	Cultivation of Lands Order	All unoccupied land could be secured by the Board of Agriculture. Post-war and in 1919, areas of allotment land reclaimed by landowners.
1919	Land Settlement (Facilities) Act	Power for councils to acquire land for returning veterans for smallholdings and allotments.
1922	Allotments Act	Allotment authorities required to set up allotment committees. Defined security of tenants of 6 months' notice to quit and compensation terms. Defines allotment gardens as not exceeding forty poles (under 0.25 acre) and No legal minimum size.
1925	Allotments Act	Town planning schemes to consider allotment provision. Defined 'statutory allotments' as land purchased for that purpose and which could not be sold or converted without Ministerial consent.
1926	Smallholding and Allotment Act	Increased notice to quit to 12 months. Tenants of uncultivated plots made liable to pay compensation for dilapidation.
1939	Dig for Victory	Campaign launched in October that year with objective of creating 0.5 million new allotments. Estimated 1.75 million allotment plots by 1944. Between 1944-1947, 0.5 million plots lost/reclaimed.
1947	Town and Country Planning Act	Prohibited building on land without planning permission. Removed the requirement to consider allotment provision in town planning schemes. Outlawed plotlands and living in huts on allotments (cf. Hardy and Ward 1984).
1949	Allotments Advisory Committee	Sought 4 acres of allotments for every 1,000 people in the UK (Cook 2006: 86).
1950	Allotment Act	Council obligation for population of 10,000 or more to provide plots not exceeding one-eighth acre. Provides for reduced payment of rents in special circumstances (e.g. retired, unemployed or other).
1951	National Association of Parish Councils	Produced handbook for councils on running allotments.
1957	Occupiers' Liability Act	Common duty of care for anyone involved in allotment site management to ensure it is run in as safe and appropriate manner as possible.
1969	Thorpe Report	Recommended site facilities, and provision level equivalent to 15 per 1,000 households, or 0.2 ha. per 1,000 households.
1971	Town and Country Planning Act	Covered forward planning for allotments.
1972	Local Government Act	Schedule 29, para 9: Duty for allotment provision lies with Town, Parish, or District Councils and Unitary Authorities. Removed requirement for Allotment Committees.

1980/ 1981	Local Government Planning and Land Act and Amendments	Covered forward planning. LAs to safeguard existing land used as allotments. Any proceeds from land sale to be re-invested in developing the allotment service.
1998	Select Committee of the Departments for the Environment, Transport and Regional Affairs (DETR)	Recommended urgent action to protect existing allotment sites, and overhaul of existing legislation, including removal of restrictions on the uses to which allotments could be put. Para 84: noted that replacement sites were provided in only two of the 51 'statutory' sites lost since May 1997.
	Planning Policy Guidance 17 (PPG17)	LAs must make provision for all types of open space that may be of public value, required robust assessments of local needs for audits of open space, sports and recreational facilities and to establish standards for new provision. Sites to be normally 0.75 mile or less from centre of demand. (PPG17 superseded by new National Planning Policy Framework 2011.)
2000	NSALG	Recommended provision level of 20 standard size plots (i.e. ~250m^2) per 1,000 households.
April 2007- March 2009		Of 98 applications to the Secretary of State for consent to dispose of statutory allotment sites, 56 were approved, 2 refused, 5 withdrawn, 4 remained under consideration, and consent was not required or applications were not pursued for 35. (Hansard 14 July 2009 C309W).
2010	DCLG report A Place to Grow	Guidance on management of plots including on reducing plot sizes to minimise waiting lists.
2011	Localism Act	Community Right to Challenge. Potential for local communities to take on management of land areas.
2012	National Planning Policy Framework	Presumption in favour of 'sustainable development' but allows for neighbourhood plans to be written by local residents.

Appendix 2 Food Security Indicators

This appendix presents the UK government's approaches to food security and sustainability from reports published in 2010 illustrating the different indicators and assessments used and the need for further data.

(a) Defra Food Security Indicators *(Source: Defra 2010c:: 3-4)*

Food security theme	Rationale	Headline indicators	Supporting indicators	What threats and challenges do the indicators address?
1. Global availability	Global food supply ultimately underpins UK availability and prices. A well-functioning trading system is essential if supply is to respond efficiently to global demand.	***Trends in global output per capita***	*Demand growth trends (contextual indicator)* 1. Yield growth by region 2. Real commodity prices 3. Stock to consumption ratios 4. Share of production traded 5. Concentration in world markets 6. R&D expenditure 7. Impact of animal disease	Population and economic growth Rising incomes in emerging economies Harvest shortages Trade protectionism Breakdown in trade Lack of investment Warming and more volatile climate
2. Global resource sustainability	Food must be produced in a way that is environmentally sustainable or we will set up problems for the longer term.	***Global land-use change***	*CO2 emissions (contextual indicator)* 1. Fertiliser intensity 2. Phosphate rock reserves 3. Water productivity of crops 4. Water withdrawn for agriculture 5. Global fish stocks 6. Pesticide intensity *(to be developed)*	Supply expansion being ultimately unsustainable because of natural resource constraints and degradation. Resources not correctly priced or lacking good governance.
3. UK availability and access	Sourcing nutritious food from a diverse range of stable countries including domestically enhances security by spreading risks and keeping prices competitive.	***Diversity of UK supply***	1. EUs share of UK imports 2. Diversity of fruit and veg supply 3. EU production capability 4. UK production capability 5. UK potential in extremis 6. Diversity and flexibility of ports 7. Port diversity of non-indigenous foods	Over-reliance on single sources of supply. Domestic supply failures Capacity and concentration at ports. What if non-EU trade breaks down? Could the UK feed itself in extreme circumstances in which trade broke down?
4. UK food chain resilience	UK food supply depends upon sophisticated and complex chain and infrastructure, and is particularly dependent upon energy supplies in their various forms.	***Energy dependency of the food chain***	1. Energy capacity reliability 2. Diversity of oil and gas imports 3. Business continuity planning 4. Retailer warehouse stocks 5. UK cereals stocks 6. Food industry diversity 7. Viability of large manufacturers 8. Strategic road network	Energy intensive food chain Does just-in-time operation reduce resilience? Diversity of domestic supply chains Is there sufficient continuity planning?

5. Household food security	Everyone should be able to access and afford a healthy diet.	***Low income households " share of spending on food***	1. Relative prices of fruit and veg 2. Food prices in real terms 3. Household access to food stores 4. Self-reported food insecurity *(to be developed)*	Can low income households afford nutritious food? Is physical access a problem?
6. Safety and confidence	Public confidence in UK food system rests primarily on food safety. Food safety stressed in Strategy Unit report.	***Trends in cases of food-borne pathogens***	1. Food safety inspections and incidents 2. Food covered by assurance schemes 3. Public confidence in food safety measures 4. Consumer confidence in food availability *(to be developed)*	Do consumers have confidence in food industry and authorities? Is food safety improving? Growing role for assurance and traceability.

(b) Indicators for a Sustainable Food System *(Source: Defra 2010a)*

S *Supporting indicator*
C *Contextual indicator*
UD *Under development*

		Theme
A		***Enabling and encouraging people to eat a healthy sustainable diet***
1		Accessibility/Affordability: relative price of fruit and vegetables
	s	Low income households' share of spending on food
	s	Food price in real terms
	s	Household access to food stores[1]
	s	Purchasing behaviour in at risk groups *(UD)*
2		Engaged and informed consumer *(UD)*
	s	Public sector leading by example *(UD)*
3		Diet related ill health: obesity
	s	Dietary health
	s	Fruit and vegetable consumption
4		Consumer confidence in food safety measures
	s	Public confidence in food availability *(UD)*
B		***Ensuring a resilient, profitable and competitive food system***
1		Productivity of agriculture (gross value added based measure)
	c	Agricultural resilience
2		Total factor productivity
	s	UK food chain resilience
3		Water usage post farm gate *(UD)*
	c	Water usage post farm gate *(UD)*
4		Congestion and infrastructure costs of food transport
5		Traceability of food (assurance scheme)
6		Food-borne disease incidence
7		Animal health
s		Incidence and prevalence of disease
8		Animal welfare
C		***Increasing food production sustainably***
1		Water abstraction for agriculture (UK)
	s	River water quality
	s	Pesticides in water
2		Soil quality
	s	Sedimentation in rivers *(UD)*
3	s	Biodiversity action plan
	s	Biodiversity – water environment (under investigation)
	s	Farmland birds
	s	Trends in plant diversity in fields and field margins in England
	s	Genetic diversity
	s	Ammonia emissions

4		Fish stocks harvested sustainably
	s	Marine system integrity (North Sea)
	c	Fish imports *(UD)*
	s	Sustainable fish consumption (under consideration)
	c	Global fish stocks
5	c	UK Food production
6	c	Global food availability
D		***Reducing the food system's greenhouse gas emissions***
1		Energy use across the food chain *(UD)*
	s	Energy use of the domestic food chain *(UD)*
2		Greenhouse Gas Emissions from the UK food *chain (UD)*
	s	Trends in food related GHG emissions from UK households
E		***Reducing, reusing and processing waste***
1		Food and drink manufacturing waste (provisional and UK)
2	c	Waste generated per household
	c	Consumer attitudes to household waste
F		***Increasing the impacts of skills, knowledge, research and technology***
1		Investment in training
	s	Skills
	s	Higher education *(UD)*
2		Development and uptake of knowledge and innovation

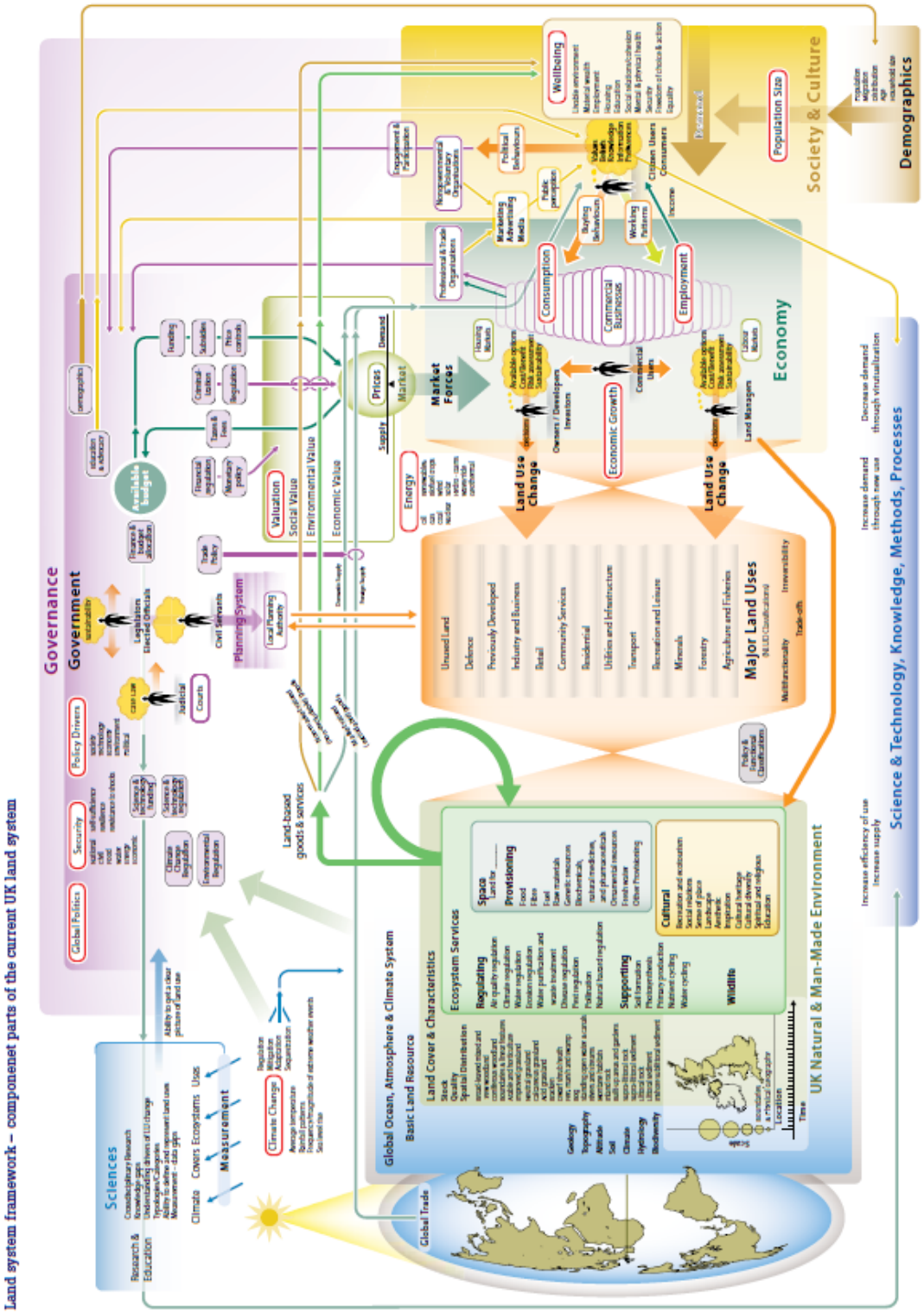
1. From Food Security Agency FSA Low Income Diet and Nutrition Survey

Appendix 3 Systems diagrams from Foresight Project on Land Use Futures

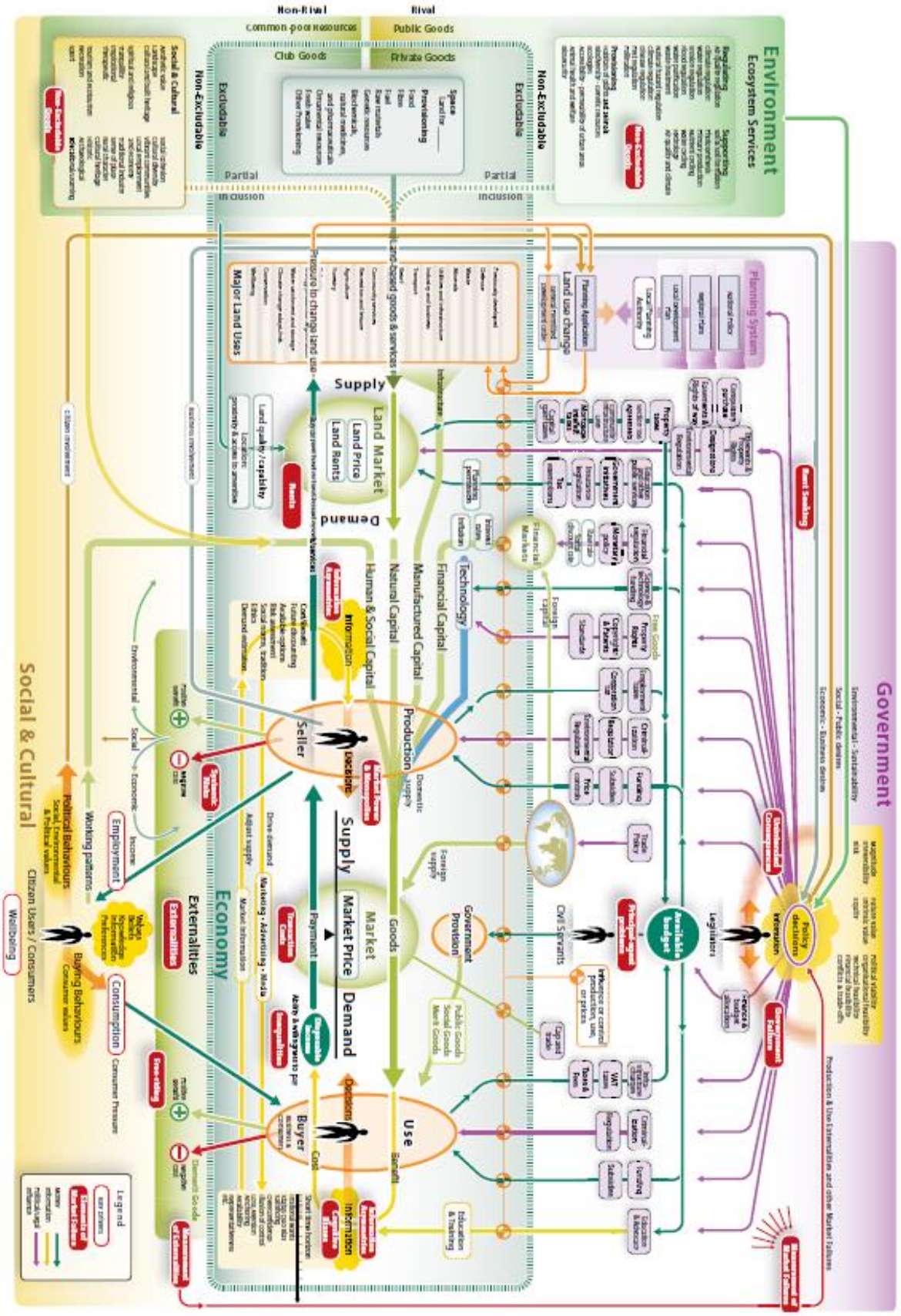
(Source: Foresight Land Use Futures, 2010)

Note: These are presented as a representation of complex modelling in the area of this research not for detailed reading.

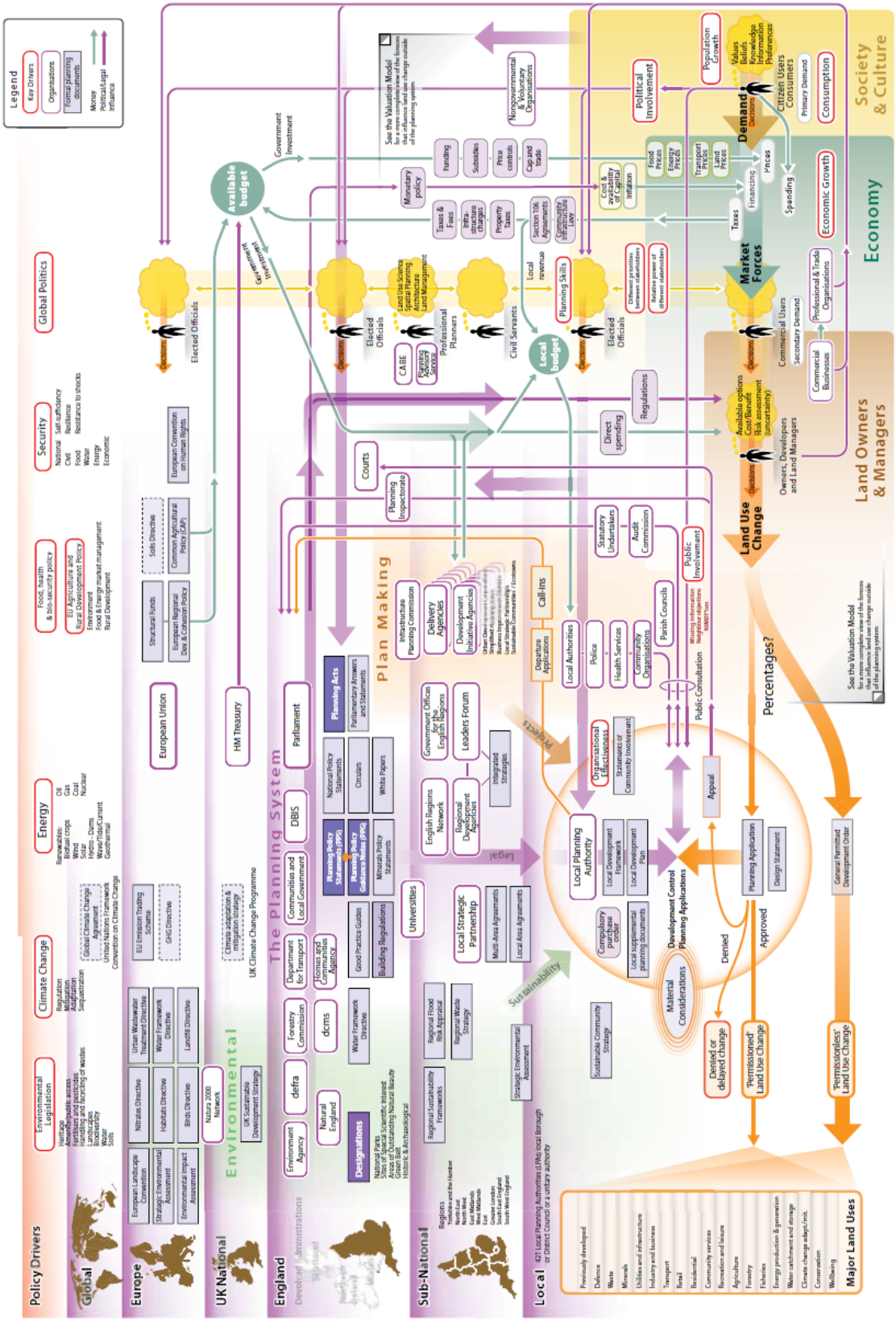
(a) Land system framework: component parts of the current UK land system



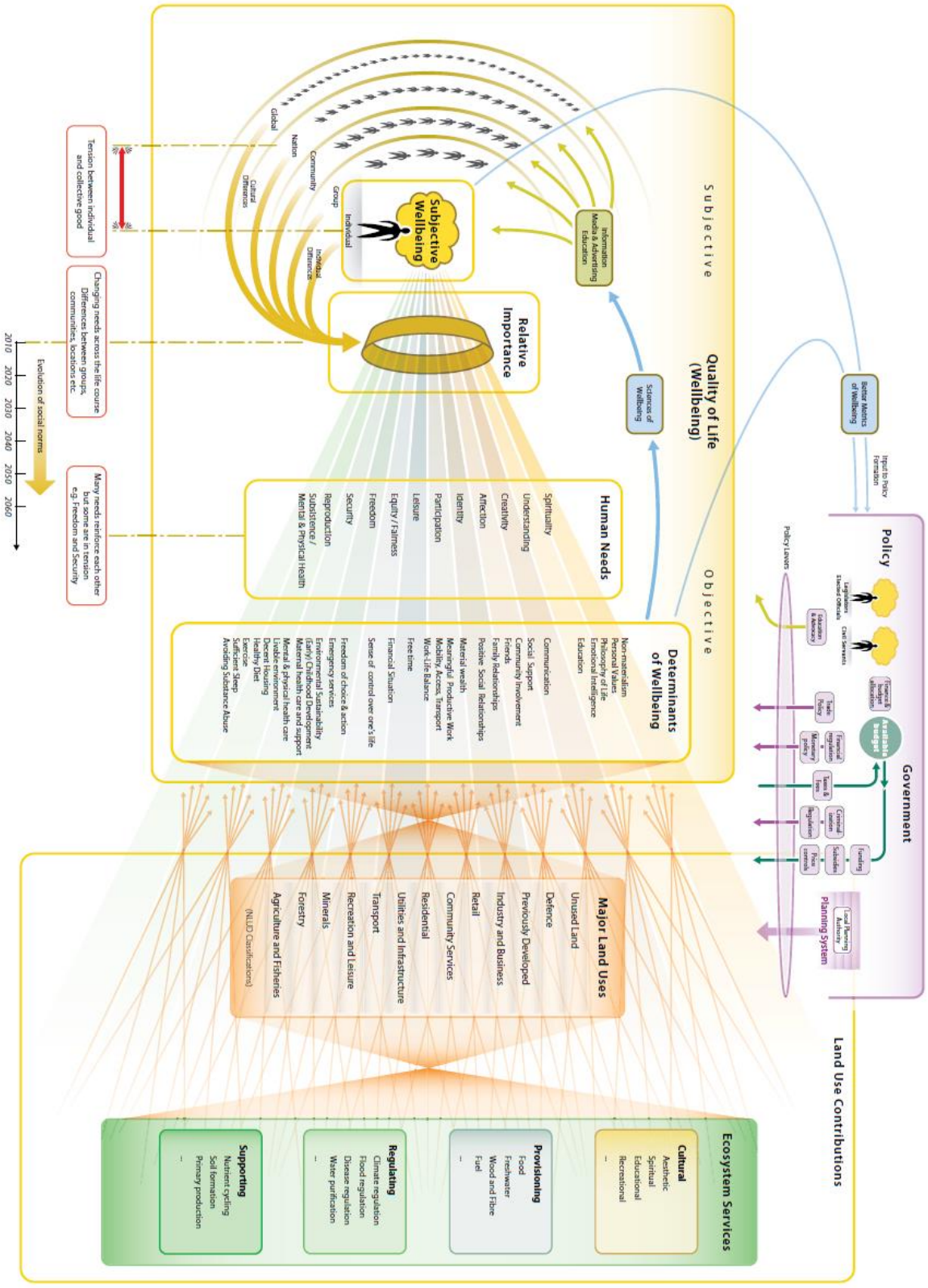
(b) Valuation framework



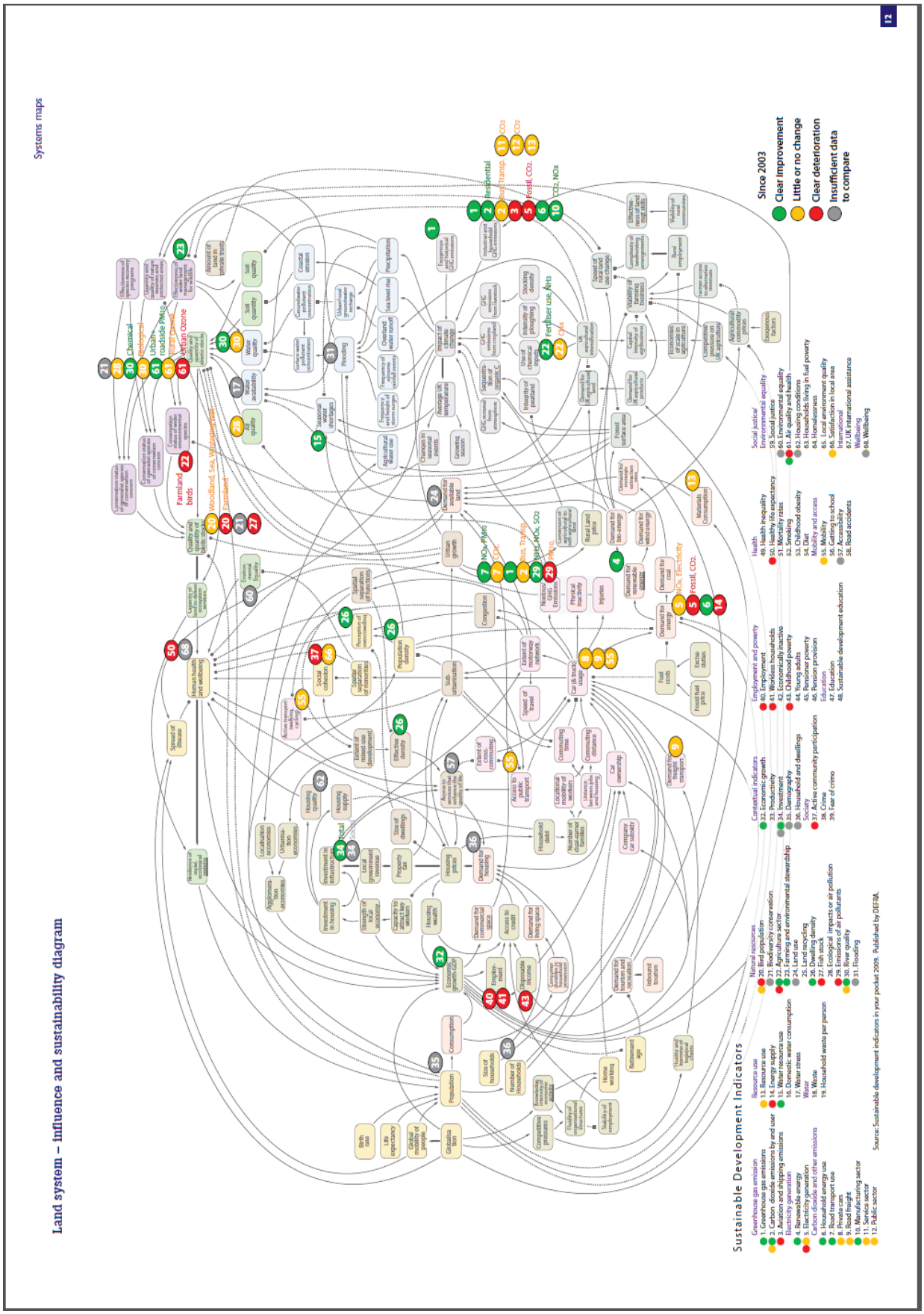
(c) Governance framework



(d) W*ellbeing framework overview*



(e) Land system influence and sustainability diagram



Appendix 4 Stakeholders considered in this research

Key

Zones:

1	Plymouth
2	Devon and Cornwall
3	South West
4	National
5	International
6	Transnational

Categories:

AA	Allotment assn
BC	Buyer co-op
CA	Community supported ag
CF	Community farm
CG	Community gard
CI	Citizen(s) initiative
CN	Consultant
CP	Community project
FO	Funding organisation
FP	Food producer
FPR	Food producer and retailer
FS	Food service
GS	Government/statutory
HP	Home production
IN	Information
MA	Market
MW	Media or web
NS	Network (non-profit)
PC	Producer co-op
RE	Retail
RI	Research institute / academic
SE	Social enterprise
SG	School garden
TN	Trade or professional network
UA	Urban agriculture
UF	Urban forum
WH	Wholesale

Zone	Type	*Name*	*Brief description*	*URL*
		Plymouth		
1	AA	Central Park Allotment Association	Events, seed discounts for members	http://centralparkallotments.org.uk
1	CP	Devon and Cornwall Food Association	Redistributes surplus food	www.dcfa.webs.com/
1	CG	Dig for Devonport	Community garden and allotment	http://www.routeways.org.uk/index.php?page=diggin-it-devonport-park
1	CP	Allways Apples	Community project to identify and celebrate apples and orchards in the city and surrounding region	-
1	CG	Diggin It	Community garden	www.digginit.org.uk
1	CN	FLAIR f3	Local food consultants	www.localfood.org.uk
1	UF	Food! Plymouth initiative	Plymouth Food Charter	www.foodplymouth.org
1	CG	Grow Efford	Community garden, allotment and 'Shed-on-Wheels, part of Building Communities initiative	http://www.effordtakeapart.org.uk/category/projects
1	CG	East End Community allotments	Community garden on statutory allotment site	-
1	CF	Keveral Farm	Community organic farm	http://www.keveral.org
1	AA	Plymouth Allotments	32 sites across Plymouth	http://www.plymouth.gov.uk/allotments
1	RE	Plymouth Farmers Market	Discontinued	-
1	CP	Plymouth Foodbank	Provides foodbags for people in financial crisis	http://www.plymouthfoodbank.co.uk
1	RE	Plymouth City Market	Local food stalls	http://www.plymouthcitymarket.co.uk
1	SG	Oreston School Garden	Influence from exchanges with Ghana	http://www.orestonacademy.com
1	CG	Freedom Fields Garden	Volunteers from MIND Oasis project	http://www.plymouthmind.org.uk/mind_oasis_project.html
1	SG	Ford Road School Garden	Involvement of parents, governors, teachers and children	-
1	SG	Lipson Vale Primary School	Chickens with eggs used in cookery classes	-
1	CP	Plymouth Sustainable Food Settlement - lottery application	Unsuccessful bid to the lottery	-
1	GS	Public Sector local food procurement forum	Ongoing group of public sector buyers	-
1	FPR	Riverford Farm	Vegetable box scheme. Farm co-operative system	http://www.riverford.co.uk
1	AA	Rowdens Reservoir Allotment Association	Plymouth allotment association	Site no longer available
1	AA	Southway Drive Allotment Association	Events and chicken co-operative	http://southwaydriveallotments.co.uk
1	GS	Sell 2 Plymouth	Registration for businesses to sell into public sector	http://www.sell2plymouth.co.uk
1	PC	Tamar Grow Local	Co-operative promoting sustainable local produce in the Tamar Valley	http://www.tamargrowlocal.org
		Devon and Cornwall		
2	FPR	Beenleigh Meadows Farm RAISE	Demonstration farm and kitchen garden; outreach activities	http://www.beenleighmeadowsfarm.org.uk
2	CA	Buckfastleigh CSA	Community Supported Agriculture	-

2	CN	Barefoot Thinking Company	Management of short food supply chain projects	http://www.barefoot-thinking.com
2	CG	Chyan Community Field	Local food growing project	http://www.chyan.org.uk
2	CP	Cornwall Community Food and Composting Project	Local food growing and composting	http://www.cornwallwasteaction.org.uk/what-we-do/projects
2	SE	Dartmoor Commoners Council / Dartmoor Farming Futures	Elected to represent the commoners and regulate management of the commons	http://www.dartmoorcommonerscouncil.org.uk
2	SE	Dartmoor Direct Coop	Marketing and distribution of locally produced chemical-free food and drink: direct home delivery service	http://www.uk.coop/organisation/1036
2	RE	Darts Farm Shopping Village	Commercial retailer of mainly local food 'under one roof'	http://www.dartsfarm.co.uk
2	PC	Definitely Devon	Dairy producers cooperative set up in 1996	-
2	NS	Devon Farms	Connects tourists with farms	http://www.devonfarms.co.uk
2	TN	Devon Food Links	EU-funded DCC coordinated to benefit local economy	http://www.devonfoodlinks.org.uk
2	FPR	Fivepenny Farm	Producers processing cooperative	-
2	CA	Harrowbarrow and Metherell Agricultural Society (HaMAS)	Community Supported Agriculture	http://www.tamargrowlocal.org/harrowbarrow-and-metherell-agricultural-society
2	FP	Higher Farm, Beeson, Devon	Organic mixed farm and educational centre, hosts group visits	http://www.underwooddiscoverycentre.com/index.php?page_id=10
2	CF	Land Matters	Permaculture cooperative in South Devon	http://www.landmatters.org.uk
2	FP	Market garden (Silver)	Husband and wife business	-
2	NS	North Devon Food Forum	Forum for spectrum of 'food operators' within North Devon	http://www.northdevon.gov.uk/index/lgcl_environment/nonlgcl_environmental_health/nonlgcl_food_hygiene_and_safety/nonlgcl_food_forum.htm
2	CA	Occombe Farm - CSA	Event and courses	http://www.occombe.org.uk
2	RE	Penwith Produce, Cornwall	Collaborative initiative to support local produce	-
2	G	Plants for a Future	Information on and stock of useful plants (e.g. for phytomedicine)	www.pfaf.org
2	TN	South Hams Food and Drink Association	Trade association	-
2	TN	Taste of the West	The regional food and drink trade organisation for the South West of England	http://www.tasteofthewest.co.uk
2	RE	Tavistock Farmers Market	2nd and 4th Satuday of each month	tavistockfarmersmarket.com
2	RE	The Real Food Store, Exeter	Community owned food store	http://www.realfoodexeter.co.uk
2	CP	Transition Town Totnes Food Group	Projects include seed swaps, gardenshare	http://www.transitiontowntotnes.org/groups/food-group
		South West UK		
3	UF	Bristol Food Network	Umbrella group, made up of individuals, community projects, organisations and businesses who share a vision to transform Bristol into a sustainable food city	http://www.bristolfoodnetwork.org
3	UF	Bristol Local Food	Bristol local food directory	http://www.bristollocalfood.co.uk

3	TN	Direct from Dorset	To support the local economy, local communities, the local landscape and reduce food miles	http://www.directfromdorset.co.uk
3	UF	Gloucestershire Food Links	Gloucester, Stroud and Swindon local food links	http://www.fresh-n-local.co.uk/about/links.php
3	CP	Our Southwest	An on-line champion for sustainability in the South West	www.oursouthwest.com
3	CP	Planting Places, Sustainability SW	Urban greenspace initiative including local food production	http://www.sustainabilitysouthwest.org.uk/projects/planting_places
3	AA	Russell Town Avenue Community Allotment, Bristol	Allotment site at City Academy used for growing food, training and social events	-
3	CP	Somerset Community Food	Aims to reconnect people with social, health and environmental effects of growing and buying food preparing and eating food	http://www.somersetcommunityfood.org.uk
3	CP	Somerset Food	Dedicated to 'good food' in Somerset	http://www.somersetfood.org/index.htm
3	AA	South West Counties Allotment Association	Support for allotment associations in the SW	http://www.allotmentssouthwest.org.uk/index.php?page=cornwall
3	CA	Stroud CSA	Provides a link between people and farming	www.stroudcommunityagriculture.org
3	NS	Sustainability South West	'Planting places' programme	www.sustainabilitysouthwest.org.uk
		UK National		
4	NS	AAI Agribusiness Accountability Initiative	Global network, searchable database on corporate power in food system	www.agribusinessaccountability.org
4	CN	ADAS	UK agriculture extension service	http://www.adas.co.uk
4	GS	Agriculture and Horticulture Development Board (AHDB)	Resource for agriculture and horticulture	http://www.ahdb.org.uk
4	NS	Allotments-uk.com	Blog for allotmenteers	http://www.allotments-uk.com
4	TN	Association of Chief Estates Surveyors and Property Managers in Local Government	Represents around 250 public sector bodies and exists to promote good asset and estates management in the interests of the community and public services	www.aces.org.uk
4	AA	Association of Manchester Allotment Societies	Network of allotment sites in Manchester	http://www.amas.org.uk
4	GS	Audit Commission	Provides guidance on heterodox valuation (SROI)	http://www.audit-commission.gov.uk/reports
4	NS	Big Barn	Reconnecting consumers with local producers	http://www.bigbarn.co.uk
4	FO	Big Lottery	Funding programmes for local food	www.biglotteryfund.org.uk
4	NS	Bioregional Network	Promotes enterprise for sustainable futures through the One Planet Living approach	www.bioregional.com
4	AA	Birmingham and District Allotments Council	Works to ensure that allotments across the across the City receive the best service for allotments holders and associations	http://www.bdacallotments.btik.com
4	TN	British Retail Consortium	Trade association for the retail industry	www.brc.org.uk
4	TN	British Society of Plant Breeders	Protects property rights of plant breeders	http://www.bspb.co.uk
4	RI	Broom's Barn Research Station	Strategic and applied research for the benefit of UK arable farmers, with particular emphasis on the sugar beet	www.rothamsted.ac.uk/broomsbarn
4	NS	Campaign for Real Farming	Farming that is expressly designed to feed people without wrecking the rest	http://www.campaignforrealfarming.org

			of the world	
4	NS	Campaign for the Protection of Rural England (CPRE)	To protect and enhance rural England. Project mapping of local food webs	www.cpre.org.uk
4	TN	Central Association of Agricultural Valuers	Represents professional agricultural and rural valuers	http://www.caav.org.uk
4	RI	Centre for Alternative Technology	Information and education on sustainable diets	http://www.cat.org.uk
4	IN	Community Economies	Network of researchers on diverse economies	www.communityeconomies.org
4	FPR	Cooperatives UK	National trade body to develop and unite co-operative enterprises	www.uk.coop
4	TN	Country Land and Business Association	Represents landowners and rural businesses	http://www.cla.org.uk
4	GS	DEFRA (Department for Environment, Food and Rural Affairs)	UK government department responsible for policy and regulations on environmental, food and rural issues	http://www.defra.gov.uk
4	RI	Environment and Human Health Research Programme	Joint research council research programme	http://www.nerc.ac.uk/research/programmes/humanhealth/background.asp
4	NS	Farm	Represents independent and family farms	www.farm.org.uk
4	NS	Farmers for Action	To safeguard the long term future of British agriculture and the British countryside	www.farmersforaction.org
4	IN	Farming and Countryside Education	Curriculum materials	http://www.face-online.org.uk
4	CN	Federation of City Farm & Community Gardens	Support, represent and promote community-managed farms and gardens	http://www.farmgarden.org.uk
4	TN	Food and Drink Federation	Trade association for food retailers	www.fdf.org.uk
4	RI	Food Climate Research Network	Learning resource for food and climate change	www.fcrn.org.uk
4	NS	Food Commission	Consumer watchdog on food issues	www.foodcomm.org.uk
4	NS	Food Ethics Council	Advice on the ethics of food and farming	http://www.foodethicscouncil.org
4	NS	Food for Life Partnership	Helping schools to transform their food cultures	http://www.foodforlife.org.uk
4	NS	Food Sovereignty Now	UK network of the global food sovereignty movement	http://foodsovereigntynow.org.uk
4	GS	Food Standards Agency	Responsible for food safety and food hygiene across the UK	www.fsa.gov.uk
4	NS	Friends of the Earth	Campaigns on environment, health, and food miles	www.foe.co.uk
4	NS	GAFF Grassroots Action on Food and Farming	Alliance of 17 farming, consumer, development and environmental organisations. Coordinates the Agribusiness Accountability Initiative (AAI) and EU Supermarkets Working Group	www.gaff.org.uk
4	NS	Garden Organic	Researches and promotes organic growing	http://www.gardenorganic.org.uk
4	NS	Get Growing Black Country and Birmingham	Community, school, allotment and faith-based food growing projects in the Black Country and Birmingham	http://sandwellfoodnetwork.blogspot.co.uk
4	NS	Groundwork UK	Works across the UK with communities on land projects	www.groundwork.org.uk
4	NS	Growing Communities	3.2. Community-led organisation in Hackney, London, organises box scheme and farmers' markets	3.3. http://www.growingcommunities.org
4	NS	Growing Birmingham	Food growing in the city	http://growingbirmingham.org/?page_id=2

4	NS	Harvest Brighton and Hove	Multi-agency approach to support and encourage more local food growing	http://www.harvest-bh.org.uk
4	TN	Horticultural Development Company	Resource for commercial horticulture	www.hdc.org.uk
4	CG	Hoxton Trust	London growing project	www.hoxtontrust.com
4	TN	IGD (Institute of Grocery Distribution)	Research and training for food and consumer goods industry	www.igd.com
4	NS	Labour Land Campaign	Advocates a more equitable distribution of land values	www.labourland.org
4	IN	Landlife National Wildflower Centre	Aims to create new opportunities for wildflowers and wildlife and for people to enjoy them	www.landlife.org.uk
4	GS	Lantra	UK's Sector Skills Council for land-based and environmental industries	http://www.lantra.co.uk
4	IN	LEAF (Linking Environment and Farming	Promotes environmentally sound farming	http://www.leafuk.org/leaf/home.eb
4	RI	LWEC (Living with Environmental Change)	22 public sector organisations that fund, carry out and use environmental research and observations	http://www.lwec.org.uk
4	CN	Local Action on Food Network	People and projects working towards a strong and healthy sustainable food system	http://www.sustainweb.org/localactiononfood
4	GS	Local Government Association	Represents UK local authorities. Report on allotments	www.lga.gov.uk
4	GS	London Food Strategy / Capital Growth	City strategy on food	http://www.capitalgrowth.org
4	NS	Low Impact Living Initiative	Back-to-the-landers	www.lili.org
4	AA	Manor Garden Allotments	Olympic allotment site bulldozed	www.lifeisland.org
		Manchester Veg People	**3.4.** Co-operative of local organic growers and buyers	http://vegpeople.org.uk
4	TN	National Association of British and Irish Millers	Represents nearly 100% of UK flour millers	www.nabim.org.uk
4	IN	National Biodiversity Network	Project to build the UK's first network of biodiversity information	www.nbn.org.uk
4	NS	National Farmers Network	Network of local family farmer groups, organisations and networks	http://www.nationalfarmersnetwork.org.uk
4	TN	National Farmers Retail and Markets Association	Network for farmers markets in the UK	http://www.farmersmarkets.net
4	TN	National Farmers Union	Members receive an estimated £1bn CAP payments	www.nfuonline.com
4	NS	National Society of Allotment and Leisure Gardeners	Advice and support for allotments (Renamed National Allotment Society)	http://www.nsalg.org.uk
4	NS	National Trust	Allocation of land to allotments	http://www.nationaltrust.org.uk
4	NS	National Vegetable Society (NVS)	To promote the culture study and improvement of vegetables	http://www.nvsuk.org.uk/index.php
4	GS	Natural England	UK government's advisor on the natural environment with remit to ensure sustainable stewardship of the land and sea. Green Exercise project	http://www.naturalengland.org.uk
4	GS	ODPM (Office of the Deputy Prime Minister)	Community regeneration	www.renewal.net
4	NS	Organic Farmers & Growers	3.5. UK organic control body that advises on standards and licensing	http://www.organicfarmers.org.uk
4	RI	Organic Research Centre	To develop and support sustainable land-use and food systems along organic/agro-ecological principles	http://www.organicresearchcentre.com
4	NS	Play England	Aims for all children to have regular access and opportunity for free, inclusive, local play provision and play space	www.playengland.org.uk

4	NS	Reclaim the Fields	UK land rights movement	http://www.reclaimthefields.org
4	NS	RHS (Royal Horticultural Society)	Resources for gardeners	www.rhs.org.uk
4	RI	Rothamsted Research Station	The longest running agricultural research station in the world	www.rothamsted.ac.uk
4	TN	Royal Institution of Chartered Surveyors	Professional body for chartered surveyors	www.rics.org.uk
4	TN	Royal Town Planning Institute	Professional body for town planners	www.rtpi.org.uk
4	NS	Small Farms Association	To support the needs of small farmers	www.small-farms-association.co.uk
4	GS	Social Enterprise Commission	Promotes social enterprise	www.socialenterprise.org.uk
4	NS	Soil Association	Promotes sustainable food, farming and land use	http://www.soilassociation.org
4	IN	Stock Free Organic Services	Information and resources for organic vegan farming	www.stockfreeorganic.net
4	CN	Sustain	Alliance for better food and farming. Over 100 member organisations	www.sustainweb.org
4	GS	Sustainable Development Commission	Closed March 2011: archive site with publications	http://www.sd-commission.org.uk
4	NS	Tenant Farmers Association	Represents tenant farmers	www.tfa.org.uk
4	RI	The Academy of Urbanism	Manifesto - nothing on food	www.academyofurbanism.org.uk
4	NS	The Land is Ours	Planning advice for low impact developments	http://www.tlio.org.uk/chapter7
4	NS	Transition Network	Network for localisation and community resilience initiatives	http://www.transitionnetwork.org
4	TN	UK Federation of Bakers	Represents largest UK baking companies	http://www.bakersfederation.org.uk
4	RI	UK Network of Environmental Economists (UKNEE)	Network for all interested in environmental economics	www.eftec.co.uk
4		UK Systems Society	Network for all working on systems theories and methodologies	http://www.first-pages.com/ukss
4	CP	Urban Harvest London	Foraging free food in North London	http://urbanharvest.wikispaces.com
4	CP	Well London	Local community-led projects	http://www.welllondon.org.uk/index.php?resourceid=1
4	CP	Wessex Community Assets	Community Land Trust pilot	www.wessexca.co.uk
		International		
5	NS	American Planning Association	Professional institute for US certified planners and students, initiative on food systems	www.planning.org
5	IN	City Farmer	Urban Agricultural Notes (Canadian NGO)	http://www.cityfarmer.org
5	UA	Detroit Agriculture	Farming resources and education for urban gardeners	http://detroitagriculture.net
5	UF	Detroit Food Policy Council	Education, advocacy and policy organization	http://detroitfoodpolicycouncil.net
5	UA	Earthworks Urban Farm	Detroit Soup Kitchen programme to promote sustainable agricultural practices and nutrition	www.cskdetroit.org
5	RI	Food First Institute	Institute for Food and Development Policy	www.foodfirst.org
5	TN	Food Trade Sustainability Leadership Association	US non-profit trade association for organic food companies	www.ftsla.org
5	UA	Growing Power	Milwaukee-based organisation for the development of community food systems	http://www.growingpower.org
5	RI	INRA	French national institute for agricultural research	http://www.international.inra.fr

5	NS	Irish Seed Savers Association, Ireland	To preserve traditional native varieties of fruit and vegetables	http://www.irishseedsavers.ie
5	UF	Knoxville TN Food Policy Council	Monitors and evaluates the performance of Knoxville's food system	http://www.cityofknoxville.org/boards/food.asp
5	NS	Network for Ecosystem Sustainability & Health	Adaptive ecosystem approaches to help resolve questions in community health, agriculture and resource management	www.nesh.ca
5	UF	Ozark Area Community Congress (OACC)	To promote economy of the bioregion based on local goods produced in a sustainable manner	http://ozarkareacommunitycongress.org
5	RI	Scottish Crop Research Institute	To promote sustainable development and the production of healthy, natural food, acting as a bridge between rural production and urban wellbeing	www.scri.ac.uk
5	UF	Toronto Food Policy Council	Policies and projects that support a health-focused food system	http://www.toronto.ca/health/tfpc
	UA	Truly Living Well	*U*rban agriculture in Atlanta, aims to 'grow better communities' and to demonstrate economic success	http://www.trulylivingwell.com
5	IN	Urban Harvest	Supported by CGIAR	http://www.uharvest.org
5	RI	URBAN-NET	Supporting urban sustainability research in Europe	http://urban-net.org
5	CN	USDA (US Department of Agriculture)	US government department for agriculture	http://www. usda.gov
5	RI	Vertical Farm Project	Advocates used of vertical urban space for food production	http://www.verticalfarm.com
		Transnational		
6	NS	Aarlburg Commitments	Local governments' commitment on sustainability	www.aalborgplus10.dk
6	IN	Agriculture and Public Health Gateway	Information on agriculture and public health	http://aphg.jhsph.edu
6	NS	Agroecology in Action	Information resource for putting agroecological knowledge and technologies into practice	www.agroeco.org
6	NS	AGRA (Alliance for a Green Revolution in Africa)	Network for governments, private sector, civil society and farmers to develop stable, sustainable growth for Africa's smallholder farmers	http://www.agra.org
6	NS	Association of Heterodox Economics	Aims to promote open and tolerant debate in economics through a pluralist approach to theory, method, and ideology	http://www.hetecon.com
6	CN	BEUC	Umbrella group for national consumer organisations from 31 European countries	http://www.beuc.org
6	TN	Biotechnology Industry Organization	The world's largest biotechnology trade association, represents more than 1,100 companies	www.bio.org
6	RI	Centre for Global Food Issues	Promotes free trade in agricultural products for economic efficiency and environmental conservation. Aims to combat efforts to limit technological innovation in agriculture	http://www.cgfi.org
6	GS	CGIAR (Consultative Group on International Agricultural Research)	Network of 15 research centres aimed at reducing rural poverty, increasing food security, improving human health and nutrition, and ensuring more sustainable management of natural resources	http://www.cgiar.org
6	GS	Convention on Biological Diversity	International legally binding treaty for conservation of biological diversity, implemented through National Biodiversity Strategies and Action Plans	http://www.cbd.int/

6	PC	Coordination Paysanne Europeenne (CPE)	European Farmer Co-ordination: 18 farmer organisations from 11 European countries	www.cpefarmers.org
6	TN	EuropaBio	Represents all 9 seed breeding companies, and 1600 SMEs across Europe	*www.europabio.org*
6	TN	European Association of Agrochemical Companies	Represents companies trading in plant protection products	http://www.eaacc.eu
6	TN	European Crop Protection Agency	Represents agrochemicals manufacturers in Europe	http://www.ecpa.eu
6	GS	European Environmental Bureau	To protect and improve the environment of Europe	www.eeb.org
6	GS	European Food Safety Agency	Works with national agencies to build an integrated and effective European food safety system	http://www.efsa.europa.eu
6	TN	European Landowners Association	Represents the interests of millions of landowners in Europe	http://www.europeanlandowners.org
6	NS	European Public Health Alliance	Network of European organisations working in the field of public health	http://www.epha.org/r/82
6	GS	FAO Rome	UN body with mandate to improve nutrition, increase agricultural productivity, raise standard of living in rural populations and contribute to global economic growth	http://www.fao.org
6	TN	Fertilizers Europe	Represents the major fertilizer manufacturers in Europe. Its members account for approximately 81 percent of the region's nitrogen fertilizer capacity	http://www.fertilizerseurope.com
6	NS	Global Crop Diversity Trust	Works to guarantee the conservation of crop diversity	http://www.croptrust.org
6	NS	GRAIN	International non-profit organisation to support small farmers and social movements for community-controlled and biodiversity-based food systems	www.grain.org
6	NS	IAASTD (International Assessment of Agricultural Knowledge, Science and Technology for Development)	Three year collaborative effort 2005-2007 on sustainability and agriculture	http://www.unep.org/dewa/Assessments/Ecosystems/IAASTD/tabid/105853/Default.aspx
6	NS	Institute for Agriculture and Trade Policy	Works locally and globally at the intersection of policy and practice 'to ensure fair and sustainable food, farm and trade systems'	www.iatp.org
6	RI	International Association for People-Environment Studies	multidisciplinary network of researchers and practitioners with an interest in people's interaction with their environment	http://www.iaps-association.org
6	GS	International Commission on the Future of Food and Agriculture	Works to ensure that food and agriculture become more socially and ecologically sustainable	www.farmingsolutions.org www.future-food.org
6	NS	IFOAM (International Federation of Organic Agriculture Movements)	International umbrella organization with affiliates in over 100 countries	http://www.ifoam.org
6	RI	IFPRI (International Food Policy Research Institute)	Seeks sustainable solutions for ending hunger and poverty	http://www.ifpri.org
6	RI	IIED (International Institute for Environment and Development)	Promotes sustainable patterns of world development	http://www.iied.org
6	NS	IUCN (International Union for the Conservation of Nature)	The world's oldest and largest global environmental organization	http://www.iucn.org
6	NS	IUFN (International Urban Food Network)	Research and cooperation network for local authorities and researchers around sustainable food governance of urban regions	http://eng.iufn.org

6	GS	Local Governments for Sustainability	Network of cities and towns in 86 countries dedicated to sustainable development	www.iclei.org
6	NS	Navdanya (Nine Seeds)	Seed saving, revitalising indigenous knowledge and culture, founded by Vandana Shiva	http://www.navdanya.org
6	NS	Network for Ecosystem Sustainability & Health	Promotes adaptive ecosystem approaches for community health, agriculture and resource management	www.nesh.ca
6	NS	Organic Seed Alliance	Advancing the ethical development and stewardship of the genetic resources of agricultural seed	www.seedalliance.org
6	RI	Resilience Alliance	Research network to explore the dynamics of social-ecological systems	http://www.resalliance.org
6	IN	RUAF (Resource Centres on Urban Agriculture and Food Security)	Resources for urban agriculture	www.ruaf.org
6	FO	Rockefeller Foundation	Supports work that expands opportunity and strengthens resilience to social, economic, health and environmental challenges. Promotes golden rice	http://www.rockefellerfoundation.org
6	RI	Rodale Institute, Cornell University	Promotes best practices in organic agriculture	www.rodaleinstitute.org
6	IN	Soil and Health	Downloadable e-books on radical agriculture, natural hygiene/nature cure, and self-sufficient living	http://www.soilandhealth.org/index.html
6	NS	UCS (Union of Concerned Scientists)	Network of scientists for innovative, practical solutions for a healthy, safe, and sustainable future	www.ucsusa.org/food_and_agriculture
6	GS	UN Environment Programme	The voice for the environment within the United Nations system	http://www.unep.org
6	GS	UN Sustainable Development Commission	Set up in 1992 to ensure effective follow-up of the Earth Summit	http://www.un.org/esa/sustdev
6	GS	UNCTAD (UN Commission on Trade and Development)	Promotes the development-friendly integration of developing countries into the world economy	http://unctad.org/en
6	NS	URBACT	European exchange and learning programme for sustainable urban development with 500 cities, 29 countries and 7,000 participants	http://urbact.eu/en
6	IN	Urban Agriculture News	News service for urban farmers and planners	http://urbanagriculture-news.com
6	NS	Via Campesina	Set up in 1993. Promotes small-scale sustainable agriculture as a way to promote social justice and dignity, represents over 200 million farmers in over 70 countries	www,viacampesina.org
6	GS	World Conservation Monitoring Centre	Sources, collates and verifies information on biodiversity and ecosystems	http://www.unep-wcmc.org
6	GS	World Food Programme	To promote world food security according to the recommendations of UN and FAO	http://www.wfp.org
6	RI	Worldwatch Institute	Works to accelerate the transition to a sustainable world that meets human needs	http://www.worldwatch.org
6	GS	World Trade Organization (WTO)	Deals with the global rules of trade between nations	www.wto.org
6	NS	WWF (World Wildlife Fund)	Programmes on eco-footprints, community engagement and sustainable development	www.wwf.org.uk

Appendix 5 Schedule of research activities

The frequent, often daily, observations, conversations and interviews on allotment sites are not listed here (though see Table 4.6 for allotment participants). Interactions for the purpose of this research are shaded.

Schedule of Research Activities			
yy	**dd**	**mm**	
2010		April	Plymouth Local Food Focus Group
2010		May	Geography Presentations
2010	5-7	Jul	BSA Food Studies Conference
2010			Lizzie, Sandwell Project
2010			Elizabeth Dowler
2010			Caroline Devereux, Harvest Brighton and Hove
2010		Aug	RGS-IBG Annual conference
2010	10	Aug	Public Sector Procurement project
2010		Sept	CP Allotment Association Cttee mtg
2010	5	Sept	Plymouth LF Stakeholder Forum
2010	7	Sept	Farmers Market on campus
2010	7	Sept	Dave, Diggin It
2010	27	Sept	Dave and Liz, Diggin It
2010			Mrs Silver
2010	2	Oct	Efford Community Apple Day
2010	14	Oct	Growing the Land project Ruth Wilson
2010	14	Oct	Plymouth LF Stakeholder Forum
2010	25	Oct	Ministry of Food Exhibition
2010	28	Oct	UoP mtg on Community garden research
2010		Nov	Simply Legal UK Cooperatives
2010		Nov	Public Sector LF Procurement Workshop
2010		Nov	RTPI/APA Food Security Online Conf
2010	3	Nov	Larch Maxey seminar
2010	5	Nov	Molly Scott-Cato Green Economics
2010	10	Nov	Lorna Bell, SERIO
2010	15	Nov	Tamar Grow Local
2010	16	Nov	Jeany Robinson, FCF
2010	16	Nov	John Dixon, PCC
2010	17	Nov	Judith Ward, consultant

2010	17	Nov	Traci Lewis / Tom Andrews, SA
2010	18	Nov	Plough to Plate
2010	22-24	Nov	CCRI Winter School
2010	24	Nov	Stroud CSA
2010	27	Nov	CPAA AGM
2010	29	Nov	Serco
2010	29	Nov	Aramark
2010	29	Nov	Tamar View Fruiterers
2010	1	Dec	Brakes
2010	1	Dec	Dairy Crest
2010	1	Dec	Chartwells
2010	15	Dec	Plymouth Food Network
2010	15	Dec	Public Sector LF Procurement project
2011	6	Jan	Catherine Brunsden/PFN
2011	10	Jan	Linda Morris / Jenny Bushrod
2011	11	Jan	Public Sector LF Procurement project
2011	19	Jan	Plymouth Food Network
2011	27	Jan	Jon Selman/Andy Pratt, Tamar Grow Local
2011	1	Feb	Supplier (Dairy and F&V) workshops
2011	3	Feb	CP Allotment Association Cttee mtg
2011	7	Feb	Billy Moore, Allotments Officer
2011	17	Feb	Sustainable Food City Plymouth
2011	24	Feb	Allotment User Group (Parks Dept)
2011	10	Mar	Plymouth Stakeholder Meeting
2011	15	Mar	Denise Rudgley, PHDU
2012	17	Mar	North Prospect buyer's coop
2011	22	Mar	Public Sector LF Procurement project
2011	26	Mar	Farmers Market
2011	26	Mar	Pannier Market
2011	28	Mar	Janet Richardson, Totnes Healthy Growing Project / UoP
2011	7	April	FoodPlymouth Communities sub-group
2011	7	April	Efford Library Garden planting
2011	11	April	FoodPlymouth Health & Wellbeing subgroup
2011	21	April	FoodPlymouth Economy subgroup
2011	21	April	PHDU Community Health Team
2011	12	May	FoodPlymouth Communities subgroup
2011	20	May	Eco City Innovation Synposium
2011	21	May	Hungry City symposium
2011	21	May	Richard Wiltshire
2011	21	May	Linda Hull, Somerset Food Links

2011	21	May	Richard Price, social horticulturalist
2011	31	May	Plymouth Food Network
2011	31	May	Devonport community gardening
2011	15	Jun	FoodPlymouth - Tamar Fruiterers
2011	20	Jun	Ian Eggington-Mathers
2011			Campus farmers market
2011	21		Plymouth Food Bank
2011	30	Jun	Nature Inc, The Hague
2011	5	Jul	SW Allotment Officers Forum
2011	5	Jul	Alan Carr, NSALG
2011	7	Jul	Visit to Buckfast Abbey CSA
2011	7	Jul	St Anthony's Community Orchard
2011	11	Jul	Simon Platten, TGL
2011	20	Jul	OS Mapping Workshop, Southampton
2011	20	Jul	Colin Tudge, Campaign for Real Farming
2011	20	Jul	Ruth West, All Part Parl Group on Ecological Agriculture
2011	24	Jul	Community Orchard launch, HarrowBarrow
2011	26	Jul	Food Plymouth Stakeholder Group
2011	?8	Aug	Real Food Store Exeter
2011	10	Aug	Food Plymouth subgroup ??
2011	15	Aug	East End Community Allotment Event
2011	16	Aug	Plymouth in Bloom
2011	20/21	Aug	Flavourfest
2011	30	Aug	RGS-IBG Annual conference
2011	7	Sept	Food Plymouth economy subgroup
2011	12	Sept	Food Plymouth subgroup: FEAST
2011	16	Sept	Kim Wide, Grow Efford
2011	16	Sept	Anne-Marie Culhane, Efford
2011	26	Sept	FoodPlymouth steering group
2011	29	Sept	Essential - Food coop buying workshop
2011	8	Oct	This Land is Ours Autumn gathering
2011	12	Oct	UK sustainable food cities consortium, Bristol
2011	26	Oct	Allways Apples, Devonport
2011	27	Oct	AESOP Sustainable Food Conference Cardiff
2011	10	Nov	CCRI Winter School
2011	15	Nov	FoodPlymouth FEAST public meeting
	25	Nov	RSA Winter conference
2011	30	Nov	PCS/PCC Core Strategy / Sustainable Neighbourhoods meeting
2011	?5	Dec	FEAST follow up meeting
2011	6	Dec	FoodPlymouth steering group

2011	7	Dec	Sustainability Sandpit, FoST, PU
2011	13	Dec	Food Policy seminar, City College London
2011	14	Dec	Health Communities research forum, UWE
2012	5	Jan	Oxford Real Farming conference
2012	11	Jan	Grow for Good SW
2012	12	Jan	FoodPlymouth Action Plan meeting
2012	12	Jan	FEAST meeting
2012	13	Jan	PCC Producers/Traders meeting
2012	26	Jan	LocalGiving.com workshop for fundraisers
2012	31	Jan	FoodPlymouth steering group
2012	20	Feb	Hugh Barton lecture on healthy cities
2012	21	Feb	Healthy Communities seminar
2012	22	Feb	Community Rights Made Real workshop
2012	23	Feb	FoodPlymouth action plan launch
2012	2	Mar	Soil Association conference
2012	12	Mar	Grow for Good SW
2012	14	Mar	Derriford Community park consultation
2012	15	Mar	FEAST
2012	19	Mar	Clint Jones, CCC
2012	20	Mar	John Dixon, PCC
2012	21	Mar	Gareth Harrison-Poole
2012	27	Mar	Campus Garden meeting
2012	28	Mar	FoodPlymouth
2012	26	Apr	FEAST
2012	9	May	T Lewis, Soil Association
2012	20	May	Swarthmore
2012	22	May	Swarthmore
2012	22	May	Public Records Office
2012	24	May	FoodPlymouth steering group
2012	29	May	Presentation to SoGEES, Plymouth Uni
2012	11	June	Richard Wiltshire
2012	12	June	Campus garden opening
2012	14	June	Billy Moore, Allotments Officer
2012	2	July	RGS-IBG Edinburgh
2012	17	July	Plymouth in Bloom
2012	18	July	Plymouth in Bloom
2012	19	July	Plymouth in Bloom
2012	20	July	Plymouth in Bloom
2012	14	Sept	Community Farm Bristol
2012	21	Sept	Janet Richardson, Totnes Healthy Growing Project / UoP

2012	27	Sept	WHO Healthy Cities event
2012	28	Sept	Billy Moore, Allotments Officer
2012	4	Oct	Food Plymouth
2012	4	Oct	Plymouth in Bloom awards
2012	5	Oct	Regional Studies Association annual lunch
2012	8	Oct	Billy Moore, Allotments Officer
2012	12	Oct	Food Plymouth Treasury event
2012	18	Oct	Devon Food Conference
2012	29	Oct	Andrew Simms, NEF
2012	8	Nov	CPAA meeting
2012	12	Nov	Grow for Good SW meeting
2012	13/14	Nov	Methodological Innovations conference
2012	17	Nov	CPAA AGM
2012	29	Nov	SDRN conference London
2012	6	Dec	FoodPlymouth
2012	14	Dec	G4G Accountants meeting
2013	2	Jan	Oxford Real Farming conference
2013	16	Jan	Saltash Environmental Action
2013	23	Jan	Cllr Brian Vincent visit to Campus garden
2013	1	Feb	Exeter Uni Food Security conference
2013	5	Feb	Polly Higgins Ecocide lecture
2013	5	Mar	Isaacs Growing Futures meeting
2013	7	Mar	Stephen Sterling book launch
2013	21	Mar	Community Garden event Devonport
2013	27	Mar	FoodPlymouth Expo

Appendix 6 Journals relevant to this research

This appendix is presented to indicate the challenges of multidisciplinary research. The following journals were drawn on during the research, though not all eventually referenced in this thesis:

Agra-Europe
American Journal of Alternative Agriculture
American Journal of Agricultural Economics
American Journal of Alternative Agriculture
American Journal of Epidemiology
Annals of the Association of American Geographers
Antipode
Area
British Food Journal
Built Environment
Capitalism Nature Socialism
Cities
Cities and the Environment
Computers, Environment & Urban Systems
Development and Change
Ecological Abstracts
Ecology and Society
Economic Development and Cultural Change
Economic Geography
Ecopolitics Online Journal
Environment and Planning C: Government and Policy
Environment and Planning D: Society and Space
Environmental Policy and Governance
Estey Centre Journal of International Law and Trade Policy
European Journal of Agronomy
European Journal of International Relations
European Review of Agricultural Economics
Explorations in Sociology
Food Policy
Foreign Affairs
Foresight
Futures
Geoforum
Geographical Abstracts
Geography
Geography Review
Global and Planetary Change
Global Environmental Change Part A
Habitat International
Health and Place
Human Organization
IDS Bulletin
International Development Abstracts
International Journal of Applied Earth Observation and Geoinformation
Intl Journal of Sustainable Development and World Ecology
Journal Agricultural Science
Journal of Agricultural & Applied Economics

Journal of Food Distribution Research
Journal of Peasant Studies
Journal of Agrarian Change
Journal of Applied Ecology
Journal of Asian Studies
Journal of Economic History
Journal of Environmental Management
Journal of Environmental Planning and Management
Journal of Environmental Policy and Planning
Journal of Environmental Psychology
Journal of European Public Policy
Journal of Farm Management
Journal of Farming Systems
Journal of Historical Geography
Journal of Rural Studies
Journal of Science of Food and Agriculture
Land Use Policy
Landscape and Urban Planning
Landscape Research
Local Economy
Local Environment
New Left Review
New Political Economy
Oikos
Outlook on Agriculture
Planning
Political Geography
Political Geography
Population Studies
Population and Development Review
Progress in Human Geography
Progress in Planning
Regional Science and Urban Economics
Regional Studies
Research Policy
Resources Policy
Science and Policy for Sustainable Development
Social & Cultural Geography
Socio-Economic Planning Sciences
Sociologia Ruralis
Synthesis/Regeneration
Technology Analysis & Strategic Management
Technology and Culture
The Gardeners Chronicle (1856-1900)
The New Farm
Theory Culture and Society
Third World Quarterly
Transactions of the IBG
Urban Forestry and Urban Greening
Values in Agriculture
World Development

Appendix 7. Interview question schedule and example transcripts

(a) Allotment Interview Schedule

This schedule developed through many conversations with allotment tenants (see Table 4.6) during the period of this research and guided formal interviews.

(a) What motivates you to cultivate an allotment? (e.g. food, socialising, being, other)?

(b) Has this changed since you started?

(c) Does anything undermine your commitments, and is there anything that could be done about this?

(d) What affects the time you are prepared to give to it?

(e) Has it changed any relations in food provisioning within your household?

(f) Does distance of plot from your home affect your ability to cultivate the allotment?

(g) Do you find there are competing time constraints?

(h) Do you preserve excess and or give away excess. If so, to who, why?

(i) Is it important to you to maximise food production?

(j) Do you find conflicts over preserving for your own use later in the year and giving away excess fresh produce?

(k) Would you like to make money, and if so, do you ever think how and what (e.g. selling fresh, prepared, or flowers)?

(l) If this were possible, any factors that would restrict your ability?

Interview with allotment tenant F21 (October 2012)

Could you just tell me about what motivates you to cultivate an allotment?

I'm trying to trace back my original motivation. It's just about, I like being outside, I like working with the land and I like seeing things grow and there's a real sense of satisfaction seeing food grow. I'm not very good at flowers and plants. I have indoor plants so I actually just grow food and I love to see food grow and I've always really enjoyed going on walks and looking in hedgerows and trying to guess what you can eat out of hedgerows. So I know you can eat so much of what grows in the wild and most of it I don't recognise but I think it probably stems from that general interest around how so much of what grows around us in the natural environment is edible. And how traditionally we would have foraged for those edible foods and how food production has been kind of taken away from us and .. for various reasons over the last hundred years or so and I just felt like taking back some of that sense of control and nod to tradition really and I try and buy seeds which are heritage seeds. I'm not very good at seed saving. I do save seeds. And I just get a real thrill from seeing what I can nurture. It is a real sense of wanting to nurture something and also I like at the end of the season clearing it all away. So I get a real sense of achievement when the end of the growing season that I can clear a plot and know that I can start again next year and if any .. and if I had any problems this year with bugs or diseases or something didn't grow very well, the challenge next year is to get it to grow well. So it's a kind of dynamic thing.

Is it important to you to maximise the amount of food you get from your allotment?

Yes, it is. In fact in some ways I feel I've gone over the top in the sense that every bit of the plot that can be grown on is being grown on and even the boggy bit at the end I've turned into a natural pond. So to the extent that even in a square four feet that could be just grass or a path I've dug up and turned into a small bed. So yes, every bit of it is cultivated. And it's really overwhelming sometimes. In the sense of there's so much to do.

And so do you feel that you would like to spend more time and that there are other things that stop you spending more time?

Well, since I've had an allotment, which must be around 9 years now, I've always balanced it with working full time. And I'm amazed now at how well I did that. Because now I'm part-time, I've filled my life with lots of other things. So it almost feels like the allotment is competing now with other things that I'm doing in my spare time and I'm trying to come to terms with that so that I can balance the demands of the allotment with my other interests. Because I think that previously the allotment was my main interest and it was something I ran alongside work and somehow managed to balance it. I'm not sure how when I think back over the last 8, 9 years.

So do you think there's something about working full-time and then the allotment as a contrast?

Complete contrast. Yes. Because my day time job was working with the public and that was quite kind of intense, and latterly it's been very academic work. So working with my hands and creating something real… And I think also my job was always around public health. And public health is always a difficult topic to work with and you don't see results very quickly. And in academia, working in that, you don't see tangible results that people can work with very quickly. Whereas with the growing cycle you get food in a few weeks. So for me it is a complete contrast.

Thank you. So how would you describe cultivating an allotment, shared, as you have a partner. Has it changed the gender division of 'duties' on the allotment and at home.

Well, that's interesting (laugh). There's no competition really because my partner has his interests so he bimbles off and does his own thing and can be quite determined, single-minded and focused around that. And in many what that does is it frees me up to entertain myself. And so I toddle off to the plot and really, just lose myself in it. And quite often will plan maybe to go up there just for an hour or two and then I'm there all day. So now I've taught myself to take food supplies with me, I know I'm growing food up there but just in case I stay longer. .. My partner gave me lots of time and help in getting the plot infrastructure set up which was really valuable at the time. Because I had this rather large plot and I'd started to .. that had been covered in, half of which was covered in brambles at the time. It had been cleared and rotavated, but the brambles were just coming up faster than I could blink. And so I covered it all in plastic and carpet, weighted down with tyres, and I suppose that happened for maybe about two years . And bit by bit I peeled back the mulch and worked on it and then I got the idea reading around growing and the benefits of raised beds … so I decided I'd like raised beds. And I thought how am I going to do that on my own. So he pitched up and gradually he made all the raised beds. In terms of

division of labour, I grow the food and he eats it, but he's my JCB (laugh). So when I need anything heavy doing. So he built the shed, and he's going to put some guttering up for me. And he built the fruit cage And he built the raised beds. So he did all the heavy-duty stuff. And I grow the food and pick it and cook it and I bring him up and show it off every so often. But he doesn't grow the food, he's not he doesn't cook it he doesn't get involved in growing it. He doesn't get involved in deciding what vegetables I grow. He's doesn't get involved in any of that at all. He's not interested in that at all. But he was very willing to help me set up the infrastructure. And I think I'm a bit of a control freak in that I felt that I needed infrastructure. Some allotment holders are very free-wheeling in terms of how they grow things an they grow they allow the plot to kind of grow itself really and that's a great way of doing it but I couldn't cope with that. I like to control my plot.

Fair enough! So how do you decide what crops to grow then?

I tend to look through the seed magazine because I'm a member of the what was the HDRA which is now Garden Organic, which I've never quite got the hang of saying. So I tend to go through their catalogue on a winters' evening and then probably spend a small … well I do spend a fortune on seeds if I haven't saved seeds.

Do you think you save money by growing things on the allotment?

I doubt it. I don't feel if I do. Having spent maybe £80 or £90 on seeds and you know various. So this year I wanted some asparagus crowns and I also wanted to refresh my strawberries. So they're quite expensive. Ordinarily I would take runners from strawberries and grow those on. But because I'd had a year's break, I wasn't sure of the condition of the strawberries because I let them grow this year and they weren't very good and so I didn't want any disease. So you end up with additional expenses each year for the big things that you want to grow.

So what do you think of the figure that some people have given that you can grow £1000 worth of produce from a standard size allotment?

I think that you might be able to. It depends how intensively you grow and whether you grow all year round. I tend to grow mostly in the summer months but I have things in that last me over the winter. So I would have parsnips in and quite often leave the carrots in and just pick those as I need to.

Would you say there's something nearly all year round?

Yes mostly. Even if it's kale or, sprouts, keep me going. I think that as fruit and vegetables are going up in price, I think it's probably, I've never worked it out. But if I just pull up 3 or 4 pounds of (talking in pounds) of potatoes and I think about how much they cost now. And I know that I've still got kilos of potatoes I could pull I think quite quickly you could save money. But you I spend easily I spent £100 a year on seeds, and various other things. Plus maybe I might need to replace some equipment, fertilisers, because I usually buy a pallet of the soil improver from EcoSci and also a load of manure, so I suppose by the time we've done that each year too. So I suppose it's probably could it be £300 a year maybe. Then when you think about what you get back. I do it more for the pleasure than I do to save money. But increasingly I think as I'm looking as I go round the supermarkets at how expensive for example soft fruit is, I know there that I make a fortune because I grow so much soft fruit and I buy it regularly because I eat it every day. And I get tons of it and freeze it.

So it gives you a sense of availability of foods that you like. Would you ever want to grow any more and earn any income from it?

Occasionally I grow more than I need. Well often I grow more than I need and I tend to just give it away. To neighbours. So and they're always very grateful for it. I had thought once or twice that maybe I could go down to the car boot sale and sell of, you know, runner beans and some soft fruit in the summer, bits and pieces, but I don't think we're allowed to do that. Mostly what I try and do with surplus is I try and preserve. So it goes in the freezer or I make something with it. A preserve of some sort. I make sauces, chutneys, jams. All those sorts of things that use the stuff I'm growing. Because I kind of think there's no point in growing it if you can't do something with it.

Have your ideas of nature and wildlife changed since you started the allotment?

No I don't think so. Because before I had the allotment I grew .. because I had a big garden which I'd also put a lot of effort into. Building growing infrastructure and I was very much aware of the environment in which I was growing things. I think I was probably a bit more robust then about tackling pests and diseases in an organic way. Because I grow organically. Whereas now I tend to be a bit more

relaxed about it. I tend to grow a bit for me, a bit for the thief, a bit for the wildlife and a bit for pests and diseases. So I always grow more than I need. Because I know that always some of it is going to get stolen, it's going to get eaten. It's going to die.

So some stuff does get stolen you think? What kind of things?

Well, one year all my broad beans went. Another year courgettes. My apples I very rarely get apples because no sooner are they ripe than they've gone. So yes, I keep my fruit cage locked up. So that's got a padlock ion it.

Can you think of any solution to such thieving?

I think it's tricky. I think it's going to become more problematic as food prices increase. I think people are going to become more resourceful about getting into allotments and I think typically allotments aren't well secured. The fencing is often inadequate and so you are really at the mercy of the elements really. If people want to steal then they can find a way in. I suppose I would I think by raising the profile of allotments and encouraging people to grow. I've always felt that people don't need an allotment to grow food. Only the obsessed need an allotment to grow food! You can actually grow a lot of food in your backyard and on your windowsills. And I think if we can encourage people to grow in their own homes, the food that they can eat, then they are less likely to go stealing it.

What about stories about households about using food banks. So instead of growing food people would choose to go to a food bank and maybe they see allotments as foodbanks too?

I think foodbanks, I don't know very much about them. But I suppose they're a more formal arrangement for sharing food, whereas on allotments you're not typically growing food for a thief. And I would rather have an open day on an allotment where excess produce is either given away or it's sold cheaply to people in the local community than have people in the local community coming in and stealing stuff. Because there are times when you have more produce. And collectively, if you think about the number of people that are on allotment site, there is the potential there for a lot of wasted food Because people particularly newcomers. They take on a plot they work their fingers to the bone. The second year it just becomes, they grow a few things. By the third year maybe they don't do anything, they've given up on it. And maybe for two years it lies fallow and then maybe somebody new takes it on. And looking at that cycle of allotment holders, what they're growing, seeing if they're tending it, and if they're not tending it then that's food that can actually be sold or given to other people rather than just left to go to waste. I know it can feed insects and feeds the soil. But at the moment people are finding it difficult to feed themselves and there is a potential for a lot of waste on allotments, so if there was some kind of formal arrangement where you could encourage allotment holders who have a glut or who for whatever reason have got a couple of months where they can't get up to their plot and things are actually going over so they're not edible that they can be moved on. It's just about sharing the food. Nobody wants to starve or be in some way prevented due to the economics from accessing fresh food. You can get masses of cheap stuff from Aldi and Lidl. I do it myself when I've got gaps. But I do think that there's some way that we could think about moving on allotment holders' excess produce. But I don't know how you'll ever stop thinking. Unless there's a real political will to encourage people to grow. First of all we should be encouraging people to grow small amounts in their own homes and I think secondly for the allotment holders there needs to be a bit more fortification around the plots.

I think it's going to become a bigger problem, stealing food, because it's getting so much more expensive. And one of my worries this year, because the growing season has been so terrible it's the worst seasons I can remember ever. Almost nothing has grown. The potatoes have been fine. The courgettes never grew and they would normally grow like weeds. My soft fruit grew but some brassicas are growing but I had sweetcorn that never grew, I had climbing beans that didn't grow. Broad beans didn't grow. It's been terrible. So I think this year food prices are going to go through the roof.

So there'll be more demand. What do you think about the waiting lists in Plymouth, about a thousand.

I think it's interesting how allotments have become a kind of appendage or a sort of accessory. I think there are hard-core people who've grown vegetables for a long time on allotments, and there are some newcomers, I'm not sure what percentage of newcomers stick it out. I'd love to know over a five year period, because I think it takes five years to really settle in, how many are still there and how much attrition there is of allotment holders.

Do you think there are things that can be done to lengthen tenancies, or help people.

I think that new people shouldn't be given a full open-ended rental on an allotment. I think they should have a trial period. And I think that trial period should just be for two years to begin with because that first year is clearing the land and feeding it and the second year is growing. And if they've done nothing in those two years. And many new allotment holders don't, they look at it, they dig a square four feet, they overwhelm themselves. Or they dig lots of small squares in one day, overwhelm themselves and never come back. But it takes years for that plot to get moved on. I'm looking at a plot at the moment which has been vacant since 2010. 10/11/12, so that's three growing seasons. Don't know what's happened to it. The girls that took it on. I think they worked it for a year and never came back, and it's been vacant since. No it was 2009, yes, because I helped them with some of their planning of it and pest management, because they wanted to grow organically. And they were very keen, and they were up so much, they were students, and they worked really hard but I never saw them … so that's easily 2009 since I last saw them and that plot's been vacant since. That's a long time.

Do you have relations with other plotholders, water things when

No I don't really. It's really odd you know because I often think, who is it who works the plots, is it the fairies? Because I don't often see people working their plots at the same time as me. Even though it's a good sized site, I very rarely get a sense of an allotment community. Even on a beautiful day, sometimes there might only be two or three allotment-holders. You think where is everybody? So, but I do know my neighbours, and so over the course of what is nearly a decade now I have got to know the regulars and I've seen some new ones join and they've stayed the course, which is great. It's really nice to see people flourish. And I think it's absolutely right that people are given a quarter or a third size plot. But I think there should be a limit to two or three growing seasons and if they're not maintaining some sense of not order but actually they're not committing themselves to growing and their plot is all weed then I think they need to be moved on.

What about the book, the Half Hour Allotment

I don't know that. No, I think that's I mean what size allotment? A windowbox? I'm just thinking, I never, I go up sometimes and I would never ever say I'm going up to the plot for half an hour. I rarely say I'm going for an hour unless I'm absolutely going just to pick something for supper. Mostly I would say I'm going for two or three hours, and typically I would still be there at 6 o'clock. [because] there's so much to do. There's so much to do. Every season brings its own type of work and there's always weeding and clearing. Because it's an allotment it's very susceptible to weeds. Even if you don't go up for two weeks, which would be an hour based on that, you know, it can become totally unmanageable. Well I find it can anyway. Brambles have grown into the fruit cage, the weeds are growing up between all the onions. Can't see anything anymore. I think that's I think it's irresponsible to try and convince people that they can do it on half an hour a week. Because actually you can't manage land on that. You can manage a windowbox.

False expectations? that some people say that the media creates, like Alan Titchmarsh… plants and a week later a crop

Absolutely and they never look tatty and they don't like they're providing a home for the world's supply of caterpillars! Whereas mine do. And quite often when you grow your own your swedes and your potatoes do get eelworm and you do have to cut them out. And your garlic bulb might only be the size of a 10p, which mine nearly always are, even if I feed the soil, I don't seem to get big fat garlic bulbs.

But does it taste better?

I don't know that organic food, growing your own necessarily tastes better. Though having said that, I think it's more to do with the variety. And to do with how well you feed the soil, and I think there's absolutely nothing better than picking something and having it on your plate within the hour. So I think that's where the flavour comes from, because it hasn't had to be picked before it's properly ripe, and it hasn't sat in a freezer or a cold room, and it hasn't been imported across thousands of miles. I do like the idea that there isn't a great distance between the plot and the plate and I like that it hasn't been tampered with. And I don't mind cutting out the bruised or diseased bits and eating what's left.

Even if it means more time in the kitchen?

Oh I don't mind in the least bit. I like it all perfect, but I like knowing I've grown it. And it just there's a huge sense of satisfaction when I sit there with about 20lbs of tomatoes and I think I've got to do something with these, before they start going off, That's it, I'm in the kitchen for a weekend, but it's all part of the pleasure of doing it. But I think there is something about the media not conveying an

unrealistic image of what it is to have an allotment and to grow vegetables. And I think there should be a real allotment book. Because the other thing is all the books. Most of the books are written by experts, who've forgotten what it's like to be a novice. And they use language which only makes sense to people who aren't novices. So I think for a newbie trying to start from scratch it can be really hard. You've got to invest a lot of time, understanding the soil, the things that help to maintain it, things that can damage it, and pests and diseases, good pests, good diseases, bad pests, bad diseases. Some pests are worth doing something about, some aren't. So it takes a long time to learn that and I think that for newcomers it's quite onerous.

Do you use YouTube, pruning raspberries, or would you go on courses?

I have gone a range of courses at DigginIt. I did all their courses one summer on how to make a compost heap [and did they help?] Yes, they were great. Because more than anything I was already, I felt already very well read. What it did was it confirmed that I was going in the right direction, it created a really nice environment for other people to share. So we shared our ideas and I think, another thing that I've found that happens on the plot is that sometimes a new plotholder will see me working on mine and they have said I love your plot. And I think why. And they say it just looks so ordered, and it just looks you're growing so much, it looks so healthy. And I say, yes, but it takes time, and it takes effort and you have to read about it. Things will grow whether you like it or not but actually if you want to make the most of your plot you do need to read about how to do it. And so people have been quite flattering but also it's been really nice when they've asked me how I've done things and I think I can tell them about that because I know and I can share my knowledge. So I wonder sometimes whether new allotment holders need a body.

And have you been offered advice like that from other more established plotholders?

Yes I have, there's one particular guy whose been here years and his plot is incredibly well-tended and he, yes, he's great. If I talk to him about problem I'm having with my sweetcorn, then we'll compare notes and he'll make suggestions and sometimes if he's got a glut of things he'll put them on my plot, I put them [my surplus] on his plot and so we benefit from each other. And if I've bought more seeds or things to grow then I can really use then I'll put them on his plot and let him use them so he can plant them up, seedlings.

Seed, seedlings and harvest. Do you have an association/events. Would you like one?

I've often thought about it. When I was working full time I knew I didn't have the time to do that. But now that I'm beginning to think about how I'd like to spend my time, because I'm part-time, I'm struggling to balance the desires for my plot as well as taking up other interests, and I do think one of the things that saddens me is that although we have DigginIt, the charity, on the site, one of the things that saddens me is that over the last couple of years it's become quite distanced from the allotment holders. Whereas previously I think when the initial allotment manager was there he was very involved and he was great at giving you advice. And I did all the little courses with him, and he was a great resource and he was very open and willing to advise and he was just accessible. Whereas I feel it has closed itself off a little bit. It's become quite isolated within the allotment site which saddens me massively because I used to really enjoy going up and having a talk with Dave and talking to him about what he was growing and what the problems were. Even when they put the beehives in, how they were getting on. I got lots of ideas from him which really benefitted me massively and he would talk to me about the different composts that he was using and which were the good ones for this year and which ones didn't do well last year. Maybe that's partly me, but I don't feel that the current person in post is particularly open and friendly.

That is a specific project on site as opposed to allotment

I think it could be both. It could actually be much more open and an allotment association could be forged alongside it. It would make much more sense. Because the charity has to buy in produce I think it even buys in stuff to sell. So, which is bonkers given that the allotment holders themselves have stuff which they could supply to the charity which they could sell in their shop. So I feel it's not well integrated any more.

Anything else you want to say..

I do feel very passionate about people being encouraged to grow their own food and I do feel passionate about people being encouraged to grow it in their homes. I know if you live in a flat it's difficult but you can grow herbs on your windowsill rather than spending £2.50 on a potted basil, you can grow it. You

can grow enough to keep yourself growing all year round, for 99p. If you live in a house and you've even got a courtyard in the back, you can grow potatoes in a sack and it doesn't cost very much. And if you go down Bob Flowerdew's route you can even take some of the small potatoes or some cuttings from your potatoes and grow them on the following year and you can do that year after year after year. So it doesn't have to be expensive. You don't have to spend £100, and all you need is a trowel if that. You just need your hands cos you can week.

How do you think people could be encouraged, worried about beautiful nails getting dirty?

Yes, but I think one way of doing it is through the media, through role models, people actually doing it. The likes of Carol Klein and Alan Titchmarsh. The people that we know well they all have Barleymead or their huge sites that they have a whole team of people to cultivate. They create the illusion that they're the only people digging the plot. Which is rubbish. They probably rarely ever do it. They're usually digging someone else's. But I think if they were geared more to people who have less land. Because houses are getting smaller. Land around houses, gardens, are getting smaller or almost non-existent. If you look at North Prospect now, the redevelopment has just been a massive garden-grabbing exercise. And it was a good idea, because most of those gardens go to waste. But where there is land associated with a dwelling I think developers could be encouraged to think about building in something that might encourage somebody to grow. Even if it's one raised bed. Or even if there isn't space for a raised bed they could build in a trough.

Yes, they've done that in Devonport. But that has taken a paid worker to go round, and teach them.

Yes, that's like a buddying system isn't it, and as people commit in the long term then the paid worker should be able to pull out because the oldies should be able to buddy up people who want to get involved. I think community gardens are a really good idea. So where you've got maybe flats to actually have a space in the middle which is for growing. I think Kevin McCloud did that, with his social housing development. And all the new residents all pitched up to work this little space of land where everybody was going to grow. And I'd love to know how that got on in the long term. Because it's one thing to do it for a TV programme but it's another thing to see it five years later.

Something to be said about it being right outside peoples' homes?

Absolutely. You are so right. Because when I, in my previous house where I had that huge garden it was right outside my backdoor. And in the morning I used to have my cup of tea after breakfast before I went to work and I would go up to my growing which was up around the side of the house and I would visit my bed and my greenhouse and I would see what was growing and nip things here and move things around and it would only be twenty minutes or half an house but it was just something that I could do then and there whilst I was having breakfast.

How long does it take to get to your allotment?

It takes ten minutes to walk.

Do you carry a lot of tools?

No because I've got a shed, which is metal and locked.

Even that ten minutes is different?

I wouldn't pop up there for ten minutes. It wouldn't occur to me if I only had an hour to pop up there for an hour. Because it would be too stressful to get there to find that I'd run out of time already. So I have to go up there when I think I can do half a day, and then it gets to 2 o'clock and I think I've been here since half-nine .. where did half the day go?

The effort of getting dressed up to do allotment work, then going to the plot, letting myself in, driving down to my bit, parking up, getting everything out, that's my half an hour gone, that's before I've started so I feel I don't put that pressure on myself to just go up for half an hour.

Does it make you think you would prefer a different scenario where your growing patch is closer to where you live?

Ideally, we'd live in the city centre and I'd have a garden the size of my plot. But it's not do-able, so this is a nice compromise. And I don't want to move away from the city. I guess that whether on e way round it would be to look at how we can utilise spare bits of ground all over the city for growing. The French are fabulous for using up their roundabouts. They grow vines, they grow vegetables, they don't get vandalised. They also have works of art in the middle of them, but they actually use their land. It's

very rare that you see, .. wherever I've been in France, it's very rare that I've come across a piece of land that isn't in some way being used.

Like Incredible Edible Todmorden .. Using public space for growing food for everyone.

Yes, like guerrilla gardening. Just eat, if you knew what was out there you could just eat it.

What would be your recommendation to the powers that be if they could do one thing that would encourage more people to grow and enable more food to be around.

I think given the pressures that people work under today, just to hold down a job and keep families ticking over and pay the bills etc. people have less and less time to devote to a plot of land like we associate with traditional allotmenteering which is probably why I would argue that maybe about 70% of new allotment holders aren't still there the following though I may be wrong. Just looking at our own site not many people stay and work. So I wonder whether to increase the density of growing spaces, so rather than have a large allotment sites in tucked in behind schools or tucked away in housing estates, to actually have visible growing things all over the city so have spaces where food is growing and people can see it growing. Whether it's on roundabouts which are typically just left to go to waste, whether it's verges, I just think that we could grow so much more.

In the interstitial spaces?

Yes, definitely. And where there is a half reasonable sized space encourage one street, or just half a street, to work it, see what happens. I guess it's already been done, but it's just about making food production more visible to people.

More attractive?

How can getting dirt in your nails be attractive, I don't know!

So do you feel celebrity culture, or concepts of freeing women from the kitchen affects all this?

I don't know about that … we need to survive, and traditionally we come from hunter-gathering stock. It's just the nature that has changed and you can't free women from feeding their families because that's what women do. You can't free men from going out and earning an income because that's what being human is about. It's just the nature of how we do it has changed over centuries and millennia. So I don't know it is about freeing women up I think it's actually about embracing food production on a kind of whole family, whole community approach. Because actually we're nothing if we can't feed ourselves then we're in a mess really. So for me it's about embracing the challenges, the rewards of food production for yourself. And if you can get your neighbours involved in it.. My neighbours say if I grow excess produce they'd happily buy a veg box off me – fabulous that is, isn't it! Great! And I've got a couple of neighbours who also grow and I see them wandering around from one house to another giving their produce away, so it's kind of going on but it's unrecognised.

Do you think we've lost that communal celebration?

I guess so because our only tradition of feasting is Christmas and when we all eat far too much. And so there isn't the harvest festival because it has religious overtones, it's not celebrated here which is a real shame. Just thinking back to what that was like when I was a child and it was great fun. Not being a religious person, but I just loved seeing food all around the altar. I'm obsessed with food .. just for the record, I'm actually quite slim!

Interview with Local Authority Officer (LA1) March 2012

I think you've already been working with a colleague..?

Yes, I was working with x. And she went on and used some of the data from that to help inform planning circles but then she also did a paper with xx on it as well. I was very pleased that they managed to get something out of it which was good. They didn't name me as part of the research team but I won't hold that against them. .. So I spent a very wet summer looking at all our different parks and open spaces and going through a quantitative analysis of access, quality, usage, physical what's there, is there a waste bin, is there a path, or is it just a lump of grass with a tree in it, or with a bench or with a viewpoint. All that sort of stuff. So I think I did about 230 sites in the whole city. Which was good - it would have been lovely if the weather would have been good but I think it was about the wettest summer on record. Ranging from really big nature reserves like woodland with a hundred odd hectares down to the pocket parks like at Mutley. We used that and then we did a massive user consultation. Who uses the greenspaces. Where they use them. How far they travel to do so. How long do they spend there. All that sort of stuff. So we built up a city picture. We then used that to inform the planning side of things using PPG17 which is Planning Policy Guidance 17 on Open Spaces, Sport and Recreation. We set our own standards, in that it says you should set your own local standards .. 10 minute walk away. So we did that and we stipulated a 100 metres accessibility as the crow flies and 600 metres for a play area ... within walking distance, because that's how far mothers with buggies were prepared to walk to a decent play area. We did the same for greenspace, the same for open space for formal parks. We segregated it out into different types of greenspace.

And how do they compare with Natural England and their standards?

It doesn't compare at all because Natural England have to have very broad-brush ... you know whether you're urban to completely rural. This is a kind of a standard that sits in the middle. Whereas the local standard is specific to Plymouth, as an urban population in the middle of this fantastic wider green infrastructure such as Dartmoor and South Hams. So it doesn't really dovetail at all. Which is a good thing, because it's very specific to Plymouth.

I've seen in the Greenspace Strategy an allocation per thousand population of xx hectares.

Yes, that's how it all came about. So much greenspace we have in the city. This is the population we have. So how do we factor that together to create a hectare's per thousand, or per capita.

So from a food-growing point of view point of view, the allotment standard is 0.02 hectare per thousand, and there's much more greenspace, but they're separate and so are there any plans to increase the use of food crops in existing greenspace, not particularly allotments, so that you could satisfy the requirements for allotments or food in the city, providing more food?

The distinction between allotment land and open space or informal open space, park and garden is very different, and their obviously governed by statutory law, 1908 law or whatever. So they're governed very differently. Whereas public open space can be governed by different things, such as the 2006 Commons Act which is about village greens and that. So there are different bits of statutory law that can apply to different areas. So, allotments stand alone, solely as food growing. And if you want to get rid of an allotment and you have to prove that this allotment is surplus - if you want to build on them or turn them back into parkland or whatever. The issue of trees and growing within parks and gardens is carte blanche. You can really do what you like. Very recently we've had quite a few new orchards going in, designated 'Wanted by communities and Planted by communities'. One in Efford, a brand new one. I think 70 or 80 native British trees were planted, ranging from gauges, plums, apples, pears, things like that. 'Planted by the community. Designed by the community'. They went and visited the nursery up in Cotehele, the National Trust gardens up there and they gave them a really good walk around and talked about the ins and outs of apples and pears and stuff. There's another one going in at Radford in Hooe. There's an education centre there, Radford Bird Hide that we've just taken over which we're hoping to get lots of schools in. We've got a pond and so on. So that's newly been refurbished to get schools using that. And there's a Friends group that's there and they've just turned taken away all the brush and lots of rhododendron there and stuff and turn that into a community orchard as well. So that will be planted this autumn. And so we also have, you obviously know about, Devonport Allways Apples and things like that [Yes, very active.]. We have that now happening in Stonehouse where we have these old stone

planters - they're probably as big as this room, 4 metres by 5 metres and they want that to be an edible landscape in there, so we're putting in dwarf fruiting trees.

So what's the level of maintenance of that compared to ordinary parkland?

Obviously the trees are easy to maintain. The grass cut beneath it changes from 13 cuts a year through the growing season, typically around now, middle-March through to September. That changes to sometimes to a 10 weekly cut, so three times a year roughly. And in other places we haycut it to just cut it once a year, and just take away the arisings. So you just get a better kind of natural species coming through.

So which neighbourhoods do not have so much space for growing or greenspace? Wards or neighbourhoods. Have they changed again.

They have changed but only slightly. So I'll stick with what I know …so south of the A38, City Centre, Stonehouse, Stoke, Maurice Town, right in the middle there, North Prospect, Ford, Keyham. All of them around this area. I can give you a copy of this. Obviously right in the middle here you've got Central Park which is one of our biggest parks, 100 hectares. So greenspace that's fairly well accounted for. Plympton and Plymstock are quite greenspace deficient. Again because they're based around smaller stannery towns. They do have bigger gardens. Up in the north of the city and around the sort of Southovers, Glenholts, Whitley, you have large gardens but you also have really big foraging areas in the nature reserves and things of that. So lots of wild berries, nuts and things like that. So they're less deficient in greenspace.

What would you think if residents started all this guerrilla gardening.

It does happen in the city. Apart from Occupy .. We had in Stoke, not too long ago, opposite Cafe India, there's a shrub bed there. That's been recently guerrilla gardened.

And your Parks guys get a bit fed up if they go to visit a place that they've carefully planted. Or has that not happened?

That hasn't yet happened. Normally guerrilla gardening takes over sites that aren't owned by the local authority. Normally owned by absentee landlords or people that don't really care about their local environment that have their plot of land and the bits of land that say sit outside the wall of the garden, but fall short of the highway, so isn't maintained by the local authority. So it's just left to grow and grow. It'll belong to an absentee landlord. Or blocks of housing.

What did you think of the guys in the old fire station and they got chucked off when owned by Asda. I thought it quite ironic.

Was it Asda or Lidl. One of the supermarket chains. I think that was a happy coincidence … It could have been a developer. I understand why they were… *[thread not pursued]*

Do you ever have to justify the space given to allotments by others in Parks or in the Council

I think generally allotment land was overlooked and it took this very large bit of work about the greenspace strategy to highlight the importance of them. And also there's a direct need. At the minute the city has the same amount of people on the waiting list as are currently gardening or allotmenteering. So you've around 1200 tenants with an allotment plot and you've got roughly the same amount of people wanting an allotment plot. So there's a definite need which is evident because you know we can print off 1200 names quit easily and their addresses. But it highlighted the need for that and it's also put it in the sphere of the planning department because we're getting you know planning gain from the developers section 106 or tariff monies directly for allotments. Whereas before, all of our s106 developer money came in for parks and gardens and play, because these were the main two that were being championed. So yes we've done well to put it into the planning, to say you know it is important. People do need to have secure sites that they can grow in etc. etc.

So, secure sites ...?

That's what the people want. That's what they require. They spend a lot of time growing there and for people to come in and trample over it. I completely understand the merits of open sites

Speaking as an allotment holder and seeing sheds burnt down and stuff stolen there's a lot to be desired... there is a tension with community gardens on an allotment site: for example Diggin It at Penlee, some people were unhappy because the gates were left open and they felt there were people wandering around … Anyway, so planners recognise the need for allotment space now?

I think they do more now because we have definite figures and we have … we've done all this research and we've backed it up with consultations that say there is a definite need for it.

Would they say this is quite a privilege given the high real estate value of land within the city … a bit luxurious to expect to be able to allocate that amount of space to one individual?

It could be a train of thought but it's also a statutory duty placed on the local authority... we have to provide land for food growing if it is deemed that people want it, so they can't get round that fact. However, it can be offset against financial gain … currently the economic climate … we do have market recovery things in place to ensure that the Plymouth economy stays growing in terms of house building and things to help deliver our to keep the city economically moving forward as opposed to stalling and people losing jobs and it becomes a place no one wants to invest in and come to …

Could there be income opportunities for people selling produce grown in the city?

Yes, I think so. I think it's a very niche market because *[pause]* people like locally grown food but for the people that can afford the locally grown food ... because it comes at a premium, locally grown, organic, than the bulk brought-in stuff from the continent unfortunately. The likes of Riverford, the other food growers, can't remember the name of the other veggie-box …

Yes there are a few

There's a couple out there … which but again that's a premium price for a vegetable. Whereas you go to Asdas and you buy a bag of carrots for a pound, a kilogram bag of carrots and a five kilogram bag of potatoes for two pounds, whereas you're paying £10 for a box of vegetables which will last you for a week which will do three meals. It doesn't equate. Economically, also within the city there's a massive economic divide. The people that live in the spaces where there should be more greenspaces. Devonport, Stoke, typically the houses that live on the breadline can't afford to buy that type of vegetables

And they don't have the space to grow it either?

They don't have the space to grow it either. Therefore they are completely disengaged with the whole aspect of food growing, foraging, local food and the importance of that.

Which is why the initiative in Devonport is interesting. There's a lot going on there. But that has been helped by regeneration funding and once that runs out, what happens then?

We won't have the capacity to deliver what is currently being delivered on community engagement and growing skills. Yes

That links in very nicely because look, we're here already [reference to schedule]. How do you think growing skills can be best encouraged. Parks Department they're particularly amenity landscape as opposed to food growers, so if there were to be a shift of more people generally wanting to grow food on greenspace do you think there would be a need for a skills programme and do you have the people that could put that on?

The make up of our Parks staff, the main staff, is you have roughly ninety grasscutters, maybe eighty ... you have a team of eight tree surgeons, a handyman that goes out and does all the odd jobs, you have a team of six playground inspectors that keep all the playgrounds clean and inspected every week, and you have one allotment officer and one allotment handyman for thirty two sites … however, there's no spare capacity however we do have other projects like Freedom Fields Park and the friends groups there .. Bernard Tock is the chairman, and they've done [great things], they live in an area where greenspace deprivation is quite high which is the Lipson and Laira and Mount Gould. So you have very formalised Victorian parks, terraced housing, school courtyard gardens ... nowhere really where to grow, unless it's in a container. So what they've done is they've taken over part of the park and put in raised beds and are growing vegetables to use in the cafe .. linked with Mind Oasis. And it's got so popular now that Mind charity are now sending people there to do a bit of gardening and learn and stuff. And they've linked in with our city gardeners and they do the shrub beds, they don't do the grass cutting, they do the shrubs and the trees, they do the gardening for the area. City gardeners, they're trained as gardeners so they know how to plant a bulb, a shrub, when to prune and when not to prune it, and what needs to happen over the year. Food growing is not a specialism of our gardeners because they are trained in the maintenance of what we have out there in terms of shrubs and things and things.

So through the city are project gardeners who are providing the skills and learning and learning opportunities. What would you do if there was no limit to a budget for food growing in the city?

If no limit? .. I'd quite easily turn a lot of the amenity grassland that we have in the north of the city which if you think in places like Whitleigh, and Southway and Budshead, Eggbuckland areas, you've got long strips of housing literally running in rows up the hillsides, interspersed between zigzag paths with greenspace either side of it and at the other end you have lots of grass areas. Just amenity kept grass cut 13 times a year. No interest to nature. No interest to food. Nothing, just ... kids don't play on it because it's too steep. Areas like that you'd turn into allotment growing, or at least let people have the opportunity to grow food there. There's quite a bit of allotment land that is designated allotment land that is no longer being used as allotment areas so if you look on Ordnance Survey maps you'll see allotment land designated but no longer, it's just left fallow. They tend to be areas like I just talked about but in the South of the city where it's really steep land that is ... to a modern day gardener very unworkable, but to a post-war gardener, the best thing since sliced bread because they can grow their family's fruit and veg on it, when it was the whole Dig for England kind of mentality.

What's the relative cost of maintenance of an allotment site compared to amenity grassland for the council?

The allotments, if it's got grass paths and stuff, they need to be cut, so that's roughly 13 times a year, depending ... Fencing and things, all cost money. To set up a site … We set up a new site, or an old site in Ocean Street and that was an old site that we kicked people out of back in 2000 I think we closed the site down and moved them across the road into the allotments up there because that was a bit more used. There were about 3 or 4 tenants so we closed the whole site down and moved them to a site that was a bit more prosperous. And then obviously there was a massive increase in people wanting allotments, so there was a direct need to re-open this allotment site and we spent £30,000 putting in water, new fencing, new access, and still haven't completely secured the site. There's still two large, the largest sides of it, one is owned by South West water so that's got power fencing, so that's alright. One side abuts the backs of the houses and the thing is we've just left it so it's brambles and stuff so people could hack a path through if they wanted. It would cost another £10-15,000 to fence in to completely secure the site.

Once the site is secure and set up, the relative maintenance?

Is relatively low because the majority of the space and the land is left as food growing and is cultivated by the tenants

And it generates a bit of income

Yes, 120m^2 a half a plot, generates £16 or something. 50p, no not even 50p a week. Roughly 35p a week. Which is nothing really. It doesn't generate a lot of income. Which is why when you talk to our economic development people where money talks in the economies of land putting it to allotment and food growing although it's very good for people and it's a lot of community benefit doesn't tick any of their boxes because you're giving good land over to £15 for 120m^2 whereas if they sold that they'd probably get thousands of pounds for 120m^2. The argument doesn't stack up financially for them.

So there must be pressure to put up the rents.

There is, yes, massively. And it's something we look at every year and we do put up rents in line with inflation.

Is there any research that would help you, that could be done, that would strengthen the case for increasing allotment provision?

Economic viability but in terms of how it affects people's health. So does it, do people who use their allotments and eat fresh veg have less of a drain on the NHS. Go to the doctor less? But that doesn't affect *[city budget holders]* … because the funding pots sit very differently. Because the NHS has its little pot, we have our little pot, so we start doing good stuff it will have a knock on effect for the NHS, encouraging people to be healthier, lose weight... it puts less pressure on the NHS resources. But that's never clawed back. So we don't see benefit from that. So that bigger picture. That bit of research which is probably too big a scope …

Any thoughts on city greenspace providing food …

We positively encourage it. We like people foraging. We like people blackberry-picking, picking apples. Efford, they do their fantastic allotment, apple pressing every year now and they're creating a foraging route, creating more foraging ability into the major parks and gardens there. But that's come out of again capital funding, regeneration money. It wouldn't have happened otherwise.

As well as regeneration funding, what has struck me is that there are several incredibly committed individuals who are working on this agenda, that there's some succession strategy for if those people move on ... it's happened a bit at Diggin It …

Absolutely, the whole place, it's [not very good anymore] more difficult to get volunteers, just non-existent isn't it. They've got two sites now which is great. Devonport as well. But that means their time is now split. So their presence isn't there all the time. So they're not building up relations with the allotmenteers that sit on that site anyway that would help them and look after it. There isn't the same buzz about the place because it's not happening on a daily basis. I think it's definitely changed. But then that's funding again.

Funding as well as individuals. There are some people who are quite inspirational.

Yes, on the flip side there's embankment road allotments and you've Mo Townsend from the East End allotment group completely done off her own back, there's no regeneration money there at all. Yes, they brought the allotments back into life

PHDU gave a bit of money

A bit of start up cash but not a lot comparatively to Diggin It or to Efford

Diggin it, because their lottery money ran out for their core project, they got funding then for outreach work with schools. Have you have any feedback of successful school projects?

Yes, and the person to speak to is Jacques Marchal who does a lot of projects regards to getting children to find out where food actually comes from. Oreston primary School, have leased a very big bit of land for their own garden from the council.

It's a very popular picture for the Herald, lovely bunch of children happy in the children

Yes and they really are. The other school that's done really well is Elburton Primary School. An amazingly inspirational teacher and we've been there about four or five years on the trot now just visiting because they've got a fantastic garden and you see the same ... the kids that go there. There's been one group of girls especially actually who've really taken it on board. And they will take you round the garden and tell you each individual type of plant, when you can eat it, when you should do this. Absolutely phenomenal.

Jacques has said has its fabulous working with schools but the problem comes in the summer holiday.

Teachers on holiday don't want to go to school or are too busy preparing for the next year.

Can you think of any way to get over that?

You have to employ or make sure it's part of the caretaking duties of the staff that are there year round, because schools don't 'close close'. Or you engage with someone like us to go in and maintain them. We do school grounds maintenance, we do their grasscutting, tree work, etc. If the school wants to ... they'd have to buy it in, on a contract price, but that's a possibility. Unless they link it, thinking completely differently, the localism way, these are allotments for locals as well, so we let local people … the extended school agenda. Say we've got allotments you take the food away because in the summer there's going to be all that food we've grown that's going completely to waste. Say 'are there any local gardeners out there to help us', and pay them to do it. Schools have budgets. Or exchange for food. That would alleviate some issues on the allotment pressures on our waiting lists maybe.

Are there any places that you read about that you think I wish we could do that here?

Yes, Modbury, locally, their gardening is [great] … I've got a little thing from them… this is the Big Greenspace Challenge and this has come from South Hams District Council to help deliver on Langage Energy Plant. Mitigate against that part of their s106. No it was Wembury allotments. And their allotment society, they applied for some money ... as part of a 'share our shed' project. So they sit within the National Trust site at Wembury. They've got this fantastic polytunnel and shed which collects rainwater for irrigation, they want solar panels on there, what they're asking now for is tool storage and other bits and bobs.

How did they get the money for that?

This was a grant, I think part of the National Trust. ... they want a shed basically for storage.

So that's a community meeting space. I'm intrigued by community processing space also, community kitchens to make chutneys etc.

Very exciting. You think. There is a lot of capacity. But people lead busy lives. And a lot of the people that really engage are retirees that have a bit of time to spend. The people that live in Devonport and in Efford. The amount of people we engage in that process is very limited comparatively out of the total population. It's the retirees. The people with families that are working, they don't have time. They have very busy lives nowadays. Which is unfortunate, because part of my role is to engage with these people and to help develop projects and get funding for them, do that sort of bit of work and actually I don't get to see half of the people I should be seeing …

What about the concept of the undeserving poor on benefits who sit in front of their daytime TV eating rubbish food and they're people who you could get out gardening but they're the people who don't want to engage. Is there anything that could tempt them.

That's the 64 million $ question. How do you tempt somebody. Because a lot of it is institutionalised. That's the way their parents were, well, generalising here. You will get out of one in every ten of children who grow up in those families will have a keen interest in gardening … their granddad might have had an allotment and they spend there

And maybe a celebrity or two helps. If Posh starts gardening ..?

Absolutely. We are unfortunately a very media-driven society now. The OK magazines and the Hellos and all of that really dictate modern day culture and what we should be expecting out of life.

[ends]

Appendix 8 Agriculture in the South West of England: Extracts from Farm Business Survey 2011/2012

(Source: Farm Business Survey 2011/2012 accessed at http://www.farmbusinesssurvey.co.uk/regional/commentary/2011/southwest.pdf)

The nature of farming in the South West of England

The South West region covers a wide range of agricultural environments from the Less Favoured Areas (LFA) of Exmoor, Dartmoor and Bodmin Moor (covering 8% of the region), to the Somerset levels, across to the chalk down land of Salisbury Plain, as illustrated by Map 1. One third of the land area is designated nationally for its landscape quality which encompasses-

- seven Environmentally Sensitive Areas
- two National Parks wholly in the South West, Dartmoor and Exmoor, covering 7% of the region, and a small part of the New Forest National Park
- fourteen Areas of Outstanding Natural Beauty (AONB) covering 30% of the region
- and just under a quarter of the Sites of Special Scientific Interest (SSSI) in England

Natural England estimated that in March 2011 over 62% of all farmed land (or 1.2 million hectares) in the South West is managed as part of an agri-environment scheme, the majority of this land (83%) under the Entry Level Scheme (ELS). This represents 26% of the national agreements. The region also contains a large share of the UK Biodiversity Action Plan Priority Habitats, especially the lowland heaths and grasslands, coastal and floodplain grazing and sand dunes.

The South West is very important with regards to organic production methods. Defra data produced on organic farms for 2011 indicates that the South West has over 171,000 ha of organic or in-conversion land. This represents 10% of the total agricultural area, excluding common grazing land, compared with the England figure for organic or in-conversion land which is 4% of the total agricultural area. This is a reduction in the land used for organic production both nationally and regionally of close to 10%. Nearly half of the organic or in-conversion land in England is situated in the South West. A dataset showing figures from 2002 onwards is available on the Defra website at: http://www.defra.gov.uk/statistics/foodfarm/enviro/organics/index.htm

The region is predominantly grassland, with 63% of the region's area of agricultural land being grass, the majority of which is over five years old, plus an additional 69,500 hectares of sole occupancy rough grazing (4% of agricultural land). The South West has nearly a third of the nation's cattle and over 20% of its sheep but grows fewer crops and has less intensive livestock than the national average.

The contribution made by farming in the South West to the region's economy and to farming in England

Table 1 summarises the contribution made by agriculture to both the regional and the national economies. In 2011, the gross output for agriculture in the region was £3,148 million, an increase of 14% as compared to the previous year. The South West gross output was 18% of the national output of £17,786 million. In terms of the Gross Value Added (GVA), the region contributed £1,332 million to the national figure of £7,331 million being the largest figure for any region in England. In terms of Gross Output from agriculture the South West is ranked second in importance in England behind the East of England Government Office region. The GVA for the South West was 18% higher than the 2010 figure. Nationally, agriculture contributes 0.5% of the total gross value added in 2010, but the South West figure is approximately twice this figure. Within the labour market, the regional work force amounts to 2.5 million people with 61,072 people working in agriculture, 2.44% of the workforce, and 21% of the total labour engaged in agriculture in England.

The South West is predominantly a grass growing region, with 75% of the land grass or rough grazing. This represents 29% of all the English grassland, with over 32% of the English beef and dairy herd and 20%

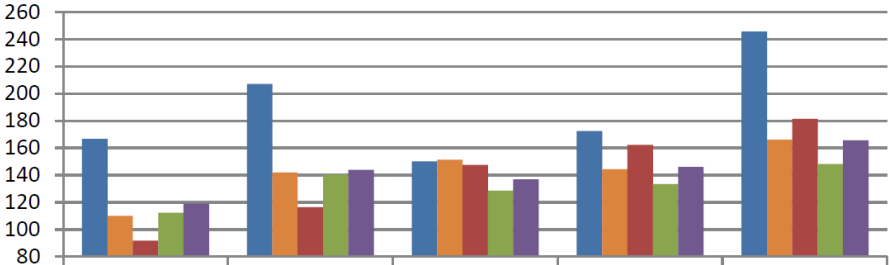
of its sheep grazing this area. Cereal crops cover 12% of the region. The woodland area is also above the percentage area for England.

The South West has a greater proportion of small and very small farms (<20 Ha) and fewer large farms (>100 Ha) compared to England as a whole. Thus in summary, the South West is predominantly a grazing livestock area, with a large share of England's cattle and sheep, employing a greater share of the population than other English regions and generating a share of GVA above the national average.

Economic factors

Changes in income result from changes in the price of inputs and their usage, and the level of output and unit price, which in turn will dictate the future choice of enterprises. Figure 3 illustrates the trend in producer prices since 2007 as an index. Each commodity has behaved differently over this period, but 2011 figures for cereals are nearly two and a half times higher than 2005, cattle two thirds higher, sheep 81% higher, milk is 48% higher and the 'all products' figure is two thirds higher.

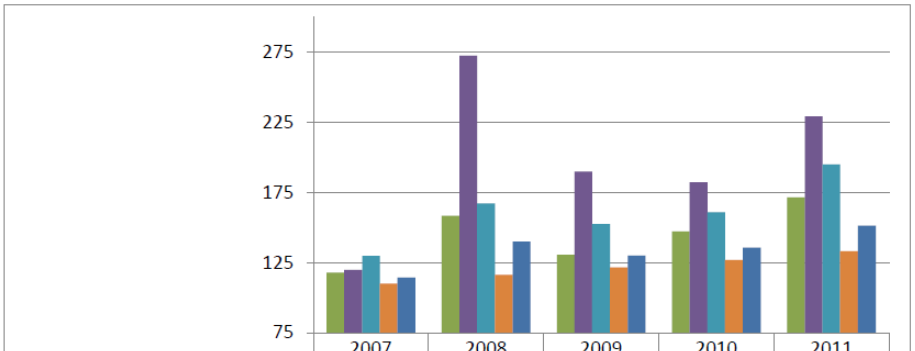
Figure 3 Index of producer prices, UK (2005=100)



	2007	2008	2009	2010	2011
Cereals	166.7	207.1	150.1	172.4	245.7
Cattle	109.9	141.9	151.4	144.2	166.1
Sheep	91.8	116.4	147.4	162.2	181.4
Milk	112.3	140.4	128.4	133.5	148.1
All products	119.0	143.9	136.9	145.9	165.6

Input prices have risen for a number of products as shown in Figure 6.

Figure 6. Index of purchase prices, UK (2005 = 100)



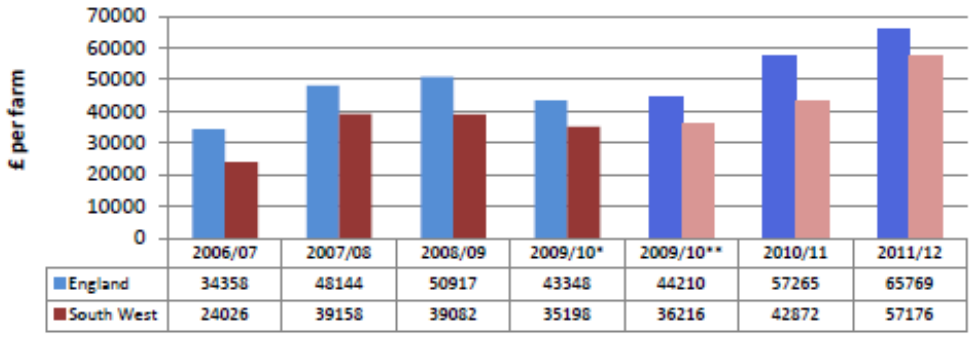
	2007	2008	2009	2010	2011
Energy and lubricants	117.9	158.2	130.4	147.1	171.5
Fertilisers	119.8	272.5	189.8	182.4	229.3
Animal feed	129.7	167.3	152.5	161.0	194.9
Maintenance of plant	109.9	116.3	121.5	126.9	133.1
All means of agricultural production	114.2	139.9	129.9	135.6	151.2

Source: Defra, National Statistics

The fluctuations in the value of oil are continuing to affect agriculture in a number of ways. Direct fuel costs on holdings reached record levels in 2011, whilst delivery and collection costs also remain high. Fertiliser prices, in particular, went up as raw material costs rose and the global economic crisis affected demand on the world market, the value of fertiliser for 2011 being 229% higher than the 2005 figure. In 2011 the cost of animal feedstuffs was close to double the 2005 figure. The higher cereal prices and the cost of protein sources were contributing factors to this change. In 2011 the 'All means of agricultural production' index was half as large again as in 2005. Costs have eroded much of the benefit of the large changes to the output from agriculture because changes to the Costs Indices have been largely similar to the changes to the Producer Prices Indices.

For 2011/12 the South West has a Farm Business Income per farm equivalent to 87% of that for the whole of England. It is worth noting that the difference in income would be even more pronounced if the data for the South West were to be removed from the data for England. The classification of farms has been recently revised meaning that the results for 2011/12 are not directly comparable with those published for 2008/09 or earlier in previous reports. Figure 8 shows the trend of Farm Business Income (FBI) over the past 6 years. The data for 2009/10 is shown twice, once with the former typology specifications and once with the new typology specifications to allow a direct comparison of the data for 2009/10 onwards. The difference in typology has altered the FBI for England and the South West for 2009/10 by between 2% and 3%, however, because of the significance of the increase in 2010/11 and again in 2011/12 the overall trend and comparison with previous years is still valid.

Figure 8 Farm Business Income per farm, South West and England
(Changes to classification of farms means that comparisons pre- and post- 2009/10 are inexact)



Compared to the previous year, FBI per farm in 2011/12 increased by 15% in England, whilst there was an increase of £14,304 per farm in the South West, a 33% improvement. The mix of farm types and sizes of farms determine the 'All Farms' figure for each region and Table 2 indicates the South West regional differences as compared to the all England data.

Table 2 Farm characteristics by region

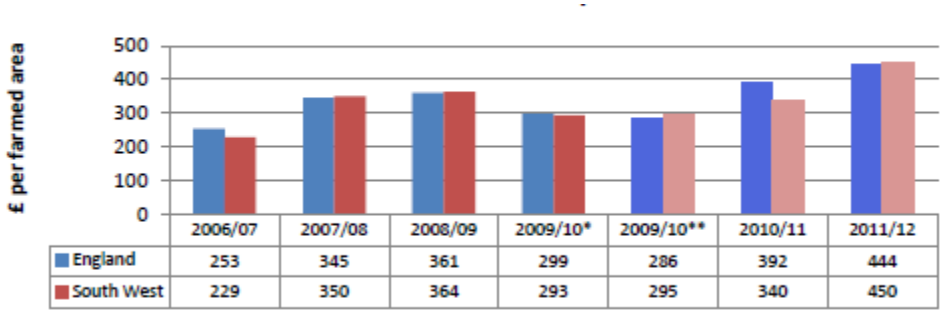
	Farmed Area (Ha)		*Tilled area (Ha)*		*ALU*	
	England	*South West*	*England*	*South West*	*England*	*South West*
All farms	138.5	121.3	75.4	43.6	2.5	2.3
Cereals	171.3	189.2	152.3	151.1	1.6	1.8
Dairy	143.4	151.5	38.6	39.5	3.7	3.9
LFA Grazing Livestock	139.2	129.7	2.2	1.4	1.5	1.6
Lowland Grazing Livestock	101.0	84.9	10.7	9.9	1.6	1.4

The South West has a higher percentage of 'Grazing Livestock' farms, which produce lower income than any other type of farming. Also using farmed area and annual labour units (ALU) as a measure of size, the farms in the South West are generally smaller. Although the Cereal farms in the South West are 10% larger than the England farms and the Dairy farms are 5% larger, the Grazing livestock whether in the

LFA or Lowland are both smaller in the South West than in England as a whole. Smaller businesses and the less profitable farm types therefore result in lower FBI per farm in the South West.

Representing the figures on a per hectare basis removes the scale differences and these are illustrated in Figure 92. For 2011/12 the FBI per hectare is slightly higher than the England figures which are an improvement compared to the previous year where the South West per hectare figure is only 86% of England. This change reflects the increase in the incomes of the livestock systems for 2011/12

Figure 9 Farm Business Income per hectare by region



	2006/07	2007/08	2008/09	2009/10*	2009/10**	2010/11	2011/12
England	253	345	361	299	286	392	444
South West	229	350	364	293	295	340	450

The Farm Business Income per hectare for the most prevalent farm types found in the South West is shown in Table 3 for both England and the South West. The Farm Type figures for the South West indicate a distinct advantage over England in the grass based farm types but lower for the cereal farms.

Table 3 Farm Business Income per hectare by farm type (£) FBI per hectare

	England	South West
Cereals	499	426
Dairy	608	684
LFA Grazing Livestock	213	280
Lowland Grazing Livestock	301	319
All farm types	444	450

The Less Favoured Area (LFA) in the South West includes a large area of Disadvantaged Area (DA) land and the moorland of Dartmoor, Exmoor and Bodmin Moor which are less extreme in terms of altitude and climate than the Severely Disadvantaged Area (SDA) in northern England.

Horticulture in South West England

Horticulture covers a very diverse range of enterprises and this group of farms cover specialist fruit, glasshouse and hardy nursery stock together with other horticulture. This year's sample has 38 farms and the average farm size for these businesses is 32.0 hectares, with a farmed area of 29.0 hectares. Top fruit occupies the largest area with 4.3 hectares. The average farm has a grassland area of 10.6 hectares, with a small livestock presence of 8 livestock units. This group of producers has the highest number of annual labour units with 4.1, primarily made up of the farmer & spouse (1.4 units), regular paid labour (1.3 units) and casual or seasonal labour (1.3 units).

Total farm output was close to £190,000, a 1% increase on the previous year and this increase was seen in most enterprises, except outdoor vegetables, outdoor flowers and top fruit whose output fell. The contribution made to output by agri-environment schemes and the Single Payment Scheme was £7,514, which represents 4% of the total output.

Seed and other crop costs represent three quarters of the variable costs, while labour costs of £48,583 are half of total fixed costs. The Farm Business Income came to £38,540, an increase of a 28% compared to the previous year.

The Horticulture businesses in the South West are smaller, in area terms, than the national average and they produce a Farm Business Income per hectare slightly below the national average so when ranked they are the fifth highest for Farm Business Income per farm among the seven Government Office regions that are able to publish data for Horticulture businesses.

Mixed farms in South West England

Mixed farms cover a wide range of farming activities, but with no single dominant enterprise. Therefore the average farm has a combination of arable and grazing livestock together with pigs and poultry. The average farmed area of these farms was 191 hectares, with 46% tilled. Winter wheat area represents 42% of the tilled area. Spring barley covered 14% of the tilled area with winter barley and oilseed rape 10% each. Most of the grassland is permanent, and the average stocking consists of 14 dairy cows, 143 other cattle, 136 ewes, a small pig herd of 10 sows and 117 other pigs and a flock of poultry numbering 1,012 birds.

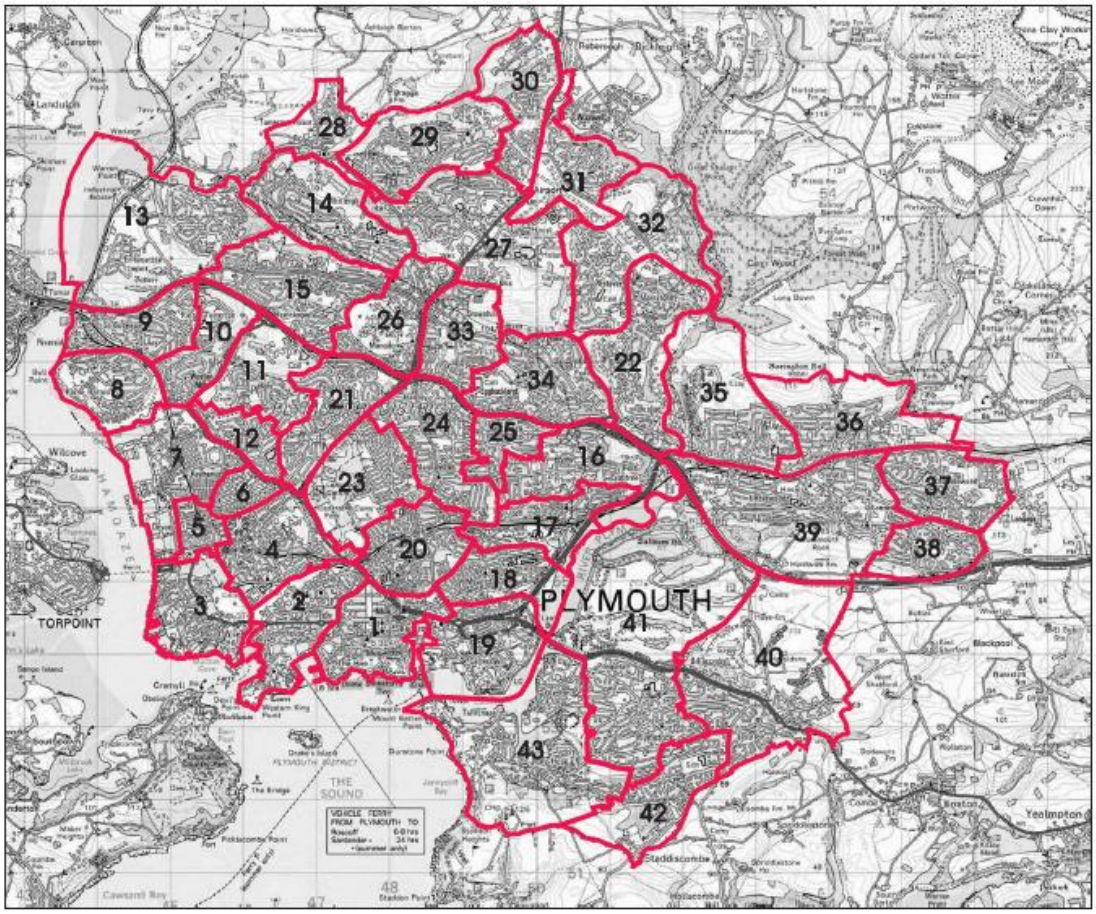
The farmer and spouse accounts for 40% of the labour units on these farms, and paid labour is equivalent to 1.4 annual labour units with the total requirement of 3.2 annual labour units. Livestock enterprises produce 41% of the farm output, with rearing and finishing cattle the largest contributor, followed by milk & dairy, pigs and then poultry.

As with all the livestock dominated farm types, concentrate feed, fodder and other livestock costs are the largest variable costs, but with these farms using more of their home grown feed. The more intensive nature of these farms means that feed accounts for 42% of variable costs. Fixed costs total £184,685, with labour close to a quarter of these costs, followed by land & buildings inputs then machinery fuels and repairs.

Appendix 9 Plymouth neighbourhoods and IMD profiles

(Source: Plymouth 2020 Local Strategic Partnership 2007)

Plymouth Neighbourhoods



1. City Centre
2. Stonehouse
3. Devonport
4. Stoke
5. Morice Town
6. Ford
7. Keyham
8. Barne Barton
9. St Budeaux
10. King's Tamerton & Weston Mill
11. Ham
12. North Prospect
13. Ernesettle
14. Whitleigh
15. Honicknowle
16. Efford
17. Lipson & Laira
18. Mount Gould
19. East End
20. Mutley & Greenbank
21. Beacon Park & Pennycross
22. Leighham & Mainstone
23. Peverell
24. Hartley & Mannamead
25 Higher Compton
26. Manadon
27. Derriford
28. Tamerton Foliot
29. Southway
30. Widewell
31. Glenholt
32. Estover
33. Crownhill
34. Eggbuckland
35. Woodford
36. Colebrook & Newnham
37. Chaddlewood
38. Yealmpstone
39. Plympton St Maurice
40. Elburton & Dunstone
41. Plymstock
42. Goosewell
43. Turnchapel, Hooe & Oreston

Table D: Neighbourhood Renewal Index of Deprivation 2007

	Education Score	Education Rank	Health Score	Health Rank	Crime Score	Crime Rank	Workless ness Score	Workless ness Rank	Housing Score	Housing Rank	All theme Score	All theme Rank	Position of Lowest whole or part Scoring IMD 2004 SOA within neighbourhood	Does the SOA fall 100% within the neighbourhood	2005 Rank
Devonport	83.84	2	77.10	1.00	28.42	10	100.00	1	61.15	20	70.10	1	3%	Whole	2
City Centre	54.67	19	65.11	5	100.0	1			54.98	23	68.69	2	3%	Part	3
Stonehouse	80.36	3	68.86	2	73.82	2	93.93	2	23.3	36	68.05	3	3%	Whole	1
North Prospect	91.20	1	58.12	9	32.55	7	66.07	4	79.61	9	65.51	4	3%	Whole	4
Barne Barton	77.92	5	55.55	12	32.45	8	61.73	6	85.71	6	62.67	5	3%	Whole	5
Whitleigh	69.10	10	58.21	8	37.38	6	55.19	9	81.28	7	60.23	6	10%	Whole	16
Ernesettle	79.80	4	66.54	3	16.77	21	62.23	7	75.31	13	60.13	7	20%	Whole	10
Efford	75.74	6	57.38	11	18.42	17	47.00	13	89.8	3	57.67	8	10%	Whole	6
Honicknowle	74.43	7	62.01	6	41.86	5	44.28	12	65.68	17	57.65	9	10%	Whole	12
Stoke	42.67	30	41.88	24	42.11	4	45.67	8	88.11	4	52.09	10	20%	Whole	15
St Budeaux	73.06	9	57.56	10	26.93	11	40.93	17	60.11	21	51.72	11	20%	Whole	11
Keyham	59.94	13	58.91	7	17.67	18	44.15	14	75	14	51.13	12	10%	Whole	8
Ford	53.97	22	44.22	20	16.58	22	40.48	10	96.59	2	50.37	13	20%	Part	14
Southway	58.67	14	50.37	16	17.07	20	44.26	15	72.23	16	48.52	14	30%	Whole	21
Mutley and Greenbank	60.09	12	43.26	23	69.89	3	27.70	18	41.4	31	48.47	15	20%	Whole	17
Morice Town	53.04	23	66.21	4	23.05	13	70.02	5	27.5	34	47.96	16	10%	Part	9
Mount Gould	56.83	17	37.34	30	24.14	12	37.73	11	80.38	8	47.29	17	10%	Part	18
East End	58.50	15	51.63	14	30.31	9	62.60	3	31.61	33	46.93	18	10%	Whole	7
Ham	73.51	8	51.79	13	14.44	26	40.10	16	46.05	29	45.18	19	10%	Part	19
Kings Tamerton and Weston Mill	56.79	18	51.18	15	17.32	19	35.43	20	64.74	18	45.09	20	20%	Part	22
Plympton St Maurice	35.44	36	35.50	33	15.33	25	18.29	37	100	1	40.91	21	30%	Part	31
Lipson and Laira	67.30	11	35.81	32	18.57	16	34.89	19	47.57	27	40.83	22	20%	Part	13
Estover	57.29	16	40.77	26	15.38	24	29.15	25	58.9	22	40.30	23	30%	Part	20
Higher Compton	42.20	32	43.37	22	5.43	40	23.01	28	86.93	5	40.19	24	60%	Part	29
Beacon Park and Pennycross	52.68	24	36.92	31	20.26	15	32.94	21	47.41	26	38.04	25	20%	Whole	25
Plymstock	36.55	34	41.14	25	16.53	23	19.65	35	73.91	15	37.56	26	40%	Part	27
Widewell	45.79	27	37.49	29	5.48	37	21.97	36	75.5	12	37.25	27	30%	Part	38
Manadon	54.31	20	45.15	19	12.34	27	32.12	23	25.97	35	33.98	28	20%	Part	24
Goosewell	45.77	28	38.74	27	5.48	38	19.66	26	54.33	24	32.79	29	60%	Whole	23
Tamerton Foliot	54.30	21	30.72	39	5.43	39	17.98	32	53.5	26	32.39	30	40%	Part	28
Colebrook and Newnham	22.02	42	34.57	35	7.12	35	17.58	29	75.59	11	31.38	31	50%	Part	37
Woodford	29.34	39	46.06	17	4.98	42	12.28	42	61.36	19	30.81	32	70%	Part	34
Hartley and Mannamead	20.29	43	25.21	43	10.90	29	17.48	31	77.27	10	30.23	33	20%	Part	40
Yealmpstone	36.42	35	45.62	18	5.08	41	16.89	40	44.82	30	29.76	34	30%	Part	30
Leigham and Mainstone	43.75	29	38.36	28	9.01	33	32.17	22	19.86	37	28.63	35	30%	Part	26
Turnchapel Hooe and Oreston	29.78	38	30.52	41	9.06	32	20.14	33	53.62	25	28.63	36	40%	Part	35
Crownhill	49.76	25	32.71	38	9.21	31	18.87	30			27.64	37	50%	Part	33
Derriford	49.34	26	35.41	34	7.86	34	16.21	38			27.20	38	20%	Part	39
Elburton and Dunstone	35.40	37	34.33	36	5.72	36	16.37	34	40.08	32	26.38	39	60%	Part	43
Eggbuckland	40.36	33	33.65	37	10.80	30	22.89	27	19.82	38	25.51	40	30%	Whole	32
Chaddlewood	42.46	31	30.26	42	11.35	28	15.13	39			24.80	41	70%	Part	36
Glenholt	22.87	41	43.80	21	1.34	43	21.75	41			22.44	42	70%	Part	42
Peverell	27.94	40	30.70	40	21.75	14	21.90	24	0	39	20.46	43	40%	Whole	41

Source: Plymouth 2020 Local Strategic Partnership 2007

*Please note that Overall scores represent an average of all dataset scores within each theme and as such the poorest performing neighbourhood may not have an overall score of 100.

Appendix 10 Historical development of allotment sites in Devon and Cornwall *(Source: Burchardt and Cooper 2010)*

D = Devon, C = Cornwall, S = Somerset

	County	*Acreage of estate*	*Size of allotments*	*Rent compared with land let in farms*	*Remarks*
Earl of Devon	D	20,049	Rather under 0.25 acre	The same	398 allotments now in occupation; more would be provided if required
Earl Stanhope	D	5,186	15 perches	Rather under	As a number of smallholdings. Is laying out a fielde in allotments
Earl Fortescue	D	20,171	About 0.25 acre	If anything, lower in all; in some decidedly lower	Is disposed to afford facilities for the extension of the allotment system
Earl St Germans	C	5,961	10-20 perches	A little higher	Labourers on the estate have for many years had allotments
Viscount Sidmouth	D	4,500	-	-	In Devon all cottagers have large gardens; only one or two requests for land; two labourers rent fields.
Lord Arundell of Wardour	C	182	Nearly 8 acres each	Rather more	In 1878, 428 acres were offered for sale in small lots; 164 acres sold.
Lord Poltimore	D	19,883	30 perches	Not higher	-
Lord Alington	D	2,587	0.25 acre	Not higher	-
Rt Hon Sir Massey Lopes	D	11,977	Eighth to quarter acre; in some cases considerably more	Not higher	Prepared to offer further facilities
Hon Mark Rolle	D	55,595	Eighth acre	Not higher	22 allotment fields, varying from 1 to 22 acres, making up an aggregate of 1,000 acres, let to 1,000 tenants. Desires to extend the system, especially in the neighbourhood of towns.
Hon Mrs Gilbert	C	2,895	-	-	The whole of the estate is let in small holdings to miners.
Rev Preb Barnes	D	-	6 acres	Rent same	Has solicited applications
Frank Bradshaw Esq	D	6,642	15 yards	Not higher after deducting outgoings	150 acres surrounding the village let to a large number of tenants
A Coryton Esq	C D	8.585	20 perches to 2 acres	Not higher	
W J Harris Esq	D	2,900	3 to 38 acres	Somewhat higher but low rents as to value	Has for last 12 years been engaged in creating small holdings on the property.
T Kekewich Esq	C D	2,603 2,131	30 perches	About the same	
G F Luttrell Esq	D	154	15 perches	Much lower	Rent is much lower in some cases than on adjoining farms, and in no case higher
J R Pine-Coflin Esq	D	3,854	20 yards to 0.25 acre	A little higher	
F Rodd Esq	C	7,912	20 yards garden and 20 yards allotment	The same	Allotments were let at from 3d to 6d per yard, according to wages of tenants as under or over 12s a week, but not being taken up the system was abandoned.
W Sandford Esq	D/S	5,057	About 0.25 acre	About the same, less when let separate from cottage	All cottages have quarter-acre gardens
CWA Troyte	D	6,627	20 perches to quarter acre	Rent free	Every cottage has a good garden
Wm Wyndham Esq	D	6,740	About 20 perches	Rather higher	Is open to extend the allotment system

Appendix 11 The Plymouth Food Charter, Action Plan and Pledges *(Source: Food Plymouth)*

(a) Plymouth Food Charter

THE PLYMOUTH Food Charter

Good food is vital to the quality of peoples' lives in Plymouth. By promoting healthy and sustainable food as part of a thriving food economy, the Plymouth Food Charter aims to improve health and wellbeing for all and to create a more connected, resilient and sustainable City. Signatories to the Charter - which include public, private and community partners – are committed to promoting the pleasure and importance of good food to help create a vibrant and diverse food culture. We will work together to increase both the demand and supply of delicious and affordable, fresh, seasonal, local and organic food throughout Plymouth in order to achieve:

A thriving local economy

1. Encouraging a greater number and diversity of food enterprises and jobs, making the most of Plymouth's rich land and sea resources.
2. Sourcing healthy and sustainable food from local producers and suppliers, keeping value within the local economy.

Health and wellbeing for all

3. Raising awareness of the importance of a nutritious, balanced diet and improving the availability of affordable healthy food.
4. Providing a wide range of community growing and other food-related activities to improve physical and mental health for people of all ages.

Resilient, close-knit communities

5. Promoting and celebrating the food and culinary traditions of all cultures through a variety of public events, such as Plymouth's Flavourfest.
6. Supporting local and city-wide food initiatives that bring communities together and help them to improve their neighbourhoods.

Life long learning & skills

7. Giving everyone the opportunity to learn about good food– how to grow it, how to cook it, how to eat it and how to enjoy it.
8. Inspiring and enabling organisations such as schools, hospitals, businesses and other caterers to transform their food culture.

A reduced eco-footprint

9. Supporting food production that protects wildlife and nature; reducing food miles, packaging and waste; and increasing composting and recycling.
10. Maximising the use of greenspace and brownfield sites in and around Plymouth to produce food for local people.

Food Charters?

A few pioneering cities around the world have realised that food can be one of the most powerful drivers of positive social, economic and environmental change. They are promoting healthy and sustainable food as a key part of their efforts to improve peoples' lives whilst also protecting the planet.

Some cities have adopted a food charter to enable partnerships of public, private and community organisations to describe how they will work together to use healthy and sustainable food as a vehicle for driving positive change and to provide a focal point around which these partnerships can grow over time.

In Plymouth, partners to the Food Charter are developing an Action Plan to achieve its aims.
The success of the Charter and the Action Plan will depend on the pro-active support of individuals and institutions across the City. We want as many people and organisations as possible to endorse the Charter and to work with us on making Plymouth a truly sustainable food city.

We .....

sign up to the Plymouth Food Charter.

Get involved

If you would like to support the Plymouth Food Charter just follow these three easy steps.

1. Sign and display this Charter in your organisation.
2. Make a commitment to do one new thing this year which will support the ten aims.
3. Sign up online to register your commitment.

Contact Traci Lewis or info@foodplymouth.org or visit www.foodplymouth.org

For more information visit www.foodplymouth.org or email info@foodplymouth.org

For more information visit www.foodplymouth.org or email info@foodplymouth.org

(b) Food Plymouth Action Plan

OUTCOME	ACTION	WHO	WHEN
A THRIVING LOCAL ECONOMY			
Encouraging a greater number and diversity of food enterprises and jobs, making the most of Plymouth's rich land and sea resources. Sourcing healthy and sustainable food from local suppliers, keeping value within the local economy.			
New food outlets and models through social enterprise	New Local Food Store & Café in Plymouth city centre Mobile Community Food Hub 3 new community food coops or buying groups – in areas with little access to fresh produce Set up and support 3 new producer co-operatives	Food Plymouth Partnership Take a Part: Grow Efford Partnership Tamar Grow Local	September 2013 December 2013 March 2014 December 2012
Support the establishment of a variety of commercial retail for the provision of local food & an increase in fresh produce sold within existing city retailers, caterers	Mobile Farm Shop at Plymouth University (PU) Support 5 new and existing fruit and veg retailers / vendors to sell local produce Thriving Farmers market in prominent city centre location	Plymouth University Food Plymouth Partnership Plymouth City Centre Company	ACHIEVED March 2014 October 2012
Drive large-scale changes in demand & supply of organic & other sustainable produce from Devon & Cornwall food producers, especially through: • Public sector catering and procurement • Hospitality catering • Multiple retailer engagement and research	8 Plymouth public sector caterers adopt Sustainable Food Policies, 4 adopt the Food for Life Catering Mark - help embed long term commitment to local and sustainable sourcing 25 Private sector hospitality caterers sign up to Plymouth Food Charter, with commitments to increase % local sourcing 5 main multiple retailers contacted to engage with aims Plymouth Food Charter & to explore opportunities for more local produce sales and community engagement activities	Public sector buyer group Food Plymouth Partnership Food Plymouth Partnership	PCC & PU ACHIEVED FFL CATERING MARK (Gold / Bronze) Feb 2012 February 2013 September 2012
HEALTH AND WELL-BEING FOR ALL			
Promoting healthier lifestyles through awareness of nutritious and sustainable food, and improving availability of seasonal, affordable produce. Building on the existing wide range of community growing and other food-related activities to improve physical and mental health for young and old.			
Maximise opportunities for raising awareness about the importance of food on improving health & wellbeing and influence this at every level	Involvement in health awareness raising campaigns eg. British Heart Foundation's Develop and use Food Plymouth website www.foodplymouth.org – for marketing and member participation 'Food champions' across city to engage and inform different organisations, communities, other stakeholders, media and create a more positive image around sustainable and healthy food	Food Plymouth Partnership (FPP)	2011 – 2014 ACHIEVED September 2013
Particular emphasis on health inequalities and the significance of preventing ill health through diet	Food Charter aims embedded into relevant policies and plans with NHS Plymouth 'Healthy Plymouth' and Local Authority-Health Inequalities Plan Food Plymouth campaign to raise awareness with citizens and food retailers about food promotions and products which cause obesity and other health problems Produce a campaign film to raise awareness of aims of Plymouth Food Charter & Action Plan	Plymouth City Council (PCC) NHS Plymouth Food Plymouth Partnership (FPP) FPP	2012 - 2014
Food meeting place to engage people, celebrate food and provide opportunities for learning and training	A Local Food Café & Shop social enterprise in Plymouth city centre (also in Economy Section). Continue to deliver working programme of cooking skills training - 10p/yr Skill sharing and intergenerational learning food workshops - annual programme	Food Plymouth Partnership NHS Community Health Improvement Team (CHIT)	September 2013 2011 – 2014
BUILDING RESILIENT AND CLOSE KNIT COMMUNITIES			
Promoting and celebrating the food and culinary traditions of all cultures by holding community and city events such as Flavour Fest. Bringing communities together through local and city-wide food initiatives, helping to promote neighbourhood inclusion, cohesion and regeneration.			
Promote Food Charter at Flavour Fest and through city wide initiatives to help raise awareness and to celebrate good work already taking place	Food Plymouth mobile display for presence at city events eg. Flavour Fest, PCC allotment open days Plymouth Food Awards developed and launched Summer 2011 – to continue and develop these through 2012/13 East End Allotments recognised by awards from SW in Bloom (outstanding achievement) & Plymouth in Bloom (Gold for best community environmental project & Champion of Champions)	Food Plymouth Partnership (FPP) FPP East End Allotments	2011 - 2014 ACHIEVED 2011 ACHIEVED 2011
Develop and support local food events and projects within communities and neighbourhoods	Annual community food events (4 p/yr) Press articles about Food Plymouth aims and activities (min 4 p/yr)	Food Plymouth Partnership (FPP) FPP	March 2012 – 14 ACHIEVED 2011
Develop networks through which anyone with an interest in food can find out what others are doing and work more effectively together towards a common goal	Food Plymouth Network developed through website, e-newsletter and social media Current and relevant links and resources signposted through website and network	Food Plymouth Partnership (FPP) FPP	March 2012 – 2014 2011 – 2014

OUTCOME	ACTION	WHO	WHEN

LIFE LONG LEARNING AND SKILLS

Giving everyone the opportunity to appreciate good food – where it comes from, how it goes here, how to grow and harvest it, how to cook it, how to eat it and how to enjoy it.
Giving everyone of all ages the opportunity to learn and develop skills around food – at schools, colleges, universities, workplaces, local communities, and in the home.

To "inspire and enable" schools to adopt a "whole school" approach to transform their food culture	Every educational establishment to receive "tailor made" information (e.g. posters, fliers) on the food charter, what it means and how best to engage with it. Cookery classes /demos in schools to engage children with food (min 15 pa/r) 27 Plymouth FFLP schools, 2 Flagship schools	Food Plymouth Partnership (FPP) Food is Fun Food for Life Partnership (FFLP)	March 2012 - 14 March 2012 - 14 ACHIEVED
Provide opportunities for learning growing skills	Apple tree planning and pruning workshops (winter) Children's food growing workshops (monthly). Start up and market support for small scale community food producers in Tamar Valley eg. Apple grafting workshops, Bee keeping courses.	Dig for Devonport Tamar Grow Local	2012 - 2015 2012 - 2014

A REDUCED ECO FOOTPRINT

Protecting wildlife and the natural environment, by using greenspace and brownfield sites in and around Plymouth to produce local and sustainable food.
Reducing food miles, packaging, and waste, and increasing composting and recycling.

Map greenspace and brownfield sites in the city and assess availability and food growing potential Increase food growing space within the city Showcase 3 model new edible gardens	Natural England and PCC Green Infrastructure (GI) report NT Saltram House new allotments (40 - 50 plots) 3 new edible gardens in city eg. Efford, Stonehouse,	Plymouth City Council (PCC) Saltram House Dig For Devonport	ACHIEVED 2011 July 2012 March 2015
Support short supply chains into the city through collaboration of all players within food chain	Facilitate dialogue across supply chain to support and enable beneficial collaboration for shared distribution and marketing Feasibility study into multi-stakeholder distribution / local food hub to access a range of city markets Regular Low Carbon Sail deliveries of fresh local organic produce into city from Tamar Valley producers	Food Plymouth Partnership (FPP) FPP Sailfloats Tamar Grow Local	March 2012 - 2014 March 2015 March 2012 - 2014

Plymouth to be a "Sustainable Food City" supported by a city wide cross sector partnership to help embed healthy & sustainable food into the city's culture. Help to develop a national learning programme and network to inspire and inform best practice.

Establish and support a city-wide cross-sector group of organisations that can drive and steer the project and develop a Sustainable Food City: Plymouth (SFCP) Food Charter and Action Plan	10 - 20 members involved in quarterly meetings 5 sub-groups to develop Action Plan, through city wide consultation process Annual consultation process to develop SFCP Action plan to reflect progress and ensure a dynamic plan which is responsive to changing climate	Food Plymouth Partnership (FPP)	April 2011 - 14 ACHIEVED 2011 March 2015 - 14
Raise profile of the Food Plymouth Partnership and its aims	100 businesses & organizations signed up to Plymouth Food Charter from across city Funding secured for delivery of this action plan	Food Plymouth Partnership (FPP)	March 2015
Capture learning and best practice from the programme and disseminate to relevant individuals and organisations throughout the UK interested in developing their own sustainable food initiatives	Hold national conference and publish detailed project report to celebrate project success, share learning and best practice	Food Plymouth Partnership (FPP)	March 2014
Research and mapping to increase understanding of a "Sustainable Food City", research and disseminate relevant policy and research documents to support this	Create a bibliography of relevant policy and research documents link through Food Plymouth website www.foodplymouth.org Food Plymouth mapping and directory – as part of relaunch Tamar Grow Local (TGL) website	Food Plymouth Partnership (FPP)	March 2015 September 2012

FOOD PLYMOUTH
ACTION PLAN 2011-14

foodplymouth.org | twitter.com/foodplymouth

FOOD Plymouth

(c) *Pledges to the Plymouth Food Charter as at November 2012*

Plymouth City Council (PCC) school meals service **www.plymouth.gov.uk** Providing fresh, healthy, local produce to Plymouth school children and supporting local farmers and food businesses; working to the Food For Life Gold Catering Mark standard for all of the school meals it serves.

Westaway Sausages **www.westawaysausages.com**
To provide local food to local people

Food is Fun **www.foodisfun.org**
Enthuse children in making healthy food fun for their future

Oasis Project
Healthy cooking on a budget courses eunicehalliday@hotmail.com

Devon and Cornwall Food Association **www.dccfg.webs.com**
Making sure 'surplus' food is redistributed to groups working with disadvantaged people

Soil Association **www.soilassociation.org** Help to raise awareness and support new activities which deliver the aims of the Plymouth Food Charter, also through engaging key decision makers and partnership building.

Transition Plymouth **www.transitionplymouth.com** Putting on public food events in keeping with the Charter. barbara hampson <b-m-h@hotmail.co.uk>

PCC Allotments City Farm **www.plymouth.gov.uk/allotments**
Promote sale of produce from allotments to local people

Cornish Farm Dairy **www.cornishfarmdairy.co.uk**
Supply milk to Plymouth in our new recyclable milk bottles

Home Grown Community owned **www.devonrcc.org.uk**
Support community groups growing fresh food in Plymouth hinterland

Paramount 21 Ltd **www.paramount21.co.uk**
To promote provenance products to the food service industry and build links with local suppliers for products

RIO **www.realideas.org**
Connect local growing to local markets

Bell and Loxton **www.bellandloxton.co.uk**
Reduce eco-footprint, provide quality healthy products

Veromar Strategic Marketing **www.veromar.co.uk**
Raising awareness of Plymouth Food Charter

City College Plymouth **www.cityplm.ac.uk**
Use local sandwich supplier

St Ewe free range eggs **www.stewefreerangeeggs.co.uk**
Deliver eggs into Devon and Cornwall – local food, local prices, low food miles

National Marine Aquarium **www.national-aquarium.co.uk**
Supply more local produce through all corporate trade

Devonport Guildhall **www.devonportguildhall-realideas.org**
Specify 'local' in our café buying

Tamar Grow Local **www.tamargrowlocal.org**
Promote the Charter throughout the valley and work harder!

Trerierve Organic Farm & Keveral community of growers **www.trerierve.co.uk** Education through hands on visits and supply more organic veg direct to Plymouth

Scorse Food Ltd **www.scorsefoods.co.uk**
To continue buying £100KS of produce from locality

Haddington House Apartments **www.abudd.co.uk**
Highlight Charter as a way to encourage more visitors and tourists to Plymouth

Keveral Farm **www.keveral.org**
Carry on supplying low impact local organic veg to the local community

Chaffins Food Service **www.chaffinsfoodservice.co.uk** 'Clear about Carbon' project participation

Dunn's Dairy Continue to promote local food

Tamar Fruiterers **www.tamarviewfruiterers.co.uk** To increase the supply of fresh local produce to outlets and communities across the city

G Free Foods **www.gfree.co.uk**
Continue sourcing locally

Gribble's Butchers **www.gribblesbutchers.co.uk**
Sausage demos in schools

Tideford Organic Foods **www.tidefordorganics.co.uk** To increase the supply of fresh local organic produce into Plymouth, promoting healthy eating with schools and hospitals.

Stiltskin Theatre Company **www.stiltskin.org.uk** Theatre production on healthy eating and growing round Plymouth primary schools

National Trust **www.nationaltrust.org.uk** Provide new community allotments at Saltram House.

Newquay Fruit Sales **www.newquayfruitsales.co.uk** Source and deliver high quality fresh produce from local growers and producers, reduce food miles wherever possible.

Plymouth University **www.universityofplymouth.net**
Is working to embed the Plymouth Food Charter into the University's Sustainable Food Policy, now accreditated to Food For Life Bronze Catering Mark. As part of this commitment we now have a University allotment and a mobile farm shop making weekly visits to the campus.

Riverford Organic Vegetables **www.riverford.co.uk/wash** Help to promote healthy and sustainable food production at events in Plymouth and continue to supply fresh local organic produce throughout the city ianandemma@riverfordhomedelivery.co.uk

Roger Higman I commit to composting the food waste we generate and growing vegetables on my allotment.

Owens Coffee www.owenscoffee.com An organic coffee roaster based in Modbury. We use 100% arabica beans and all our coffees are Soil Association Organic, Fairtrade and whenever possible, Rainforest Alliance certified. Please let us know how we could get involved with the Plymouth Food Charter.

Cottage Farm Organics **www.bigbarn.co.uk/marketplace/vendors/Cottage** To raise awareness about sustainable living and organic food production. As part of the Superhomes network, Cottage Farm, Jacobstow EX23 0BU regularly hold Open Days; as an organic farm, we also sequester some 100+ tons of carbon annually.

Tutti Frutti Bouquets www.tuttifrutti-bouquets.co.uk To promote healthy eating in Plymouth, through our innovative approach to encouraging people to eat their 5 a day.

University of Plymouth Students Union (UPSU) www.upsu.com Promoting and celebrating the food and culinary traditions of all cultures through an international food festival held within the students' union. Bringing students and community members closer together through food.

Plymouth Local Exchange Trading System (LETS) To continue trading home made and locally produced food items at our regular monthly markets. We would also urge Plymouth City Council to rethink it's policy on the Plymouth Farmer's Market. In particular to relocate the market at a better site and persuade many of the traders who no longer support the event to return on a regular basis. michaelcolebrook@yahoo.com

Grow Efford Partnership www.hecp.org.uk We have developed a community food social enterprise around apple based products; this year we will share our ideas, skills and knowledge with other communities in the city. Kim Wide <kimwide@hotmail.com>

Dig for Devonport www.diggin-it.org/index.php?page=dig-for-devonport To continue to encourage local residents to grow their own food and create edible landscapes.

Bistro One, Ebrington Street www.bistro-one.co.uk Will continue to support local food producers and suppliers and will be pleased to publicise any events which promote the Plymouth Food Charter.

Elite Diet and Nutrition To continue to promote local and sustainable foods through education louise.pencollings@live.com

Stoke Damerel Community College www.sdcc.net Through our cookery lessons we will increase the amount of sustainable local maritime produce in our recipes

Berkeley's of St James www.onthehoe.co.uk To serve local food in my guesthouse

Rosie and John Luke, Luke's Fruit Farm rosiesteve@blueyonder.co.uk To supply the public with very fresh fruit and vegetables

The Facelift Food Coach www.starkhechara.co.uk To teach healthy eating at my food classes

River Cottage Canteen abby.selby@rivercottage.net To source local produce and support local businesses.

Brook Green School jgregory@bgcfl.org.uk As a flagship school for Food for life to embed the philosphy of the Plymouth Food Charter into our work ensuring that as much as possible we use local seasonal produce and pass the message onto our parents, local community and the schools we work with.

SailTrade **www.sailtrade.org** Aiming to provide a viable, low carbon contribution to transport networks linking food producers and markets around the Tamar Valley it's estuary and adjacent coastal region. Excellent work and a sustainable approach to food distribution into the city. andy@sailtrade.org

UCP Marjon **www.ucpmarjon.ac.uk** Are committed to supporting local businesses to provide healthy food for our students and staff.

Tamar Valley Natures Harvest tamarvalley.naturesharvest@gmail.com Tamar Valley natures harvest is totally committed to helping conserve and enhance the Tamar Valley through increasing education through various partners, and also in time helping fund various projects that are environmentally friendly, and using traditional methods.

Agricola Growers and Hay Farm Produce www.agricolagrowers.co.uk We will continue to grow and prepare vegetables for the Cornish and Devon marketplace with priority to safety, quality and environmental standards. rosalie@agricolagrowers.co.uk

Food and Drink Devon http://www.lovetheflavour.co.uk Promotion of quality food and drink produced, sold and served in and around Plymouth, and linking businesses through the lovetheflavour brand network. admin@lovetheflavour.co.uk

Food Smiths http://www.foodsmiths.biz As a local food supplier to Plymouth schools we promote all local producers and have all relevant certificates for supplying/supporting schools. We would be proud to support the Food Charter in any way we can, feel free to advise us of any help we can give you in the future. neil.foodsmiths@hotmail.co.uk

JB Preserves www.jbpreserves.co.uk To forge new and sustainable links on behalf of PL21 transition group Food Forum and to source even more local food for my business. jbpreserves@btinternet.com

Ethical Investors www.ethicalinvestors.co.uk We aim to use local, organic and fair trade produce where possible. As a committed vegetarian I also aim to encourage others to take farm animal welfare issues seriously when making food choices. Chris Deacon deaconeig@aol.com

East End Community Allotments Providing learning and growing opportunities for local people. Mo Townsend moeysadler2@hotmail.com

Morice Town Neighbourhood We are currently looking at using funding to encourage healthy eating in the area by using a local greengrocer to deliver / sell fresh fruit and veg at a discounted price which we will fund and also link in with the local school and Sure Start childrens centre; to find ways of involving vulnerable groups of people to provide them with reasonable priced fruit and veg with recipe, and possible use of cookery classes using the produce. Kim Hayden or Gill Peele kim.hayden@plymouth.gov.uk

Castang Wines www.castang-wines.co.uk To support local producers and businesses, to support economic aims of Plymouth Food Charter

The Kitchen Table www.thekitchentable.org.uk We are all about local food and local people. A small company, consisting of Hannah and Sima, catering for all kinds of events in and around Totnes. With our bespoke, friendly service we aim to produce creative and delicious food, keeping our customers' needs central to the menu design. We buy all our ingredients as locally as possible, supporting our community and brilliant diverse local food producers**. hannah@thekitchentable.org.uk**

L'Amour Botanique www.lamourbotanique.co.uk L'amour Botanique based in South Devon produces culinary herbs for the Passionate Cook and garden supplies for the Conscientious Gardener! We pledge to support the Plymouth Food Charter through; A reduced eco-footprint: Supporting home food production that protects wildlife and nature using environmentally friendly garden supplies and organic growing techniques. Learning and skills: Giving everyone the opportunity to learn about growing good food – offering local people a range of Autumn/Winter fun talks and workshops. lisette@lamourbotanique.co.uk

Green 2 Gold www.green2gold.com To make people aware of the health properties of olive oil we will offer olive oil tastings wherever we go! Please let us know what events we should take part in! Carol Elis – Lezana oils@green2gold.co.uk

Tavy Ales Ltd www.tavyales.co.uk To create a new local micro brewery producing real ales and celebrating our national beverage in plymouth and west devon. Mark Smith mark@tavyales.co.uk

Cottrel Hospitality at The Dolphin House Brasserie http://dolphinhousebrazzerie.co.uk We would like to further reduce our eco-footprint by increased and further support for food production that aims to protect nature, reduces food miles, packaging, waste and increases recycling. We are a recently established Resturant in Plymouth and have set as our mission to source local ethical produce and create food with integrity. Jacqueline Cottrel team@dolphinhousebrazzerie.co.uk

Lemon Tree Bistro www.lemontreecafe.co.uk We support the Plymouth Food Charter, as we pride ourselves on always using fresh produce and supporting local producers and businesses. We also 'grow our own' and buy in fresh fish from Plymouth fish market every day. lemontreebistro@hotmail.co.uk

Oreston Academy www.oreston.com We are already a Food for Life Flagship School and we are really interested in getting involved in the Plymouth Food Charter as I think it covers the same principals and ethos.
At present we are in the process of talking to the children in our school about the Food Charter and

whether they feel it is a good idea to get involved. At present we are really looking into getting more seasonal, local and organic produce on the menu and looking at the Charter this is one of the keys areas that it focussses on.

Pulp Project www.facebook.com/plymouthfruit Continue to promote the using and sharing of fruit grown in private gardens and public spaces to minimise wasted fruit, ensuring people benefit from health benefits of locally grown fresh fruit high in nutrients whilst also promoting community cohesion. To now take the project to the next level from voluntary organisation to a social enterprise by including more local people participating in its development. plymouthfruit@gmail.com

Pips PYO www.pipsfruitandveg.co.uk To encourage local businesses involved with food to work with other local businesses, leading to a reduced environmental impact. And for the wonderful fresh produce being shared and enjoyed in our area etc. I very much look forward to being part of this. Neilhawken@btinternet.com

Janner Jam www.jannerjam.com Continuing to use fruit grown as close to Plymouth as possible, using UK sugarbeet, jars manufactured in UK, minimising carbon and environmental footprint whilst providing Plymouth and visitors with a quality local food product based on local traditions and history. Sarah Greep sarah@jannerjam.com

The Treasury www.thetreasurybar.co.uk The Treasury actively sources all meats and vegetables from local producers and our fruits from local suppliers. We very carefully choose our fish and the sources from we procure them based on their sustainability and 'at risk' register. We only buy from day boats from Brixham to avoid the large beam fishing methods of the larger boats in other ports. Where possible we aim to source all our meat from farm to fork in less than 15miles , very often within 5 miles. We are interested in building our relationship with your organisations and emphasise that we wish to join the food charter and support all its initiatives. Benjamin Shearn <benjaminshearn@hotmail.com>

Appendix 12 Central Park Allotments site plan, Plymouth

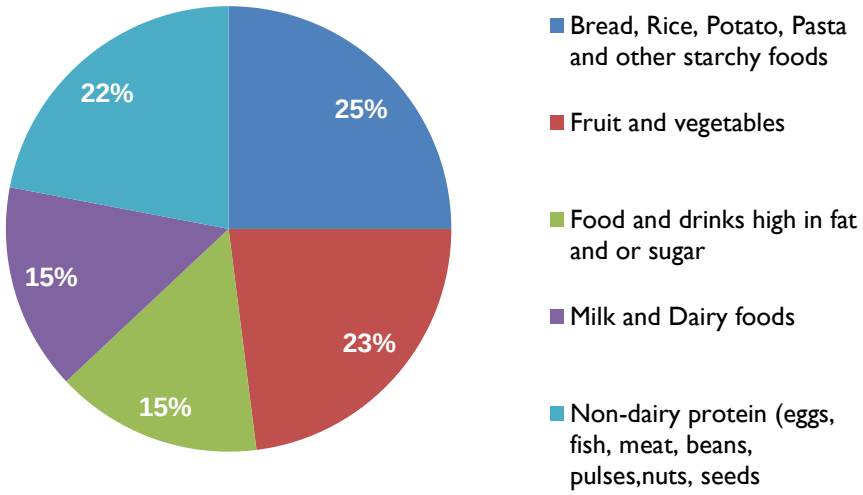
Appendix 13. Recommended, current and historical UK diets

Differences between different diets, current, recommended and historical are presented here. These again illustrate the challenges of continuity over time through re-categorization of data.

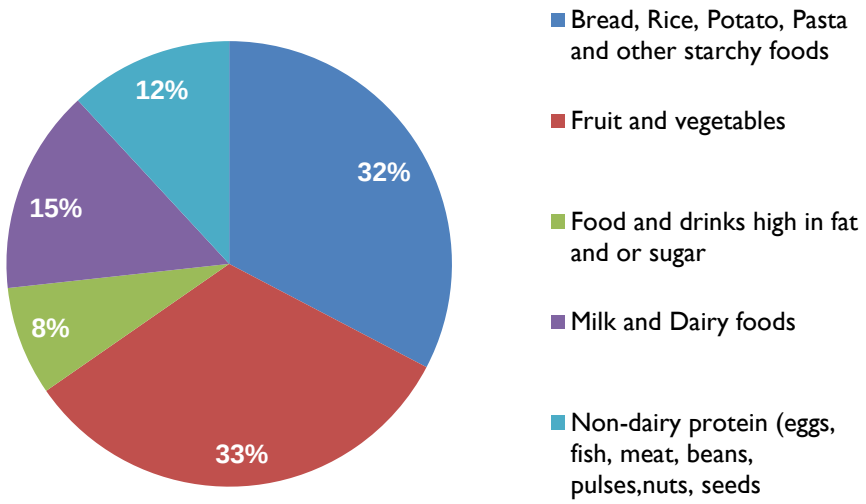
(a) *Proportions of food groups comprising different diets* *(by weight of food eaten)*

	Livewell	*Current*	*Eatwell*
	%	%	%
Bread, Rice, Potato, Pasta and other starchy foods	29	25	33
Fruit and vegetables	35	23	33
Food and drinks high in fat and or sugar	9	15	8
Milk and Dairy foods	15	15	15
Total non-dairy protein	16	22	12
Beans and pulses	*4*		
Nuts and seeds	*4*		
Eggs	*1*		
Fish	*3*		
Meat	*4*		

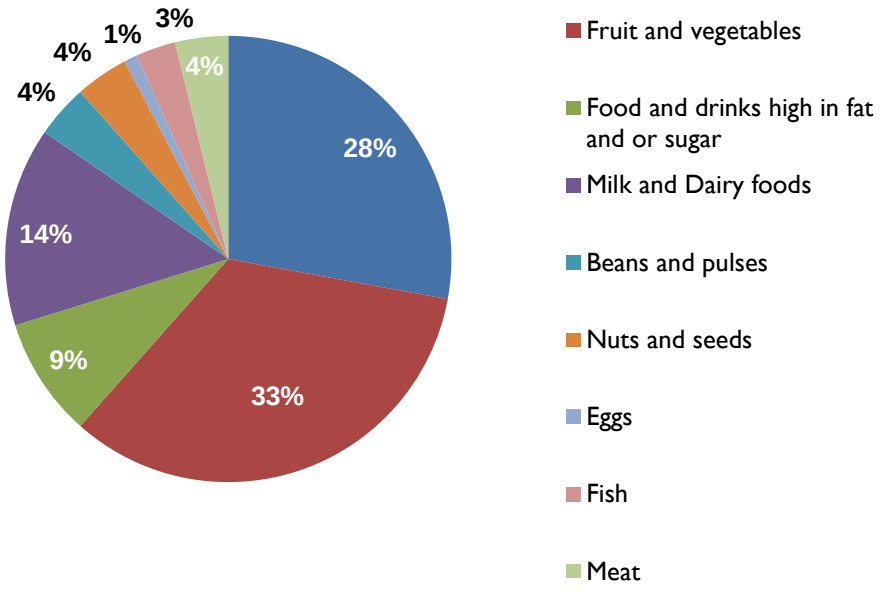
(i) Current UK diets



***(iii) Eat well diet* (Food Standards Agency)**



(i) ***WWF-UK Livewell diet – 'for sustainability and health'***



(b) Historic wartime diets

(i) ***Principal changes in weekly family diet*** *(Source: Stark 1984:186, Table 5.12)*

	1914	1918	Change	Change in calories
	lb	*lb*	*lb*	
Bread, flour, rice, oatmeal, tapioca	36.2	37.2	1	1,350
Meat, bacon, lard, suet	9	7.7	-1.3	-
Butter and margarine	2.1	1.7	-0.4	-1,500
Cheese	0.8	0.4	-0.4	-900
Potatoes	15.6	20	4.4	+1,400
Eggs (no)	13	9	-4	-300
Milk (pint)	9.2	11.7	2.5	+1,000
Sugar	5.9	2.9	-3.1	-5,700

(ii) ***Weekly consumption of agricultural labourers' families*** *(Source: Stark 1984:186, Table 5.13)*

	1901	1912	1918
	lb	*lb*	*lb*
Meat (including bacon)	7.15	6.53	4.30
Bread and flour	38.83	39.61	39.78
Other cereals	1.25	1.56	2.42
Cheese	1.20	1.08	0.45
Total fats	2.07	2.07	1.65
Sugar	4.31	4.57	2.89
Potatoes	25.75	25.7	29.10
Milk (pint)	4.5	4.5	7.2

Appendix 14 Crops grown on Plymouth allotments

Food crops on Plymouth allotments 2012	Price per kilo (Cook 2006)	Documented on allotments 1830-49[1]
Vegetables		
Asparagus (*Asparagus officinalis)*	£11.00	
Aubergine (*Solanum melongena)*	£3.52	
Beetroot (*Beta vulgaris subsp. vulgaris)*	£1.25	
Broad bean	£1.61	
Broccoli (*Brassica oleracea Italica group)*	£2.20	2
Brussels sprout (*Brassica oleracea Gemmifera group)*	£1.76	
Cabbage (*Brassica oleracea Capitata group)*	£1.46	14
Cardoon (*Cynara cardunculus)*		
Carrot (*Daucus carota)*	£1.20	8
Cauliflower (*Brassica oleracea Botrytis)*	£2.00	
Celeriac (*Apium graveolens var. rapaceum)*	£1.80	
Celery (*Apium graveolens)*	£2.00	
Chilli pepper (*Capsicum annuum Longum)*		
Chinese cabbage/leafs (*eg Mizuma)*		
Courgette (*Cucurbita pepo)*	£2.41	
Cress (*Lepidium sativum)*		
Cucumber (*Cucumis sativus)*	£2.00	
Elephant Garlic (*Allium ampeloprasum var. ampeloprasum)*		
Fennel (*Foeniculum vulgare var. dulce)*		
French bean (*Phaseolus vulgaris)*	£3.09	
Garlic (*Allium sativum)*	£6.60	
Globe Artichoke (*Cynara scolymus)*		
Jerusalem artichoke (*Helianthus tuberosus)*		
Kale (*Brassica oleracea Acephala group)*	£1.76	
Kohlrabi (*Brassica oleracea Gongylodes)*		
Leek (*Allium porrum)*	£1.76	2
Lettuce (*Lactuca sativa)*	£4.25	4
Marrow (*Cucurbita pepo)*	£1.30	
Onion (*Allium cepa)* - Red	£1.55	
Onion(*Allium cepa)* - White	£1.10	12
Parsnip (*Pastinaca sativa)*	£1.75	5
Pea (*Pisum sativum)*	£1.73	16
Potato (*Solanum tuberosum)*	£0.65	79
Pumpkin (*Cucurbita maxima, Cucurbita pepo)*	£1.20	
Radish (*Raphanus sativus)*	£2.31	

Rocket (*Eruca sativa)*		
Runner bean (*Phaseolus coccineus)*	£1.65	
Shallot (*Allium cepa Aggregatum group)*	£2.00	
Sorrel (*Rumex acetosa)*		
Spinach (*Spinacia oleracea)*	£3.57	
Spinach beet		
Spring onion	£3.15	
Squash	£1.53	
Swede (*Brassica napus Napobrassica group)*	£0.87	
Sweet pepper (*Capsicum annuum Grossum group)*		
Sweet potato (*Ipomoea batatas)*		
Sweetcorn (*Zea mays)*		
Swiss chard (*Beta vulgaris subsp. cicla var. flavescens).*		
Tomato (*Lycopersicon esculentum)*	£2.42	
Turnip (*Brassica rapa Rapifera group)*	£1.32	14
Welsh onion (*Allium fistulosum)*		
And some less common crops:		
Celtuce (Lactuca sativa var. asparagina)		
Chicory (Cichorium intybus)		
Corn salad (Valerianella locusta)		
Endive (Cichorium endivia)		
Hamburg parsley (Petroselinum crispum var. tuberosum)		
Mustard (Sinapis alba)		
Scorzonera (Scorzonera hispanica)		
Fruit		
Apples (cooking)	*£3.64*	
Apples (eating)	*£1.87*	
Blackberries		
Blackcurrants		
Cherries	*£1.20*	
Damson	*£1.95*	
Gooseberries	*£4.00*	
Grapes	*£3.50*	
Pears	*£1.98*	
Plums	*£1.80*	
Raspberries	*£10.40*	
Redcurrants		
Rhubarb	*£1.33*	
Strawberries	*£4.00*	
Herbs		
Marjoram		

Chives (	£10.00	
Coriander	£10.00	
Parsley	£10.00	
Rosemary	£10.00	
Sage	£10.00	
Thyme	£10.00	
Animals		
Chickens (for eggs)		
Ducks (for eggs)		
Turkeys (for meat)		
Bees - Honey	£5.50	
Flowers	***(Bunch/tray)***	**2**
Bedding plants	£1.55	
Carnations	£2.50	
Pinks	£2.50	
Tulips	£2.50	
Other crops grown historically		
Artichokes (unspecified)		
Barley		**14**
Wheat[2]		50
Beans (unspecified)		23
Fruit (unspecified)		3
Oats		2
Clover		1
Mangel Wurzel		1
Targes		1

1. Number of instances mentioned as growing on allotments given by Burchardt (1997: 449-455), who states there is little information about cropping on allotments between 1793 and 1829, but more for the period 1830-1849, across 91 sites in England. He concludes that less common crops (lettuce or carrots) were probably grown on greater numbers of plots but not documented. The records instead show the relative importance of the main crops in terms of the area devoted to them.

2. Records for wheat include eight undifferentiated mentions of 'corn'.

Appendix 15 Household Weekly Food Expenditure 2010 *(Source: ONS 2011)*

			Value		
			Subtotals		Potentials
			£	£	£
	Potential production from current UK allotment garden system *(with some changes in specific products within categories)*				**12.5**
	Potential production from historical UK allotment/smallholding/commons system				**43.7**
1	**Food & non-alcoholic drinks**			**53.2**	
1.1	***Food***			**48.9**	
	1.1.1	Bread, rice and cereals		5	
	1.1.1.1	Rice	*0.4*		
	1.1.1.2	Bread	*2.5*		
	1.1.1.3	Other breads and cereals	*2.1*		
	1.1.2	Pasta products		0.4	
	1.1.3	Buns, cakes, biscuits etc.		3.2	
	1.1.3.1	Buns, crispbread and biscuits	*1.9*		
	1.1.3.2	Cakes and puddings	*1.3*		
	1.1.4	Pastry (savoury)		0.7	
		Total wheat/ products		**8.9**	**8.9**
	1.1.5	Beef (fresh, chilled or frozen)		1.7	
	1.1.6	Pork (fresh, chilled or frozen)		0.6	
	1.1.7	Lamb (fresh, chilled or frozen)		0.7	
	1.1.8	Poultry (fresh, chilled or frozen)		2	
	1.1.9	Bacon and ham		1	
	1.1.10	Other meats and meat preparations		5.6	
	1.1.10.1	Sausages	*0.8*		
	1.1.10.2	Offal, pate etc.	*0.1*		
	1.1.10.3	Other preserved or processed meat and meat preparations	*4.7*		
	1.1.10.4	Other fresh, chilled or frozen edible meat	*0*		
		Total meat		**11.6**	**11.6**
	1.1.11.1	Fish (fresh, chilled or frozen)	*0.7*		
	1.1.11.2	Seafood, dried, smoked or salted fish	*0.5*		
	1.1.11.3	Other preserved or processed fish and seafood	*1*		
		Total fish and fish products		**2.3**	**2.3**
	1.1.12	Milk		2.6	
	1.1.12.1	Whole milk	*0.6*		
	1.1.12.2	Low fat milk	*1.8*		
	1.1.12.3	Preserved milk	*0.2*		
	1.1.13	Cheese and curd		1.8	
	1.1.14	Eggs		0.7	**0.7**
	1.1.15	Other milk products		1.9	
	1.1.15.1	Other milk products	*0.9*		
	1.1.15.2	Yoghurt	*1*		
	1.1.16	Butter		0.4	
	1.1.17	Margarine, other vegetable fats & peanut butter		0.5	
	1.1.18	Cooking oils and fats		0.3	
	1.1.18.1	Olive oil	*0.1*		

	1.1.18.2	Edible oils and other edible animal fats	*0.2*		
		Total milk, cheese, dairy		**8.4**	**8.4**
	1.1.19	Fresh fruit		3.1	
	1.1.19.1	Citrus fruits (fresh)	*0.5*		
	1.1.19.2	Bananas (fresh)	*0.5*		
	1.1.19.3	Apples (fresh)	*0.5*		
	1.1.19.4	Pears (fresh)	*0.2*		
	1.1.19.5	Stone fruits (fresh)	*0.4*		
	1.1.19.6	Berries (fresh)	*1*		
	1.1.20	Other fresh, chilled or frozen fruits		0.4	
	1.1.21	Dried fruit and nuts		0.6	
	1.1.22	Preserved fruit and fruit based products		0.1	
		Total fruit		**4.2**	**4.2**
	1.1.23	Fresh vegetables		4	
	1.1.23.1	Leaf and stem vegetables (fresh or chilled)	*0.9*		
	1.1.23.2	Cabbages (fresh or chilled)	*0.4*		
	1.1.23.3	Vegetables grown for their fruit (fresh, chilled or frozen)	*1.4*		
	1.1.23.4	Root crops, non-starchy bulbs and mushrooms (fresh, chilled or frozen)	*1.3*		
	1.1.24	Dried vegetables		0	
	1.1.25	Other preserved or processed vegetables		1.3	
	1.1.26	Potatoes		0.9	
	1.1.27	Other tubers and products of tuber vegetables		1.4	
		Total vegetables		**7.6**	**7.6**
	1.1.28	Sugar and sugar products		0.3	
	1.1.28.1	Sugar	*0.2*		
	1.1.28.2	Other sugar products	*0.1*		
	1.1.29	Jams, marmalades		0.3	
	1.1.30	Chocolate		1.6	
	1.1.31	Confectionery products		0.6	
	1.1.32	Edible ices and ice cream		0.5	
	1.1.33	Other food products		2.4	
	1.1.33.1	Sauces, condiments	*1.2*		
	1.1.33.2	Baker's yeast, dessert preparations, soups	*0.9*		
	1.1.33.3	Salt, spices, culinary herbs and other food products	*0.3*		
		Total sugar and other food products		**5.4**	
1.2	**Non-alcoholic drinks**				
	1.2.1	Coffee		0.6	
	1.2.2	Tea		0.5	
	1.2.3	Cocoa and powdered chocolate		0.1	
	1.2.4	Fruit and vegetable juices		1.1	
	1.2.5	Mineral or spring waters		0.2	
	1.2.6	Soft drinks (inc. fizzy and ready to drink fruit drinks)		1.8	
		Total non-alcoholic drinks		**4.3**	

Appendix 16 Plant medicine

(Source: unless otherwise specified, compiled from Culpeper1653/1998ed, Erkan et al 2008, Grieve 1931, Gurib-Fakim 2006, Hatfield 1973, Halberstein 2005, Leonti et al 2010, Palaiseul 1972, Plants for a Future[74],De Vos 2010, Neves et al 2009, Medicine Plus[75], Pardo de Santayana 2005, Wong and Kitts 2006)

Only around 6 per cent of the estimated total of 250,000 plant species that currently exista have been investigated for biological activities (Gurib-Fakim 2006). This appendix gives an overview of

(a) The few herbs used on Plymouth allotments
(b) Plants that could be grown on Plymouth allotments listed in *materia medica*
(c) Common challenges to health of urban populations and potential phytomedicines / functional foods
(d) Constituent compounds of plants and their actions
(e) Documented medicinal actions of plants

(a) *Herbs used on Plymouth allotments*

(Source: Plants for a Future)

This section documents potential uses (besides culinary) of the most common herbs on Plymouth allotments:

Lemon Balm *Parsley* *Rosemary* *Sage* *Thyme*

Lemon Balm (Melissa officinalis)

Medicinal Uses: Lemon balm is a commonly grown household remedy with a long tradition as a tonic remedy that raises the spirits and lifts the heart. The leaves and young flowering shoots are antibacterial, antispasmodic, antiviral, carminative, diaphoretic, digestive, emmenagogue, febrifuge, sedative, and tonic. It also acts to inhibit thyroid activity. An infusion of the leaves is used in the treatment of fevers and colds, indigestion associated with nervous tension, excitability and digestive upsets in children, hyperthyroidism, depression, mild insomnia, headaches etc. Externally, it is used to treat herpes, sores, gout, insect bites and as an insect repellent. The plant can be used fresh or dried, for drying it is harvested just before or just after flowering. The essential oil contains citral and citronella, which act to calm the central nervous system and are strongly antispasmodic. The plant also contains polyphenols, in particular these combat the herpes simplex virus which produces cold sores The essential oil is used in aromatherapy. Its keyword is 'Female aspects'. It is used to relax and rejuvenate, especially in cases of depression and nervous tension. The German Commission E Monographs, a therapeutic guide to herbal medicine, approve *Melissa officinalis* for nervousness and insomnia.

Other Uses: The growing plant is said to repel flies and ants. It is also rubbed on the skin as a repellent. Used as a flavouring in various alcoholic beverages including Chartreuse and Benedictine. Its aroma lasts for a long time after the plant has been harvested so it is very useful ingredient in pot-pourri.

[74] www.plantsforafuture.org
[75] http://www.nlm.nih.gov/medlineplus/herbalmedicine.html [l.a. 050213]

Parsley (Petroselinum crispum)

Medicinal uses: Parsley is a commonly grown culinary and medicinal herb that is often used as a domestic medicine. The fresh leaves are highly nutritious and can be considered a natural vitamin and mineral supplement in their own right. The plants prime use is as a diuretic where it is effective in ridding the body of stones and in treating jaundice, dropsy, cystitis etc. It is also a good detoxifier, helping the body to get rid of toxins via the urine and therefore helping in the treatment of a wide range of diseases such as rheumatism. The seed is a safe herb at normal doses, but in excess it can have toxic effects. Parsley should not be used by pregnant women because it is used to stimulate menstrual flow and can therefore provoke a miscarriage. All parts of the plant can be used medicinally, the root is the part most often used though the seeds have a stronger action. Parsley is antidandruff, antispasmodic, aperient, carminative, digestive, diuretic, emmenagogue, expectorant, galactofuge, kidney, stomachic and tonic. An infusion of the roots and seeds is taken after childbirth to promote lactation and help contract the uterus. Parsley is also a mild laxative and is useful for treating anaemia and convalescents. Caution is advised on the internal use of this herb, especially in the form of the essential oil. Excessive doses can cause liver and kidney damage, nerve inflammation and gastro-intestinal haemorrhage. It should not be prescribed for pregnant women or people with kidney diseases. A poultice of the leaves has been applied externally to soothe bites and stings, it is also said to be of value in treating tumours of a cancerous nature. It has been used to treat eye infections, whilst a wad of cotton soaked in the juice will relieve toothache or earache. It is also said to prevent hair loss and to make freckles disappear. If the leaves are kept close to the breasts of a nursing mother for a few days, the milk flow will cease. The German Commission E Monographs, a therapeutic guide to herbal medicine, approve *Petroselinum crispum* for infection of the urinary tract, kidney and bladder stones.

Other uses: A good companion plant, repelling insects from nearby plants. The juice is an effective mosquito repellent when it is rubbed into the skin and is also used to relieve the pain of stings and bites. An essential oil obtained from the plant is used in perfumeries for men. An infusion of the leaves is an excellent rinse for dark hair and also helps in the treatment of dandruff.

Rosemary (Rosmarinus officinalis - L.)

Medicinal uses: Rosemary is commonly grown in the herb garden as a domestic remedy, used especially as a tonic and pick-me-up when feeling depressed, mentally tired, nervous etc]. Research has shown that the plant is rich in volatile oils, flavanoids and phenolic acids, which are strongly antiseptic and anti-inflammatory. Rosmarinic acid has potential in the treatment of toxic shock syndrome, whilst the flavonoid diosmin is reputedly more effective than rutin in reducing capillary fragility. Rosmarol, an extract from the leaves, has shown remarkably high antioxidant activity. The whole plant is antiseptic, antispasmodic, aromatic, astringent, cardiac, carminative, cholagogue, diaphoretic, emmenagogue, nervine, stimulant, stomachic and tonic. An infusion of the flowering stems made in a closed container to prevent the steam from escaping is effective in treating headaches, colic, colds and nervous diseases. A distilled water from the flowers is used as an eyewash. The leaves can be harvested in the spring or summer and used fresh, they can also be dried for later use. This remedy should not be prescribed for pregnant women since in excess it can cause an abortion. An essential oil distilled from the stems and leaves is often used medicinally, that distilled from the flowering tops is superior but not often available. The oil is applied externally as a rubefacient, added to liniments, rubbed into the temples to treat headaches and used internally as a stomachic and nervine. The essential oil is used in aromatherapyThe German Commission E Monographs, a therapeutic guide to herbal medicine, approve *Rosmarinus officinalis* for rheumatism, dyspeptic complaints, loss of appetite, blood pressure problems

Other uses: The growing plant is said to repel insects from neighbouring plants. Branches or sachets of the leaves are often placed in clothes cupboards to keep moths away. An infusion of the dried plant (both leaves and flowers) is used in shampoos. When combined with borax and used cold, it is one of the best hair washes known and is effective against dandruff. An essential oil is obtained from the leaves and flowering stems. The oil is used in perfumery, soaps, medicinally etc. It is often added to hair lotions and is said to prevent premature baldness. The leaves are burnt as an incense, fumigant and disinfectant. A yellow-green dye is obtained from the leaves and flowers.

Sage (Salvia officinalis - L.)

Medicinal uses: Sage has a very long history of effective medicinal use and is an important domestic herbal remedy for disorders of the digestive system. Its antiseptic qualities make it an effective gargle for the mouth where it can heal sore throats, ulcers etc. The leaves applied to an aching tooth will often relieve the pain. The whole herb is antihydrotic, antiseptic, antispasmodic, astringent, carminative, cholagogue, galactofuge, stimulant, tonic and vasodilator. Sage is also used internally in the treatment of excessive lactation, night sweats, excessive salivation (as in Parkinson's disease), profuse perspiration (as in TB), anxiety, depression, female sterility and menopausal problems. Many herbalists believe that the purple-leafed forms of this species are more potent medicinally. This remedy should not be prescribed to pregnant women or to people who have epileptic fits. The plant is toxic in excess or when taken for extended periods - though the toxic dose is very large. Externally, it is used to treat insect bites, skin, throat, mouth and gum infections and vaginal discharge. The leaves are best harvested before the plant comes into flower and are dried for later use. The essential oil from the plant is used in small doses to remove heavy collections of mucous from the respiratory organs and mixed in embrocations for treating rheumatism. In larger doses, however, it can cause epileptic fits, giddiness etc. The German Commission E Monographs, a therapeutic guide to herbal medicine, approve *Salvia officinalis* for loss of appetite, inflammation of the mouth, excessive perspiration

Other uses: The leaves make excellent tooth cleaners, from rubbing the top side of the leaf over the teeth and gums]. The purple-leafed form of sage has tougher leaves and is better for cleaning the teeth. The leaves have antiseptic properties and can heal diseased gums. An essential oil from the leaves is used in perfumery, hair shampoos (it is good for dark hair) and as a food flavouring. It is a very effective 'fixer' in perfumes, and is also used to flavour toothpastes and is added to bio-activating cosmetics. The growing or dried plant is said to repel insects, it is especially useful when grown amongst cabbages and carrots. It was formerly used as a strewing herb and has been burnt in rooms to fumigate them.

Thyme (Thymus officinalis)

Medicinal uses: Common thyme has a very long history of folk use for a wide range of ailments. It is very rich in essential oils and these are the active ingredients responsible for most of the medicinal properties. In particular, thyme is valued for its antiseptic and antioxidant properties, it is an excellent tonic and is used in treating respiratory diseases and a variety of other ailments. The flowering tops are anthelmintic, strongly antiseptic, antispasmodic, carminative, deodorant, diaphoretic, disinfectant, expectorant, sedative and tonic. The plant is used internally in the treatment of dry coughs, whooping cough, bronchitis, bronchial catarrh, asthma, laryngitis, indigestion, gastritis and diarrhoea and enuresis in children. It should not be prescribed for pregnant women. Externally, it is used in the treatment of tonsillitis, gum diseases, rheumatism, arthritis and fungal infections. The plant can be used fresh at any time of the year, or it can be harvested as it comes into flower and either be distilled for the oil or dried for later use. Thyme has an antioxidant effect, thus regular use of this herb improves the health and longevity of individual body cells and therefore prolongs the life of the body. The essential oil is strongly antiseptic. The whole herb is used in the treatment of digestive disorders, sore throats, fevers etc. The essential oil is one of the most important oils used in aromatherapy. It is used especially in cases of exhaustion, depression, upper respiratory tract infections, skin and scalp complaints etc. The oil can cause allergic reactions and irritation to the skin and mucous membranes.

Other uses: An essential oil from the leaves is frequently used in perfumery, soaps, toothpastes, mouthwashes, medicinally etc. It has fungicidal properties and is also used to prevent mildew. The dried flowers are used to repel moths from clothing whilst the growing plant is said to repel cabbage root fly.

b) Plants (including food crops) listed in materia medica that are or could be grown on Plymouth allotments

Alder
Angelica *(Angelica archangelica)*
Agrimony
Apple *(Malus communis)*
Artichoke, Jerusalem
Ash
Avens
Balm, Lemon *(Melissa)*
Barley
Barberry (Berberis)
Bearberry
Beetroots
Bergamot
Bilberry
Bindweed
Bistort
Blackberry
Blueberry
Borage
Box
Broom
Buckthorn
Burdock
Burnet *(Pimpinella)*
Cabbage
Calamus
Caraway
Carrot
Chamomile
Chervil
Chickweed
Chervil
Chives
Clary
Cleavers
Clover
Coltsfoot
Cranesbill
Comfrey
Cornflower
Corn Salad
Cowslip
Cranberry
Cucumber
Current, black
Current, red
Daisy
Daisy, Ox eye
Dandelion
Dock
Elder
Elecampagne
Eyebright
Fennel
Fern
Five leaf grass
Flax (linseed)
Foxglove
Fumitory
Garlic
Gentian
Goldenrod
Gooseberry
Ground elder
Grass, couch
Ground ivy
Groundsel
Hawkweed
Hawthorn
Heartsease (wild pansy)
Heather
Holly
Honeysuckle
Hops
Horehound
Horseradish
Horsetail
Houseleek
Hyssop
Iceland moss
Juniper
Knotgrass
Lavender
Leek
Lettuce
Lily of the Valley
Lime
Liquorice
Lovage
Mallow
Marigold
Marjoram
Meadowsweet
Mint
Mugwort
Mullein
Nasturtium
Nettle
Oak
Onion
Parsley
Pellitory
Periwinkle
Pink (Dianthus)
Plantain
Plum
Poppy
Potato
Potentilla
Primula
Pulmonaria
Pumpkin
Radish
Raspberry
Rhubarb
Rose
Rosemary
Rue
Sage
Sanicle
Savory
Shepherds Purse
Soapwort
Sorrel
Speedwell
St Johns Wort
Strawberry
Sweet Cicely *(Myrrhis)*
Tansy
Tarragon
Tea[76]
Thyme
Valerian
Vervain
Violet
Walnut
Watercress
Willow
Wood betony (Bishopswort)
Woodruff
Wormwood
Yarrow

[76] Tea is included here as it has been successfully grown in Cornwall

c) *Common challenges to health of urban populations and potential phytomedicines / functional foods*

Physiological system	Indicative medicinal diagnosis	Indicated phytomedicines / functional foods from allotments
Endocrine	Diabetes	Garlic
	Immunostimulants	Thyme
Cardiovascular	Arrhythmia	Hawthorn
	Oedema (dropsy, 'failure')	Rosacaea
	Venous insufficiency	Chestnut
	Anti-platelet	Garlic
Nervous system	Sedatives	Valerian, St John's Wort
	Age-related disorders[1]	Wormwood, Lavender, Lemon Balm, Rosemary, Sage, Parsley
Respiratory	Congestion Bronchitis	Mint, Thyme, Mallow

1. *Source: Adams et al 2007*

d) *Medicinal constituents and actions of plants* *(Source: Gurib-Fakim 2006)*

Class	Compounds	Actions
Carbohydrates	Glycosides, polysaccharides, cellulose, starch, dextrins, fructans (eg Inulin), algenic acids, agar, gums	Immuno-modulatory, anti-tumour, anticoagulant, hypoglycaemic, antiviral
Lipids	Lecithins (linoleic acid),	Digestive
Acetogenins		Anti-tumour, anti-bacterial, insecticidal
Amino acids	Cyanogenic, sulphur-containing, lectins, enzymes	Anti-hypertensive, anti-fungal, anti-inflammatory,
Alkaloids	Non-heterocyclic, heterocyclic, triterpene, bisbenzyl-isoquinoline, etc	Anti-malarial, anti-arrythmic, antispasmodic
Phenols and phenolic glycosides	Tannins, lignins, coumarins, quinones, flavonoids	Analgesic, anti-bacterial, anti-inflammatory, anti-tumour, anti-fungal, anti-inflammatory, antioxidant, anti-diarrhoea, vasodilator, anti-hepatoxic, anti-oedema, anti-allergic, anti-rheumatic
Monoterpenes	Diterpenes, saponins, iridoids	Antithelmintic, anti-malarial, anti-inflammatory, expectorant, analgesic, cytotoxic,
Cardiac glycosides	Cardenolides, bufadienolides, saccharaides	Cardiac insufficiency
Carotenoids	Carotenes, xanthophyoos	Anti-cancer, retinol (Vit D) precursors

Appendix 17 Plymouth allotment tenancy agreement

(Source: PCC)

RECEIVED

PLYMOUTH CITY COUNCIL
ALLOTMENT TENANCY

An Agreement made between PLYMOUTH CITY COUNCIL (hereinafter called "the Landlord") of the one part and the person identified in the schedule attached (hereinafter called "the Tenant") of the other part WHEREBY the Landlord agrees to let and the Tenant agrees to take on a yearly tenancy an allotment garden on the following terms and conditions:-

1. (a) The annual rent will be the amount specified in the attached schedule payable 6 months in arrears on 1st April and 1st October in each year with the exception of the first and second payments which shall be paid in the following manner:-

   (i) the first payment will be 3 months rent in advance on or prior to the commencement of the tenancy, and
   (ii) the second payment will be the balance of rent payable in arrears calculated from a date 3 months after commencement of the tenancy to the next payment day.

   (b) Water charges will be payable in advance in two equal instalments on 1st April and 1st October each year, the first payment being a proportionate part of a full half yearly charge from the commencement date to the next payment day.

   All rent and water charges shall be payable as demanded direct to the Head of Financial Services, at the cash desks on the ground floor of the Civic Centre.

2. The tenancy shall commence on the date specified in the schedule and continue until determining on 31st March or 30th September (whichever is the earlier) next succeeding the death of the Tenant or upon the day on which the tenancy or right of occupation of the Landlord determines or otherwise in any of the following manners:-

   (a) By the Tenant serving not less than 3 months prior written notice expiring on 31st March or 30th September in any year.

   (b) By the Landlord serving not less than 12 months prior written notice expiring on or before 6th April or on or after 29th September in any year.

   (c) By re-entry by the Landlord at any time after giving 3 months prior written notice to the Tenant in the event of the allotment garden being required for:-

   (i) any purpose under the Housing Acts 1890 to 1988, or
   (ii) any purpose (not being the use of the land for agriculture) for which it was acquired or has been appropriated under any statutory provision, or
   (iii) any building, mining or any other industrial purpose or for roads or sewers necessary in connection with any of those purposes

   (d) By re-entry by the Landlords at any time after giving one months prior written notice to the Tenant:-

   (i) if the rent or water charges or any part thereof is in arrear for not less than Forty days whether legally or formally demanded or not or
   (ii) if there has been any breach of the conditions and agreements on the part of the Tenant herein contained or
   (iii) if the Tenant becomes bankrupt or compounds with his creditors

3. The Tenant hereby agrees with the Landlord:-

   (a) to pay the rent and water charges hereby reserved without deduction otherwise than allowed by statute on the aforementioned occasions

   (b) to use and cultivate the allotment garden solely for the purposes of growing fruit, vegetables, plants and flowers for personal consumption.

   (c) not to use more than one tenth of the total area of the allotment garden for the purpose of growing flowers.

   (d) not to carry on any trade or business on the allotment garden or use the same for the purpose of or in connection with a trade or business nor sell or exchange for gain any produce, plants or flowers grown on the allotment garden.

   (e) to keep the allotment garden clean, free from weeds and well manured and maintained in a good state of cultivation and fertility

   (f) to keep any road, path or track within or adjoining the allotment garden free from obstructions and weeds and regularly cut any grass thereon

   (g) where the allotment garden adjoins another allotment garden to allow nine inches of land together with a similar allowance by the adjoining tenant to create a barrow run eighteen inches wide

   (h) to keep any ditch adjoining the allotment garden cleaned out and any hedge on or adjoining the allotment garden properly cut and trimmed but shall not cut or prune any trees or other timber without the prior written consent of the Landlord

   (i) not to deposit or allow others to deposit on the allotment garden any refuse or decaying matter (except manure or compost in such quantities as may be reasonably required for cultivation) or place any matter in the hedges, ditches or dykes on or adjoining the allotment garden or any surrounding land

   (j) not to plant any trees or shrubs on the allotment garden so as to be injurious to any adjacent allotment gardens

   (k) not, without the prior written consent of the Landlord, to plant in the allotment garden any trees or fruit bushes or vegetables which require more than 12 months to mature

   (l) not to sell or remove any turf or soil or take, sell or carry away any mineral, gravel, sand or clay from the allotment garden

   (m) not to leave open or where lockable unlocked any door or gate leading into or out of the allotment field containing the allotment garden

(n) not to invite any person other than a member of his/her family into the allotment field containing the allotment garden unless accompanied by the Tenant or a member of his//her family

(o) not to put up any erection or structure on the allotment without first having obtained the written consent of the Landlord. Particulars of the requirements of the Landlord can be obtained from the Head of Corporate Resources Plymouth City Council. The Tenant shall maintain in good condition any erection or structure erected with such permission and as occasion shall require properly treat or paint the same in an approved colour.

(p) to be responsible for and to keep in good repair any fencing necessary for the protection of his/her crops but not to use any barbed wire on the allotment garden. However, no fencing shall be erected without the prior written consent of the Landlord nor shall any galvanised or other sheeting, ironwork, tins, barrels, drums or other articles be placed on the allotment garden without the prior written consent of the Landlord.

(q) not to keep or permit or suffer to be kept any animal or poultry on the allotment garden without the prior consent of the Landlord

(r) to ensure all dogs and other animals brought into the allotment field containing the allotment garden are kept under proper control and supervision at all times and in the case of dogs held on a leash

(s) to provide and keep prominently displayed on the allotment garden a notice indicating the plot number and not erect or display any other notice or advertisement

(t) not to cause or permit any nuisance or annoyance to the occupier of any other allotment garden or obstruct or encroach on any road path or track in the allotment field containing the allotment garden

(u) not to assign, sub-let or part with the possession of the allotment garden or any part thereof

(v) if appropriate to reside within but in any event not to reside more than one mile outside Plymouth City boundary

(w) to inform the Landlord forthwith of any change of his/her address

(x) to observe and perform all rules and special conditions relating to the allotment garden or the field in which it is contained either now in existence or hereafter to be made by the Landlord in the interests of good management or to preserve the allotment field or allotment garden from deterioration and of which notice has been given to the Tenant. The rules and special conditions may be at variance to the other conditions of the tenancy and shall take precedence thereover

(y) to permit any member or officer of the Landlord at any time to enter and inspect the allotment garden

(z) (i) upon the termination of the tenancy for any reason whatsoever to dismantle and remove any shed, structure, ironwork or other encumbrance on the allotment garden and shall yield up the allotment garden clean and tidy and in compliance with the agreements herein contained and in the event of the tenancy being terminated by the Tenant remove all trees, shrubs and fruit bushes if so required by the Landlord

(ii) not to use or permit to be used any hosepipes, except hand-held, and not to use or permit to be used any sprinklers whatsoever

4. The Landlord shall pay all rates (except water charges) and taxes

5. Any notice to be served on the Tenant may be served on him/her either personally or by leaving it at his/her last known place of abode or by prepaid letter addressed to him/her there or by fixing the notice in some conspicuous manner on the allotment garden

6. All questions of dispute or complaint shall be referred to the Head Corporate Resources of Plymouth City Council whose decision will be final

7. The rent payable under this Agreement specified in the Schedule hereto may be increased from time to time by the Landlord to a rent specified in the notice hereafter mentioned upon the Landlord giving to the Tenant at least 3 months previous written notice to expire on 31st March or the 30th day of September in any year but the Tenant shall if he/she so desires notify the Landlord in writing during such 3 months period that he/she does not intend to pay the increased rent and will be giving up occupation of the allotment garden on such 31st day of March or 30th day of September as the case may be and thereupon this agreement shall then determine but without prejudice to the right of action of the Landlord for any existing breach non-performance or non-observance of the conditions on the part of the Tenant hereinafter contained

8. The water charges payable under this Agreement will be based on the preceding years water useage increased/ decreased by any amount that South West Water PLC promulgate in their annual water charge review.

9. ADDITIONAL RULES AND SPECIAL CONDITIONS:- The tenant shall promptly advise the landlord when he ceases to be registered as unemployed.

TENANTS NAME AND ADDRESS:

SITUATION OF ALLOTMENT GARDEN:

PLOT NO.: AREA

COMMENCEMENT OF TENANCY: 1 April 1999

AMOUNT OF RENT (WHICH IS SUBJECT TO VARIATION) AT THE COMMENCEMENT DATE IS:

SIGNATURE OF TENANT ..... Dated this 11th day of November

allotmnt.frm

Appendix 18 Plymouth City Council budget book summary

Budget analysed by gross expenditure and income *(Source: PCC)*

2010/11 Gross Expenditure	2010/11 Gross Income	2010/11 Budget	SERVICES	2011/12 Gross Expenditure	2011/12 Gross Income	2011/12 Spending plans
			Chief Executive			
512,059	0	512,059	Departmental Management	482,448	0	482,448
1,610,478	(445,785)	1,164,693	Policy Performance & Partners	739,620	(9,000)	730,620
573,382	(91,700)	481,682	Corporate Communications	663,364	(91,700)	571,664
0	0	0	Chief Executive Budget Savings	(276,279)	0	(276,279)
2,695,919	**(537,485)**	**2,158,434**	**Total Chief Executive**	**1,609,153**	**(100,700)**	**1,508,453**
			Children and Young People			
150,323,254	(150,323,254)	0	Schools	177,867,791	(177,867,791)	0
21,128,064	(20,416,111)	711,953	Funded Programmes	0	0	0
3,966,720	(870,877)	3,095,843	Performance and Policy	3,763,263	(556,226)	3,207,037
25,977,551	(16,705,511)	9,272,040	Learner and Family Support	25,088,110	(16,077,011)	9,011,099
47,977,572	(35,247,440)	12,730,132	Lifelong Learning	42,450,449	(30,092,789)	12,357,660
29,884,793	(2,562,746)	27,322,047	Social Care	30,343,855	(2,745,939)	27,597,916
(1,181,000)	91,000	(1,090,000)	Childrens YP Budget Savings	(2,791,000)	0	(2,791,000)
278,076,954	**(226,034,939)**	**52,042,015**	**Total Children and Young People**	**276,722,468**	**(227,339,756)**	**49,382,712**
			Corporate Items			
5,171,417	(28,487,638)	(23,316,221)	Other Corporate Items	2,620,837	(6,863,000)	(4,242,163)
15,978,329	(5,379,103)	10,599,226	Capital Financing	14,510,311	(4,875,619)	9,634,692
909,083	(2,058,517)	(1,149,434)	Major Projects	0	0	0
3,984,000	(2,474,000)	1,510,000	Corporate Items Budget Savings	(450,000)	(1,250,000)	(1,700,000)
26,042,829	**(38,399,258)**	**(12,356,429)**	**Total Corporate Items**	**16,681,148**	**(12,988,619)**	**3,692,529**
			Community Services			
91,709,310	(19,066,964)	72,642,346	Adult Health and Social Care	91,384,877	(18,311,502)	73,073,375
16,491,484	(5,656,067)	10,835,417	Culture Sport and Leisure	13,940,873	(4,080,247)	9,860,626
44,501,384	(18,639,130)	25,862,254	Environmental Services	43,563,089	(17,775,193)	25,787,896
2,989,712	(1,356,414)	1,633,298	Safer Communities	1,496,428	0	1,496,428
1,827,882	(68,000)	1,759,882	Service, Strategy & Regulation	1,914,835	(62,500)	1,852,335
(1,596,000)	0	(1,596,000)	Community serv Budget Savings	(2,890,096)	0	(2,890,096)
155,923,772	**(44,786,575)**	**111,137,197**	**Total Community Services**	**149,410,006**	**(40,229,442)**	**109,180,564**
			Corporate Support			
181,035	0	181,035	Departmental Management	181,035	0	181,035
131,582,385	(116,483,719)	15,098,666	Finance, Assets & Efficiencies	136,354,183	(122,717,395)	13,636,788
4,140,437	(1,077,955)	3,062,482	HR Organisational Development	3,472,782	(1,068,188)	2,404,594
7,484,672	(1,362,648)	6,122,024	ICT information Systems	6,391,809	(844,465)	5,547,344
2,220,491	(17,978)	2,202,513	Customer Services	2,161,187	(5,125)	2,156,062
7,088,572	(1,175,871)	5,912,701	Democracy and Governance	6,425,912	(1,239,704)	5,186,208
0	0	0	Corporate supp Budget Savings	(1,712,031)	0	(1,712,031)
152,697,592	**(120,118,171)**	**32,579,421**	**Total Corporate Support**	**153,274,877**	**(125,874,877)**	**27,400,000**
			Development and Regeneration			
3,195,937	(1,792,794)	1,403,143	Planning Services	3,041,679	(1,575,679)	1,466,000
5,752,929	(2,865,677)	2,887,252	Strategic Housing	5,756,308	(2,884,308)	2,872,000
773,581	(798)	772,783	Business Support	918,179	(550,000)	368,179
19,180,461	(6,623,069)	12,557,392	Transport and Highways	18,255,442	(4,638,574)	13,616,868
1,088,264	(569,160)	519,104	Waste Management Project Team	630,634	(210,634)	420,000
4,491,358	(6,129,724)	(1,638,366)	Economic Development	3,540,408	(4,859,408)	(1,319,000)
(237,000)	0	(237,000)	Development Budget Savings	599,000	(950,000)	(351,000)
34,245,530	**(17,981,222)**	**16,264,308**	**Total Development and Regeneration**	**32,741,650**	**(15,668,603)**	**17,073,047**
649,682,596	**(447,857,650)**	**201,824,946**	**Total General Fund budget**	**630,439,302**	**(422,201,997)**	**208,237,305**

Appendix 19 Plymouth City Council Potential Core Strategic Objectives in relation to allotments *(Source: PCC/author)*

	Objective	Stated Goals/Targets *(PCC)*	Potential implications/ role for Plymouth Allotments *(author)*
SO1	***Strategic Role***	Works towards carbon neutrality. Safeguard natural resources and seek new opportunities for enriching the city's biodiversity.	Enhancing biodiversity Requires habitat surveys
SO2	***Delivering the City Vision***	Quality employment provision supporting regeneration and diversification. Sustainable linked communities. Access for all to high quality natural environments and open space.	Enabling legislation could lead to sales of fresh food and livelihoods. Access to allotments through events and community garden co-location
S03	***Delivering Sustainable Linked Communities***	A mix of land uses that works together providing for activity that avoids dead spaces and times, helping to strengthen social integration and civic life, as well as improving public safety. Provision for people to meet and interact. Equality and inclusion. .. Ensure many daily needs can be met within walking distance.	As above Local food production so less travel for shopping.
S04	***Delivering the Quality City***	Promote distinctive neighbourhoods.	Sites can provide a neighbourhood focus
S05	***Delivering Regeneration***	Delivering regeneration whilst also creating sustainable neighbourhoods. Improving access to open spaces. Providing new local jobs.	Land allocation for land-based livelihoods, given enabling legislation
S06	***Delivering the Economic Strategy***	Ensuring that opportunities for employment are provided within each neighbourhood. Promote economic inclusion through supporting investment in all kinds of learning infrastructure. Delivery of at least 4 hectares of development land per year. Support development of leisure and creative industries.	As above
S07	***Delivering Adequate Shopping Provision***	Ensuring that everyone has access to the range of shops which meet their needs, in a sustainable way, is important to delivering Plymouth's sustainable communities agenda.	Potential sales from allotment sites if development of neighbourhood shops
S08	***Delivering cultural/leisure facilities and the evening / night-time economy***	The opportunity to enhance and develop individual skills; a strong and pro-active voluntary and community (not for profit) sector. To promote culture and creativity.	Promotion of allotment culture as a health-giving leisure activity
SO9	***Delivering Educational Improvements***	Enable the city to excel at all levels in educational provision and achievement.	Enhancing skills training provision in horticulture

SO10	***Delivering Adequate Housing Supply***	Development land is a scarce resource that is being put under pressure by the increasing demand for new homes. In order to optimise the use of available sites and to reduce the pressure on Greenfield sites, the government has set minimum density targets of between 30 and 50 dwellings per hectare.	Less likelihood of provision
SO11	***Delivering a Sustainable Environment***	To preserve and enhance a variety of environmental assets and to protect and carrying capacity and qualities of both the local and global environment. ... recognise the importance of providing a 'multifunctional; green infrastructure that delivers a broad range of quality of life benefits (education, access, amenity, recreation, biodiversity).	Enhanced biodiversity and soil in good heart
SO12	***Delivering Future Mineral Resources***	The city contains the farthest south western exposure of workable limestone in England. It provides an important resource for the local economy, particularly the construction industry	Potential pressure on sites from Plymstock Quarry
SO13	***Delivering Sustainable Waste Management***	The challenge is to establish an alternative way to deal with our waste in the short term, but with the opportunity to lay the foundations for a more sustainable waste management solution for the future.	Reduces food packaging waste and enables composting. Potential for community composting facilities
SO14	***Delivering Sustainable Transport***	The city's communication links are vital to its economic prosperity and social wellbeing … equally important is the need for good transport connections within the city and its sub-region. To improve our quality of life and the city's economic performance, we need to radically improve local accessibility - but in a manner which is sensitive to our unique environment.	With expansion of allotments, people spend more time in their neighbourhoods rather than driving elsewhere. Good links with sub-region enables development of CSAs.
SO15	***Delivering Community Wellbeing***	Safeguard and improve the diverse leisure and recreation needs of the whole community ... support implementation of the city's Greenspace Strategy.	Supporting communities of practise.
	Specific Policies		
2006	***Towards a Sustainable Community Strategy***	Improve health and wellbeing. Promote inclusive communities. Maintain a clean and sustainable environment. Stimulating culture and leisure activities. Raise educational achievement. The foundations for the city's transformation are its neighbourhoods. New parks developed at Saltram and Seaton.	Pluri-activities on allotments contribute to these.
CS01	***Policy: Development of Sustainable Linked Communities***	Safeguard and capitalise on the local environment, including the need to deliver effective and sustainable use of resources. Contribute to promoting a positive sense of place and identity. Contribute to creating a well-connected, accessible, inclusive and safe community.	Improved local environments

Appendix 20 PM Question Time and Early Day Motions on allotments 2010-2012 *(Source: Hansard)*

Date	Type	Participants	Content
04.05 11	PM Question Time	David Cameron	Endorsement of the valuable role which allotments play in the life of the country, both in terms of leisure and growing produce
04.05.11	EDM 1778	Sponsor: Bob Russell (Lib Dem). 22 signatures: 7 Lib Dem, 9 Labour, 3 Cons.1 Green. 2 Other	Notes provision of 100,000 allotments in England but that 300,000 on the waiting list. Congratulates the National Society of Allotment and Leisure Gardeners and the grow-your-own community organisation Landshare for raising the profile of allotments and highlighting possible threats to the future of this distinctive English way of life, and also praises The Independent on Sunday newspaper for its Dig for Victory campaign on behalf of allotment holders; and urges the Government to uphold the Smallholdings and Allotment Act 1908 which requires local authorities in England and Wales to provide sufficient plots for residents.
27.04.11	EDM 1763	Sponsor: John Leech (LibDem). 22 signatures: 12 Labour, 6 LibDem, 3 Cons 1 Green	That this House notes that under the Small Holdings and Allotments Act 1908, a local authority has a statutory duty to provide a sufficient number of allotment plots to meet demand; further notes that under this legislation, should allotments be lost due to the development of that land, local authorities must provide an equal amount of land for use as allotments in its place; further notes that the Allotment Act 1908 has been included in the recent list of legislation to be reviewed; further notes that, despite this clear statutory obligation, the long and rapidly increasing waiting lists for allotments clearly show that local authorities are not discharging this duty; and therefore calls on the Government not to abandon the legislation but instead to ensure that it is properly enforced.
06.09.10	EDM 675	Bob Russell (Lib Dem). 31 signatures. 9 Labour., 12 LibDem, 0 Cons, 8 Other	That this House congratulates the National Trust for its inspirational policy of establishing allotments at several of its properties; and urges other organisations and landowners including those in the public sector to make land available for new allotments.
07.09.10	EDM 687	Russell Bob (LibDem). 68 signatures. 22 Labour. 6 Cons. 8 LibDem. 1 Green. 6 Other	That this House welcomes the big increase in home-grown vegetables, with seed sales up 14 per cent. last year; is pleased that the number of people wanting an allotment has increased by 20 per cent. in the past 12 months; is concerned that according to the National Society for Allotment and Leisure Gardeners there are 100,000 people on waiting lists for an allotment; and calls on the Government, local authorities, other public bodies and private landlords to make land available for new allotments.

Appendix 21 Example heterodox valuations for Plymouth allotments

The valuations made with techniques of heterodox economics, drawing on proxies are presented here as an indication for further research. Differences in values for health impacts of allotments derived from literature or from SROI calculations indicate the different assumptions that are made in the absence of relevant data.

(a) Health parameters of allotmenteers and their neighbours in the Netherlands *(Source: van den Berg 2010)*

	Van den Berg data		Proxy indicator suggested for Plymouth allotment population
	>62yrs		
	Allotment tenants	neighbours	
Health	0.15 ± 0.08	-0.45 ± 0.15	Halving of visits to doctors
Wellbeing: individual	0.32 ± 0.08	-0.26 ± 0.14	Halving of prescriptions for antidepressants
Wellbeing: social (loneliness)	0.28 ± 0.09	0.8 ± 0.16	Halving of social services costs
Physical activity: In summer (days per week)	5.82 ± 0.14	5.0 ± 0.24	Halving of obesity treatment costs.

(b) Suggested proxy calculations for estimate of impacts of Plymouth allotments on wellbeing *(Source: author)*

Proxy indicator	Unit	Cost to Plymouth population	50% reduction in cost for whole population	Health value from allotment system[1]
Visits to doctors avoided	Cost per visit (£53)[2] * 5.3 p.a.	£71 million	£35.5 million	£138,671
Obesity	Cost of treatment[3]	£4 million	£2 million	£7,812
Mental health	Cost of treatments for depression[4]	£25.5 million	£12.7 million	£49,609
Shared (social) health	Cost of city social services[5]	£50 million	£25 million	£97,656
Total				£293,748

1. 1,000 allotment holders / 256,000 total population
2. Source: PSSRU 2011 / NHS
3. Source: PHDU Annual Report 2009. Calculation: 26% adult population
4. Source: SWPHO (South West Public Health Observatory). Calculation: prevalence of 4%, i.e. 8,499 Plymouth adults * treatment / morbidity costs of £3,000
5. Source: Plymouth City Council budget book

(c) SROI of Food for Life programme as applied to Plymouth allotments

(Source: derived from Footprint Consulting 2008)

	£ pro rata, per year	For 1,000 allotment holders	For 6,000 active food growers
Environmental outcomes (reduced food miles, less CO2, etc)	30.9	30,900	185,400
Economic outcomes (additional employment etc)	81.8	81,800	490,800
Health outcomes (e.g. reduced health treatment costs)	14.98	14,980	89,880
Other outcomes (e.g. reduced absenteeism)	14.95	14,950	89,700
Total £	142.63	142,630	855,780

Appendix 22 Example 'rules' for producer-consumer connections

This appendix is presented to show that detailed 'rules' for AFNs already exist. *AMAP* is the French association for their equivalent of Community Supported Agriculture, with a structure that the growing UK CSA sector has sought to learn from. This appendix presents (a) Principles of organisation and (b) a Charter for Principles of Peasant Agriculture. *(Source: http://blog.urgenci.net/?p=986 l.a. 060213)*

(a) AMAP Charter: an English translation (ENG)

1. Creating an AMAP

- An AMAP's setup must be done by a group of motivated consumers wishing to support their local small-scale producers.
- This group must find a local producer who agrees to respect the principles as defined in paragraph 3.
- To this end, the consumers will give preference to contacts with local producers.
- Once found, they will submit their choice to the assessment committee of *Alliance Provence* who will organize a farm visit with the consumers.
- Then the consumers and producer will determine together the working model they wish to create according to the principles described in the next paragraph. Then they will write a contract.
- Adhering to the AMAP charter and being a member of *Alliance Provence* constitute the two initial conditions for the association between consumers and producer to be called an AMAP.

2. Working principles of an AMAP

2.1 Structure of consumers

- The consumers can choose to become an association l or a registered association (*de jure*).
- Creating a registered association can be justified because of the handling of important sums of money in the context of the contract established with the producer, the management of the membership fees, the recognition by local stakeholders. It will enable the opening of a bank account and the formalizing of decisions made by the members.
- In all cases, the decision-making bodies and governance of the AMAP need to enable the participation of the maximum number of consumers in the management of the organization.
- The responsibilities currently recognized in the AMAP are: secretariat, account keeping, distribution, internal communication, external communication, recruitment, events, assessment, co-ordination with *Alliance Provence* and with other AMAPs.

2.2 The contract

- The contract is established between the group of consumers or the association representing them, and the producer.
- Its length is linked to the cycles of production of the farm.
- This contract covers the regular distribution of produce by the producer to the consumers in one place, one day and one time slot at a constant cost determined by agreement between the consumers and the producer.
- This contract must define the list of produce in the plan that the producer will supply regularly to the consumers.
- The consumers commit to pay in advance for the produce according to the conditions to be defined. They commit to find a replacement if, for reasons out of the ordinary, they decided to withdraw from their agreement.
- The producer commits to put in place all the necessary methods to meet his agreement to supply produce to consumers in the quantities and timescales defined.
- The following paragraphs detail the contents of the contract.

2.3 Purchase of complementary produce

- Any members wishing to have access to complementary products (e.g. meat, cheese, bread, etc.) **must** create a new AMAP by finding other potential consumers in their locality.
- The distribution of complementary products can never be done by the producer of the AMAP playing an intermediary role; that would mean that the consumers have no control over the quality of the produce supplied or the price. Furthermore, it would be creating a sale in which there is no link between producer and consumers.
- Remember that consumers can also connect with organic co-operatives and buying groups: they play an important role in the distribution of organic produce and support sustainable agriculture.

2.4 Cost of produce supplied

- The producer and consumers decide together the cost of the produce supplied (vegetables, fruit, eggs, dairy products, meat, poultry, olive oil).
- The producer commits to regularly supply a quantity of produce at the agreed price.
- The producer must explain precisely how he prices his produce in the setup of the AMAP, compared to the prices he'd be able to get elsewhere.
- If the producer works exclusively in the AMAP, a calculation method will need to take into account the charges of the farm and define the revenue that needs to be cleared annually.
- In the opposite scenario, the producer can choose to apply a discount compared to market price or prices of distributors.
- In all cases, the calculation method needs to be totally transparent.
- The producer will need to regularly supply the consumers with the information that permits verification that the terms of the contract have been respected.
- If the producer is unable to supply the produce in sufficient quantities and for reasons other than his will (e.g. frost, hail, parasites, etc.), he will need to inform the consumers immediately.

2.5 Production

- The producer must adhere to the charter (see annex) when producing.
- *Alliance Provence* and the consumers can help the farmer to move the production towards a method that respects nature and the environment. In that case, a contract of clear aims and objectives is set up with the farmer.
- All produce (vegetables, fruit, cheeses, eggs, etc.) must come from the unit. No produce is to be bought-in from another source without the consent of the consumers.
- All other produce that the consumers don't receive needs to be subject to another specified contract with another producer.
- The plan of produce to supply to the consumers needs to be defined with the consumer long before the growing season. A list of products will be established and within reason will need to be respected.

2.6 Delivery and distribution

- The delivery needs to be made directly by the producer if the collection isn't made directly on farm. This is essential in order to maintain the links between consumers and producer.
- The distribution is done by the consumers in the presence of the producer.
- During the holiday period, it is each absent member's responsibility to find someone to replace him.

2.7 Payment

- The consumers commit themselves financially for a whole season.
- They make a pre-payment of the basketfuls or boxfuls that will be delivered to them. The aim is to allow the producer to have sufficient working capital or cashflow to undertake investments or cover certain expenditure.
- The payments are made once, twice or three times – the date of payment is fixed by the members and the producer.

- However, some specific payment arrangements can be made for people experiencing difficulties paying.
-

2.8 Internal communications

- The consumers and the producer will put in place all methods of communication of their choice to ensure the spreading of information, to develop conviviality and to facilitate transparency.

2.9 Assessment

- All members must be involved in a regular re-assessment of the AMAP. This is to assess whether the objectives have been met and whether the charter has been respected. It also helps the producer better meet the needs of the consumers, and improve how the association works.

2.10 Go further

- Every AMAP must think about its sustainability and resilience. It can also decide on actions allowing it to reinforce the engagement and involvement of the customers: shared investment, collective purchase of land, dissemination of community-supported agriculture models in the region.
- The active participation in *Alliance Provence* of each AMAP is indispensable to energise the network and realise its democratic function.

(b) *The ten principles of peasant agriculture*

First principle	Allocate the production to allow the greatest number of producers to access the profession and live off it.
Second principle	Show solidarity to small-scale producers from other parts of Europe and the world.
Third principle	Respect nature.
Fourth principle	Enhance abundant resources and save rare resources.
Fifth principle	Look for transparency in purchases, production, processing and sales of produce.
Sixth principle	Ensure good quality, tasty, safe and healthy produce.
Seventh principle	Aim for maximum autonomy in the farm's operations.
Eighth principle	Look for partnerships with other rural stakeholders.
Ninth principle	Maintain the diversity of the animal populations reared and of the plant varieties grown.
Tenth principle	Always think long-term and at the global scale.

Appendix 23 Supporting documents for this research

a) Plymouth Public Sector Food procurement Project report: South West Urban Centres
b) FoodPlymouth meeting notes
c) South West Region Allotment Officers Forum
d) Presentation to Saltash Environmental Action group
e) Interdisciplinarity: a key for real-world learning

(a) *South West Urban Centres: a review Plymouth Public Sector Food Procurement Project: Developing Sustainable Food Chains, March 2011* *(Source: author)*

BACKGROUND

A review of public procurement local food supply in other urban centres in the South West of England was carried out to provide a context for the project in Plymouth.

APPROACH TAKEN

Public sector local sector food procurement is likely to thrive in areas where there are supportive activities and policies. A 'building blocks' approach was taken, to explore these components of a strong 'local food infrastructure'. Increased supply of local food into the public sector can be supported throughout the supply chain, in policies, cultures and networks. The scope of this review was limited to: a) profiles of the public sector across the different organisations, to demonstrate the size of the potential market for suppliers b) levels of participation in e.g. the Food for Life programme, cross-sector food network, or public sector procurement forums, to give an idea of current activities. Proxy data from similar studies were then used to calculate potentials for the future.

As demonstrated by the Cornwall Food Programme, the proportion of local food procured by a public sector organisation can be as high as an estimated 80%, compared to a low national average estimated to be nearer 10%. Contrary to popular myth, again demonstrated by the Cornwall Food Programme, this does not need to cost any more than any other supplies from further afield. Evaluating these practices using the methodologies of Social Return on Investment (SROI) and Local Multipliers (LM2/LM3), enables a comparison of SW urban centres through a benchmarking process, and gives weight to those who are proactive in promoting sustainable food chains.

The urban areas in this study were: Bournemouth and Poole [BP], Bristol [BR], Camborne, Pool and Redruth [CPR - the former Kerrier District], Exeter [EX], Gloucester and Cheltenham [GC], Plymouth [PL], Swindon [SW], Taunton [TA], and Torbay [TO].

INTENDED OUTCOMES

- To benchmark the size and nature of public sector food procurement in Plymouth with other urban areas in the SW.
- To identify all organizations responsible for public procurement in the major urban centres of SW England.

ACTUAL OUTCOMES

- Comparisons and profiling of urban areas in the South West, with a focus on factors relevant to local and sustainable food supplies.
- Updated lists of public sector organisations in the South West

Urban Areas in the South West

Urban areas across the South West vary widely in size and demographics. The data in the table below is presented as a rough guide to the size of the public sector food market. It has been drawn up from a variety of sources, including organizational websites, national agencies for health and education (eg Ofsted reports), as well as the Office of National Statistics. Given that administrative areas vary across sectors, and accurate current data is not always available, the figures have been calculated to give an estimate of the potential demand for local food. Note that, as a result, these figures are only preliminary 'ballpark' figures. A list of the public sector organisations is given at the end of this report.

Public sector 'headcount' in South West urban areas

South West Urban Areas	Population	School children	Hosp bed nos.	Staff nos.	FE/HE nos.	Public sector 'headcount' (1)
Bournemouth and Poole	400,000	38,400	1,565	7,500	48,495	95,981
Bristol	551,000	46,500	2,002	18,315	134,109	200,936
Camborne, Pool and Redruth	40,000	5,500	917	6,600	20,000	33,062
Exeter	112,000	14,000	1,138	8,000	36,987	60,297
Gloucester and Cheltenham	235,000	32,500	1,324	10,000	42,895	86,740
Plymouth	249,000	36,469	1,170	5,875	61,439	104,953
Swindon	196,000	27,107	587	3,300	26,640	57,634
Taunton	61,400	7,995	1,076	4,415	7,600	21,086
Torbay	64,000	18,112	540	3,500	ND	22,152
Total	1,908,400	226,852	10,319	67,505	378,165	**682,841**

(1) Note that the number of meals catered for varies across and within sectors – e.g. schoolchildren possibly one meal a day, hospital patients, three meals a day.

Levels of participation

Cross-sector food networks exist in Bristol and Gloucester (see below), and more recently Plymouth, but not in the other urban regions. Similarly, public sector food procurement collaboration within urban areas is not common practice. Whilst many place tenders through shared portals (eg www.supplyingthesouthwest.org.uk), other procurers work either via sectoral and regional consortia (eg West of England Partners in Procurement and the Devon Procurement Partnership), or individually, often via contract caterers who work within the national frameworks of their companies. Although all local authorities now have carbon reduction strategies, sustainability policies, and compacts to encourage working with SMEs, there remains potential for greater activity to achieve these policy aims through working more closely with the local food sectors. The recent work in Plymouth, as part of this DSFC project, has pioneered a collaborative approach with public sector procurers, enabling a sharing of local knowledge, expertise and experience and so facilitating greater purchase for local food.

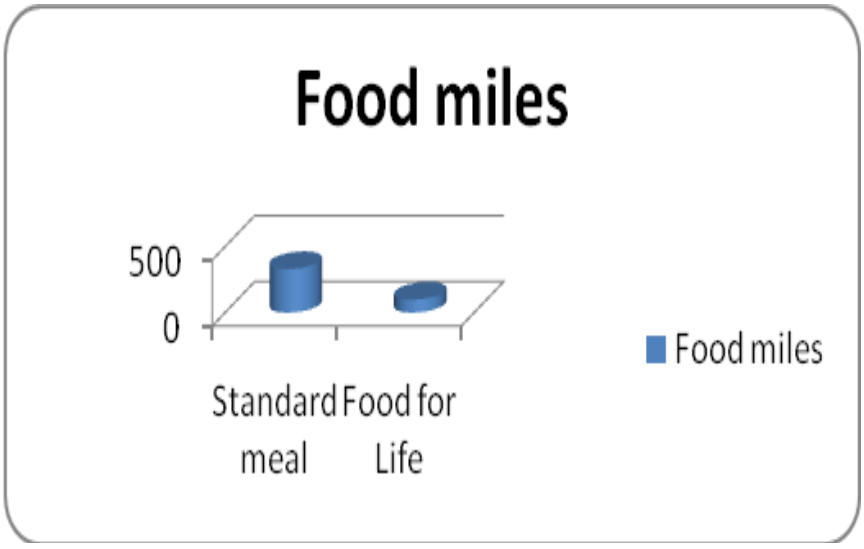
Urban food SW highlights

Bristol
Bristol is a member of the Sustainable Cities Network of over 40 other cities worldwide who are exploring and communicating sustainability projects. Its statement for food is: A food culture which values local, sustainably produced and artisan foods, celebrates the diversity of regional foods and benefits the local community, environment and economy. Feeding Bristol in the Future - Bristol City Council's Food Charter - contains ten ambitions to shape the Council's approach to food provision. The food standards spell out the sustainability and health criteria for caterers providing food, commissioned by and for the Council. In spring 2011, Bristol City Council launched its new Food Policy Council. [www.bristol.gov.uk]

Gloucestershire Food Vision
GFV supported local solutions to global issues by working within Gloucestershire to change attitudes and behaviours to enable communities to meet their needs without compromising the ability of future generations to meet their own needs. Projects on food focused on community and school growing activities and exhibition to promote sustainable food - http://www.foodvision.gov.uk/pages/gloucestershire-food-vision

FoodPlymouth
The Plymouth Food Charter, launched in spring 2011, aims to improve health and wellbeing for all and to create a more connected, resilient & sustainable city. Signatories to the Charter – which include public, private and community partners – make a pledge to promote the pleasure and importance of good food to help create a vibrant and diverse food culture. So far, public sector organisation pledges include to use a local sandwich supplier, and to embed the charter within a sustainable food policy. [www.foodplymouth.org]

An evaluation of the participation in the Food for Life (FfL) programme in East Ayrshire found that food miles per meal were reduced from 330 for a 'standard' meal to 99 for a FfL meal, a significant reduction as depicted below. The table below also gives an indication of the variance in participation across the South West, and so the future potential for increased activity in this area.



	School population (headcount)	Number of schools in Food for Life Programme
Bournemouth and Poole	38,400	9
Bristol	46,500	46
Camborne, Pool and Redruth	5,500	2
Exeter	14,000	26
Gloucester and Cheltenham	32,500	5
Plymouth	36,469	29
Swindon	27,107	15
Taunton	7,995	0
Torbay	18,112	3

Aside from an impact on food miles (and so carbon emissions), benefits to the local economy and community from increasing purchasing of local food can be estimated using the Local Multiplier measure. A comparison of benefits from participation in Food for Life programmes found that, in Nottingham, £3.11 benefit for the local economy was generated for every £1 spent, and in Plymouth, £3.04 for every £1 spent [NEF 2011]. With consideration of wider benefits, using the Social Return on Investment, the East Ayrshire programme calculated an additional £99.19 pa benefit for each meal served which met the Food for Life criteria (see table at end of report), comprised of £30.09 from environmental outcomes, £81.8 in economic outcomes, £14.98 in health outcomes, and £14.95 other outcomes (e.g. reduced staff absence levels). The table below presents these findings applied to urban areas in the South West.

Potential impact of public sector local food procurement in the South West

	Population	Public sector 'headcount'	Est. market spend (1)	Benefit to local economy (2)	SROI (3)	Food miles saved (4)
			£	£	£	
BP	400,000	95,981	5,029,404	15,289,389	9,520,355	22,171,611
BR	551,000	200,936	10,529,046	32,008,301	19,930,842	46,416,216
CPR	40,000	33,062	1,735,755	5,276,695	3,279,420	7,637,322
EX	112,000	60,297	3,159,563	9,605,071	5,980,859	13,928,607
GC	235,000	86,740	4,545,176	13,817,335	8,603,741	20,036,940
PL	249,000	104,953	5,499,537	16,718,593	10,410,288	24,244,143
SW	196,000	57,634	3,020,022	9,180,866	5,716,716	13,313,454
TA	61,400	21,086	1,104,906	3,358,915	2,091,520	4,870,866
TO	64,000	22,152	1,160,765	3,528,725	2,197,257	5,117,112
Total		**682,841**	**35,784,175**	**108,783,891**	**67,730,999**	**157,736,271**

(1) Using Plymouth data, £52.40 per head
(2) Benefit to local economy (NEF 2011) - £3.04 for every £1 spent
(3) SROI of East Ayrshire benefit (Footprint Consulting 2008) - £99.19 for each meal served
(4) Food mile reduction (Footprint Consulting 2008) - from 330 to 99, saving of 231

Even given all the provisos about data accuracy, and taking these as estimated 'ballpark figures', the conclusion is clear that increasing the proportion of local food in public sector purchasing in urban areas of the South West could have a significant impact on the economy and also wider outcomes on health and environment.

ISSUES EXPERIENCED

As experienced by the main Plymouth public sector food procurement project, baseline data can be difficult and time-consuming to obtain. Proxy data from similar studies was used to provide the best estimates where primary data collection was not possible.

KEY LEARNING

Given time and resources, much more data could be collected and collated to give a fuller picture of local food procurement in the public sector in South West England urban areas.

NEXT STEPS

A home needs to be found for maintaining a directory of all those involved in public sector procurement in the South West. Some resource allocation across the region is also needed (by whom is the key question), to maintain communication, provide networking events across organizations, with buyers as well as suppliers, to share experiences, and nurture the supply base. These steps can help to achieve an increase of local food supply in a public sector.

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March 2011

Public Sector Organisations in SW Urban Centres

Bournemouth
Bournemouth Borough Council
Poole Borough Council
Royal Bournemouth and Christchurch Hospitals NHS Trust
Bournemouth and Poole Teaching PCT
Poole Hospital NHS Foundation Trust
Bournemouth University
Bournemouth and Poole College
Arts University College Bournemouth

Bristol
Bristol City Council
North Bristol NHS Foundation Trust
NHS Bristol and Bristol Community Health
University Hospitals Bristol NHS Foundation Trust
University of West of England
University of Bristol
City of Bristol College
Bristol Filton College

Camborne Pool and Redruth
Cornwall County Council
Cornwall Partnership Trust
Cornwall College, Camborne
Royal Cornwall Hospitals NHS Trust

Exeter
Devon County Council
Exeter City Council
Royal Devon and Exeter Hospitals Trust
Devon PCT
Devon Partnership NHS Trust
Exeter University
Exeter College

Gloucester and Cheltenham
Cheltenham Borough Council
Gloucester City Council
Gloucester County Council
Gloucestershire Hospitals NHS Trust
2Gether NHS Foundation Trust
University of Gloucestershire
Gloucester College

Plymouth
Plymouth City Council
Plymouth NHS Hospitals Trust
Plymouth Teaching PCT
University of Plymouth
City College
College of Art and Design
University College Plymouth St Mark and St John

Swindon
Wiltshire County Council
Swindon Borough Council
Great Western Hospitals NHS Foundation Trust
New College
Oxford Brookes University
Swindon College

Taunton
Somerset County Council
Taunton Deane Borough Council
Taunton and Somerset NHS Trust
Somerset College of Art and Technology

Torbay
Devon County Council
Torbay Council
South Devon Healthcare NHS Foundation Trust

Social Return on Investment calculations from: Evaluation of East Ayrshire Food for Life Programme *(Footprint Consulting 2008)*

Pilot programme with 5137 pupils			
		£pa	Pro rata £pa
Environmental outcomes	Reduced food miles leading to less CO2	93,532	
	Reduced food miles leading to avoided costs of environmental damage	3,513	
	Savings in costs to the environment of externalities of organics	478	
	Sub-total of environmental outcomes	97522	**18.9**
Economic outcomes	Profit increases from FFL contract	61813	
	Value of additional employment	18018	
	Local economic impact of FFL contract	137169	
	Value of new land brought into organic production	41250	
	Sub-total of economic outcomes	258,250	**50.2**
Health outcomes	Reduction in proportion of children with a BMI outwith a healthy range	62,104	
	Reduced future health conditions: cancer	7127	
	Reduced future health conditions: coronary heart disease	2496	
	Reduced future health conditions: stroke	3352	
	Value of FFL as a health promotion campaign	1887	
	Sub-total of health outcomes	76966	**15**
Other outcomes	Increased uptake of FFL school meals compared to non-pilot schools	42259	
	Value of media campaign to achieve similar reputational advantage	9500	
	Reduced staff absence levels in pilot as opposed to non-pilot schools	25051	
	Sub total of other outcomes	76810	**14.9**
		509,547	**£99**

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(b) Food Plymouth Meeting Notes

Food Plymouth Steering Group Meeting, 31 January 2012, PHDU

Present: Traci Lewis (chair), Denise Rudgeley, Linda Morris, John Dixon, David Barrett, Tess Wilmot, Richard Price, Wendy Miller (notes)
Apologies: Jacques Marchal, Simon Platten, Tom Andrews, Jenny Bushrod

1. Notes of last meeting and matters arising

a) The notes of the last meeting were agreed as a correct record.
b) TL did get in touch with Tim Jones (LEP Chair) on a conference call. He is really excited about the project, and will include it in a report to Defra looking into local sourcing cross-sector. He cannot attend the Action Plan launch (is in Bristol). It was suggested that he might pre-record a video message for the event. **TL** to investigate
c) The first Flavourfest 2012 meeting is next month and TL is meeting with Amanda Bishop.
d) PR: TL had a piece on the Food Charter in January's Plymouth Menu. The January issue of Kitchen Garden included a feature on Plymouth. **JD** would scan and circulate.
e) TL has circulated the amended Action Plan after a meeting was held with TL, DR, TW and WM to look in more detail at the points. All were asked to look and send any comments through to TL ASAP.

2. 23rd February Action Plan launch, Plymouth Guildhall

(i) Agenda/Speakers

a) TL will be giving a brief to focus on the economy but also bring in health and learning. She would be meeting with Clint on Thursday to finalise the agenda. Brad Pearce would be talking on the FfL, and Brook Green school will be doing the catering. TL will chair.
b) Tanner Brothers (are they signed up to the Food Charter?) are unable to be there.
c) The chef at River Cottage is unable to be there, but perhaps they could have a stand.
d) Paul Cox from Marine Aquarium has mentioned a Falmouth fishmonger, v successful, sustainable, he might be able to enthuse about what it does for his business.
e) Steve Barrett from Bistro One was suggested.
f) Community slot(s): Possibly Simon Platten, 10 mins on Tamar Grow Local, Tess Wilmot on edible landscaping and resources in the city, Devonport High School, Anne-Marie or Kim on Efford Grow Local, Sue Johns, on growing in Stonehouse. **DR** will contact Mo at East End community allotments to see whether she would speak.
g) **TL** will check whether there are blackout/powerpoint facilities.
h) It would be good to show the films from the Public Health / RIO projects. **DR/WM** to get in touch with Kate

(ii) Stands suggestions and notes:

a) Free stands for signatories to the charter. Will have a list of exhibitors.
b) Maybe focus more on interactive stands than speakers for community organisations.
c) Charter Stand: info from FEAST, and possible mobile farm shop. Boards for ideas, ask for input at the beginning. **All**: ideas/material for stand.
d) Stands for producers, suppliers, community and public sector. Eg Halcyon Centre, Sell 2 Plymouth, TGL. All have received an invitation. Duchy College?
e) Exeter Food Store?
f) There is room for quite a few stands. Questioned whether wine merchant would be OK (yes, if signed up to Charter?)
g) £10 administrative charge for no-shows.

PR/Other:

a) Env Health: **JD** will ask them to send the invitation around to the 2-3,000 businesses they have registered.
b) Presentation on FEAST? opportunities for businesses to get excited about, to register interest. Put a call out, looking for a baker (17% of the turnover at the Real Food Store). (Was one using the kitchens at Cotehele at night, but he packed it in.) Others mentioned: Tavistock, Bread of Devon and Teign Valley Baker.
c) Are other cities doing similar? Bristol do a food conference with Sustain and Food Matters. Would be nice for Plymouth to be recognised – have got more than most.
d) The event doesn't yet give good opportunity for businesses. There is no food show in Plymouth; this could be the start of a trade show, DB: desperate need for it in Plymouth. Cf Exeter Food Show at WestPoint. Could have local, healthy and sustainable element to it.
e) Is an opportunity to announce FfL Catering Mark with university (bronze) – and for the presentation. Food Champion to present? (eg. Adam Hart-Davies, Dawn French, Jennifer Saunders, Tom Davies.)
f) TL has done the basic PR now doing the follow-ups. The event will be a success if we get a 'buzz' around it – lots of people and PR.
g) Photos on the day: **DR**: email TL details of Dominique for a video.
h) Have badges for Food Plymouth people.
i) **All**: Any comments on Plan or Launch event to TL by the end of the week.

3. Mapping
WM has emailed Simon Platten to arrange a meeting with Jon Selman about Food Plymouth input into the TGL FoodMap for Charter signatories and aims to have some of this complete by the time of the Action Plan launch event. She is mapping activities for her research into ArcGIS but this can only be used for educational purposes under the university licence. Plymouth Informed is due to be re-launched but is another possibility for the future.

4. Any Other Business

- JD: Paul Cox wants Plymouth to be a sustainable seafood/fish city. Has been talking with HF-W, Charles Clover (?journo at Guardian). Social enterprise that reviews restaurants. The First **Plymouth Marine City Festival** is next year. He wants to find out where landed fish goes and where fish eaten in the city comes from. Could go into Action Plan. **JD** to ask about this (cf Flavour Fest comments that more fish was needed there to support local trawlermen).
- **Healthy Communities Conference** on 21st February: DR/JD are doing the workshop on healthy food.
- **Food Safety: meals on a budget**. 11-17 June, national week. Re safe use of leftovers, growing your own veg. Opportunity to promote saving food. If interested two or three could get together with Catherine O'Connor from Environmental Health before the next meeting. **JD** will send an email with the link. Highlight theme: (?around restaurants). But links to eg Wild food walk, Allways Apples. Clare Pettinger, will be back soon and may be interested? **All**: generate email subgroup if interested.
- JD is meeting with Victoria Hurth, DCFA. They are diverting food from landfill and putting in a lottery bid. [http://dcfa.webs.com/] **TL**: invite VH onto the FP steering group
- **Consultation**: for 6 weeks from February on the new community park masterplan, which aims to incorporate a **One Planet Living Centre** – educational resources, community growing, cafe, orchard, kitchen garden etc. They are soft market testing to see interest in running it. It is a commitment in the LDF, and the commissioned Master Plan is on how it might be implemented. Funding is from part retained as productive agricultural land, part commercially viable, and part from s106 developments around the park. **(cf** Fivepenny Farm, Dorset as an example of a small-scale food enterprise/ processing unit [http://www.peasantevolution.co.uk/coop_facilities.html]).
- Tim Jones, LEP: they have £14m **Growing Places** money from the Defra, regional diversification fund. Producer survey: TL meeting with Clint to see about further market testing.
- **FEAST** 3rd meeting on 9 February, 6.30pm 171 Armada Way. Cf People's Supermarkets. TL working on an expression of interest to the lottery and now working on Springboard on the

business plan. It is becoming quite popular to have 'multifunctional' cafe. Cf also Mary Portas High Street review [http://www.bis.gov.uk/news/topstories/2011/Dec/portas-review] .

- Dr Sue Overall, Derriford Hospital food, may be interested in FoodPlymouth (cf Prince Charles, Scarborough Hospital [http://www.hsj.co.uk/news/acute-care/prince-charles-praises-trusts-for-hospital-food-improvement/5039436.article]).
- Going into next year, need to look at the legal status (at the moment FP is applying for funding through partners). Eg for FEAST and Trade Show – could generate the core that partners are doing now. The next FP meeting will look at this. (Cf Mark Simmonds is holding training in Exeter in March – possibly invite him to next meeting.)

5. **Date of next meeting**
   Wednesday 29 March, 10-12.30, Plymouth City Council

Food Plymouth (FP) Steering Group Meting, 26 September 2011
Public Health Development Unit, Catherine Street

Present: John Dixon (PCC), Lynne Sinclair (Tideford Organics), Darran Mclane (Diggin It), Nick Cork (SWFD), Denise Rudgeley (NHS Public Health), Ed Whitelaw (RIO), Clare Honey (RIO), Jacques Marchal (Flavour Fest), Richard Price (consultant), Simon Platten (Tamar Grow Local), Barbara Hampson (Transition Plymouth), Sharon Sexton (FFLP), Wendy Miller (UoP, minutes), Traci Lewis (Soil Association, Chair)
Apologies: Jeany Robinson (FCFG), Linda Morris (UoP)

1. Minutes of Last Meeting and Matters Arising

a) **Action** B/F: **TL** to contact Chair of LEP after this meeting

b) **Flavour Fest and Food Awards.** TL gave an update and members commented on these:

i. Thanks to JM for getting stand space. Given funding uncertainty, at minimum next year could probably do Food Awards and presence at Flavour Fest. (SWFD still have funds for marketing and promotion, to be spent before end December.)

ii. Food Awards spot on Friday seemed to go very well. There were only 3 weeks for nominations, but still had over 50. Criteria and sponsorship guidelines will be developed in good time for next year. Luke's Fruit Farm (award winner) had been rushed off their feet the week following. Need categories for restaurants, pubs, cafes. Awards can work as leverage to get them working with local suppliers.

iii. Need to have something for kids next time, eg. horticultural display, sample square foot gardening, freebies, need to start in February, as a project coming from within a school. RIO could help with this for next year. FoodPlymouth had a focused message with the charter and awards; next year decide on what are 1or 2 key messages likely to be. Copies of the charter given to most stallholders, generally very interested, especially that if signed up could be listed on foodplymouth.org website, though some questioned what difference it would make.

iv. TGL made lots of contacts, new community orchard sites, people interested in wood fuel coop, links with River Cottage. Lots more people subsequently signed up online to FP newsletter. Comments made at FP stall: Some things were underrepresented, esp. fish for Plymouth (e.g. Mark Lobb, Dartmouth, though health & safety, need ice), someone wanted info on diabetic food. Not a lot for vegans. People really want farmers market (TL: meeting with Clint Jones (CCDC) 10 October re relocation of this back to Armada Way.

v. Cf Abergavenny FoodFest: whole town involved, every bit of land, every public building used. E.g. restaurants to do special festival menus. Smaller producers could share costs of stall. Can download programme.

vi. **Action**: **JM** to invite TL to planning meeting for FF2012. **TL**: follow up stallholders re sign-up to Charter

2. Food Charter Action Delivery Plan.

a) TL circulated plans from Brighton and Camden (London) and gave update report: already quite far down the path, didn't want to circulate draft, not necessarily best process to address as whole group. General discussion followed: we already have charter, do we want/need strategy, more wordy/referenced format. It was agreed it would be useful to have something for funders and key stakeholders, especially action plan, detailing targets/measurements.

b) Launch event for action plan, next spring, i.e. six months (though Feb, poss dearth of veg, but 'here we go, start of another year', seed swap, though not just about growing). Event to be a celebration of 2 or 3 case studies of past year. Cf. CSA conference had interactive picture boards, round table. TGL events: end May Strawberry event, daffodil event, and another possibly around harvest. RIO are planning food event, from their NHS project, and for launch of their schools programme, poss. 30th November, keen to bring in other things. **Action**: **TL**: get sub-group actions incorporated into a plan document for next meeting 6 December. Investigate dates/venues (?Wed/Thur 22/23 Feb).**DM/EW**: Routeways and RIO to discuss possible collaboration.

3. Funding

a) TL: had met with Regional Manager of the Cooperative, put a community project bid in, with Grow Efford, for their mobile food hub, social enterprise in different areas, and wanting to connect the Charter with stores (50/60 around Plymouth) – approved £5-6k. Kim Wide and TL will be meeting her again. Designer at Fruition, putting together a quote (inc VAT) for PR with new logo, copy of charter to go into Coops, GPs and libraries, and flyers for hospitality caterers (table cards), and will do article for catering mag.

b) TL had been to Brittany with SP (TGL) re potential for Interreg project, on similar pieces of work within the two areas. Got v good leads, similar things going on (local food into public sector procurement, etc) . Going to put proposal into partners and get it translated scoping what might be possible. If Interreg projects need 3 nations could look at Mondragon in North Spain. TL met with Tim Selman (TV AONB), met some good potential partners on low carbon supply chains / transport. Plymouth twinned with Brest, has similar estuary. Cf Eden, French have experience in production, UK possibly more in marketing.

c) FfL / Reaching Communities proposal to lottery. Already ongoing in this area: PHDU works with communities and groups in Plymouth, Shekinah do lots around food, Food Bank.

d) TGL are looking at RDP money for producers cooperative, supply chains into Plymouth. NC has spoken with Mike Johns, Defra, about funds available in Cornwall, and some in rest of SW. Springboard Fund available Devon and Cornwall to develop 'stepchanging'. Next round applications due mid-November. To fund innovative projects, to create or save jobs.

e) Olympic torch in Plymouth: may be some funds for local food event when that happens. NC in contact with Kim Chang, SW Coordinator, Olympic fund, based at Bristol Uni.

f) DR: Hearty lives, huge project starting next year.

g) **Action**: **TL**: send community/Interreg funding proposal to EW/DR.

4. Public Meeting for local good food centre (FEAST)

This has been arranged for 15th November, 6.30- 8.30pm, Copthorne Hotel. Sarah and David from Real Food Store Exeter (RFSE) will share their experiences; the communities sub-group had visited in August. Event will be to refine 'vision' and plan for similar in Plymouth, and get emails/commitment for a core group to make it happen. Idea is for a social enterprise in the city where people can go and enjoy food, taste and get information. City Centre Company want to support it by through a property at reduced rent.

Action: **TL/WM/BH** draw up flyer and distribute as widely as possible.

5. Food for Life

SS gave an overview of the FfL programme and distributed printout of a powerpoint presentation on FfL - it is currently under evaluation, had started with £17m Lottery funding 5 years ago. Funding ends at Christmas. It will carry on as much leaner programme, still with website and award system, but are looking to locally existing groups/networks to help sustain the programme. Oreston and Brook Green are flagship schools in Plymouth both bronze and close to achieving silver. Schools becoming

independent will have to resubmit all their evidence. They have findings from 3 year evaluation: twice as many FfL schools as average have received an Ofsted report of outstanding, though can't directly link cause and effect. Workshop with flagship schools and local partnership schools to discuss future directions, at Brook Green in November. Some talk of sponsorship from Sainsbury's Waitrose, Morrisons, and key govt ministers, but nothing signed yet. Some NHS commissioners are looking at funding, e.g. Gloucestershire and Devon, i.e. likely to be a patchwork, with more support in some areas than others, depending on whether LAs decide to invest. (Plymouth: a social enterprise is replacing the PCT, starting 1 October, with public health going to local authority. NHS Devon are commissioning despite the changes.) RIO are already supporting some schools, on food and social enterprise, and have an event at end November, to share findings of their research re behaviour change, and to launch schools food programme offer. Schools pay according to level of support, e.g. day of consultancy. See www.realideas.org/schoolservice. **Action: RIO/DigginIt/FfL** to explore collaboration. DR/TL to forward FfL evaluation to Director of Public Health. **EW/CH:** send info on event and schools programme to group.

6. Local Food Directory/Mapping

The new TGL interactive map is up and running, in the process of being populated, and anything to do with food in Tamar Valley can be entered - boundaries of the Tamar catchment, the AONB, and 'social capital' (cf Travel to Work etc), i.e., Plymouth is included. For Plymouth, need to only include people signed up to the charter; it has to be self-policing / self-selecting, i.e. if people go along and expect to find local food but don't, then will get comments. **Action**: **WM/SP/TL:** Contact Plymouth community groups to sign-up, enter their details onto the TGL map, with links to own websites. **WM/SP/JSelman** to discuss populating the map for Plymouth and including FoodPlymouth logo.

7. Any Other Business

a) TL: UoP has acquired a large allotment in Central Park, and welcomes input and advice. Discussion re sustainability of this with student population; perennial planting is better. **Action**: **DM** to get in touch with LM to advise.

b) Always Apples, Devonport Guidhall, Wednesday 26 October, 11-4. It was agreed to have some rep from the Charter, and something for children – e.g. apple bobbing. BH and DR will be there. WM could help with a stand. **Action**: **WM/BH/TL/DR:** Charter stall and activity for children.

c) Sustainable Food Cities Network, 12 October Bristol. 30 cities around the UK, who have an interested in the sustainable/good food agenda, e.g. Camden.

d) TL will be at a meeting in Edinburgh, on international networks, representing Making Local Food Work. (Cf Nourish, Edinburgh project.).

e) Christmas lunch was suggested for the next meeting. Possible venues: Devonport Guildhall, ***Bistro*** One, or catering mark venue. **Action: TL** to investigate

8. Date of Next Meeting

To be held on 6th December 10-12.30, venue t.b.c.

[Meeting closed 12.20]

The Allotments Regeneration Initiative

SOUTH WEST REGION
ALLOTMENT OFFICERS' FORUM

Venue: Diggin' it for Devonport Office, Devonport Park, Devonport Road, Plymouth PL1 4BU

Tuesday 5 July, 9.30am - 3.30pm

Arrival from 9.30 to 10.00. Tea and coffee will be served on arrival.

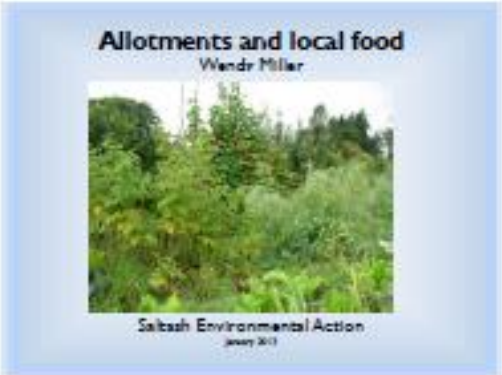
Facilitator: Carmel Ferguson with Martin Moore ARI Mentor, South West Region

Programme

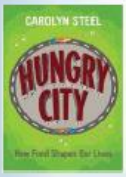
10.00	Welcome, overview of the day, ARI ground rules.
10.10	Introductions around the room and declaration of current allotments management issues for the day's agenda.
10.30	Discussion based on agreed agenda.
11.30	Break with tea and coffee.
11.45	Discussion based on agreed agenda.
12.30	Wendy Miller, Research Student, University of Plymouth*: The Political Ecology of Local Food & Urban Communities*. *Case Study for South West England.* Outline of Research Study.
12.45	Talk on Diggin' it for Devonport Project by **Kate Davy, Development Worker** (with opportunity to look around the project during lunch).

13.00	Lunch.
13.45	Animals on Allotments: Talk by Jo Pearson, RSPCA Inspector, followed by Q&A session.
14.30	Break with tea and coffee.
14. 45	AOB (conclusion of the morning's discussion topics as required; Closing session, additional issues, ideas for speakers and hosts for future AOFs. Feedback.
15.30	Close

(d) Presentation to Saltash Environmental Action



Growing concerns



- Food prices
- Packaging
- Food Miles
- Quality of food, additives and contamination

All add up to
- Revival of interest in allotments
- And ever-increasing waiting lists – up to 40 years in Camden

… and abroad

1bn overfed (obesity) and 1 bn underfed (hungry and starving)

The plebs was the general body of free, land-owning Roman citizens (as distinguished from slaves) in Ancient Rome. It was the non-aristocratic class of Rome and consisted of freed people, shopkeepers, crafts people, skilled or unskilled workers, and farmers. This term is used today to refer to one who is or appears to be of the middle or lower order; however, in Rome plebeians could become quite wealthy and influential. (Wikipedia)

Via Campesina

The international peasant's movement

Allotments in Plymouth

Plymouth allotments

- 32 sites
- 1,470 individual plots of different sizes at October 2012 (up from 1367 in May 2012)
- 50/50 male/female tenants
- 1,076 on waiting list (October 2012)

Tenancies ended in 2010/11

Involved too much work	77
Leaving the area	29
Illness	36
NTQ non cultivation	35
NTQ non payment of rent	22

New tenancies started in each year

Year	No.
1990	3
1995	9
2000	15
2010	164

How to justify the allocation of urban land?

What are allotments for – food, health, exercise, nature?

Link to health and wellbeing and ecosystem services - 'capitals' or 'assets'
"Already subsidised compared to other leisure activities" according to government

Individual

Food security – one allotment could provide enough potatoes for one person for a year

Good nutrition – fresh food

Plant medicine – underused potential

Exercise – 25% adult population obese

Time outdoors - vitamin D is deficient in 90% of the population

Psychological/emotional – learning and 'personal project'

Underused potential

Crops grown on Plymouth allotments

Most that were on < 50% of plots	Second tier on < 50% plots		Third tier were on <25% plots	
Beetroot Blackberries Broad bean Courgette Leek Lettuce Onion Parsnip Peas Potatoes Raspberries Rhubarb Runner bean	Apples Blackcurrants Broccoli Brussels sprouts Cabbage Carrot Garlic Gooseberries Parsley Jerusalem artichoke Kale	Pumpkin Radish Redcurrants Rocket Shallot Spinach beet Sweetcorn Swiss chard Tomato Turnip	Asparagus Cauliflower Celeriac Celery Cherries Cress Cucumber Elephant garlic Fennel French bean Grapes Hazelnuts	Marrow Plums Swede Welsh onion Chickens Bees Ducks

Social

Social opportunities – reduced isolation, especially for over 50s
Having a cuppa
Gifting

sadly sometimes theft and vandalism too, but not on all sites …

Economic

Legislation prohibits planting for surplus to sell, but you can sell unanticipated surpluses

Eight steps back to the land!

- Windowsill
- Yard
- Garden
- Allotment
- Part-time farming
- Full time farming with additional source of income
- Full time farming

Measure with 'Social Return on Investment'

Natural

- Landshare or landspare
- Soil fertility – might be needed again in the future if global food supplies fail
- Depends on cultivation techniques

And not to forget … …. political

Good gardeners get to be voluntary judges for Plymouth in Bloom!

"I would love to see more allotment sites in Plymouth … but it costs so much and takes so much time to set up a new site… We continually have to justify the use of city land for allotments…"

Allotments: the future

Policy recommendations:

- Competition for biodiverse well-cultivated plots
- Valuation of health and nature
- Allow uses as found in European leisure gardens
- Fiscal incentives to disaggregate land ownership - Land Value Tax

Further research:

- Habitat surveys, new facts, effective management

Know your rights!

Not only increased demand for allotments, also

- Vegetable box schemes
- Farmers markets
- Producers cooperatives
- Community gardens
- Guerrilla gardening

- Increased local food in Plymouth public sector: school meals, university, … hospital?

Brought people together

Leeks!




Know your onions …




Beans




Thank you for listening!

Thanks also to all the people who have helped in my research, and attempts to grow vegetables over the years...

(e) ***Interdisciplinarity***

Full text of article from Planet No 17, December 2008, pp29-31, published by the Higher Education Academy GEES Subject Centre: reproduction permitted for non-commercial use.

Interdisciplinarity: a key for real-world learning

Jane Dalrymple and Wendy Miller, GEES Subject Centre, University of Plymouth

The group that discussed interdisciplinarity as an aspect of troublesome knowledge and as a key to threshold concepts at the GEES 2006 summer conference explored the issues inherent in working across disciplines within higher education.

It is contended that interdisciplinary working is needed in order to explore the 'real world' problems that are the focus of intellectual endeavours. This is especially so with providing a response to some of the most pressing manifestations of unsustainable human-environment interactions – social injustice and wars, ecosystem degradation and destruction (overfishing, loss of biodiversity, deforestation, climate change, fossil-fuel dependence, etc.). These are all problems that the subjects of geography, earth and environmental sciences explore.

The nature of disciplines

In order to arrive at an understanding of interdisciplinarity, the nature of disciplines themselves needs to be explored – in this instance, with the focus on the GEES subjects.

The word discipline derives from the Latin word disciplina – literally 'the instruction given to a disciple'. Compared to the word subject, which describes a skill and knowledge base, the term discipline brings dimensions of access and boundaries, with associations of profession, elitism, and exclusivity. Key words that come up in discussing the nature of disciplines include territory, discourse, identity, belonging, and status, as described by Becher (1989) and others.

Disciplines have originated in different contexts, geographically and historically, and provide a lens on the world. It can be unhelpful to label ourselves and divide ourselves up, however, it is clear that different disciplines have different philosophical strands, narratives, content, frameworks, and temporal timescales; there are different approaches in terms of detail.

Each discipline can be said to have three elements to its structure: observable objects, phenomena resulting from their interactions, and laws or sets of axioms to account for and attempt to predict the phenomena (Boisot, 1972). Disciplinary structures allow in-depth investigation of specific phenomena through analytically simplifying external factors, and through sustained, systematic enquiry. They provide 'triangulation' points in the production of knowledge on specific issues, through disciplinary organisations, journals and books.

Yet, the term 'silo' thinking or acting conveys the potentially defensive, protective and inward-looking nature of dividing up academic and intellectual territories into 'tribes'. Instead of benefiting from cross-fertilisation and multiple perspectives, both academics and students get partial glimpses from viewing problems through the facet of one particular discipline or sub-discipline.

Environmental science is often called 'an interdisciplinary discipline'. Rather than being self-contained, other disciplines (e.g. engineering, chemistry, geography, geology) surround the environmental science tribe, passing information in and getting information back – a porous shell. Environmental Science is a recently-created discipline – perhaps comprised of 'renegades from another discipline', or 'jacks of all trades, masters of none'.

It was suggested that Geography can be seen as situated 'in the middle' of a continuum of disciplines, with physics at one end and history at the other; or alternatively, the discipline of synthesis, depicted as intersecting circles (Fig. 1). Although perhaps an old-fashioned way of looking at it, this acknowledges that geography does recognise other disciplines. In reality, it is just

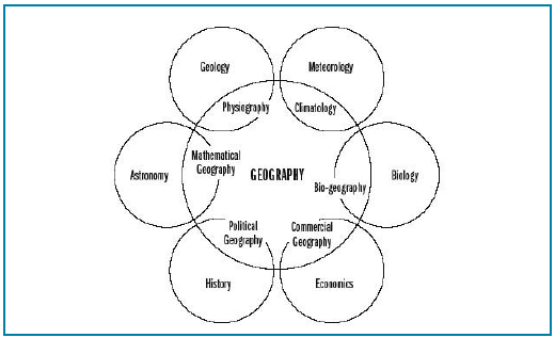


Figure 1. Geography and its sub-fields (Fenneman, 1919)

not possible to have discreet and distinct labels as they all blur into another; when is an environmental scientist a geographer? Or a physicist an engineer?

There is a real sense of identity involved. Disciplines are in a continual process of constructing and reconstructing identities – with individuals identifying themselves by joining a group, or by defining themselves as opposed to a group. Being open to 'the other', makes one vulnerable, and yet also a dangerous person. Whilst is good to be open to possibilities, there is a need for a strong identity in order to survive in the disciplinary context of higher education.

The group discussed whether people start out as (e.g.) a lawyer type, or whether studying law reinforces what you already are. From the beginning of academic studies, learner identity is powerful. To be a geographer provides a sense of home; physical geographers re-organised into a faculty of social sciences can lose that sense of identity and belonging.

Disciplinary understandings are drawn on to make sense of the world. Within the context of the ever-increasing production of research, it can also be seen as a protective mechanism to avoid a sense of drowning in information. To define and refine a sub-discipline helps to make this even more manageable, and to retain a sense of expertise amongst many other competing viewpoints.

Over time, disciplines mutate, and proliferate from within, resulting from the ever-increasing accumulation of knowledge. The process of specialisation, fragmentation and recombining leads to the suggestion that it is in the hybrid zones that creativity is to be found; more innovations occur, lacunae and gaps are identified (Chettiparambil, 2006).

The nature of interdisiciplinarity

In attempting to get at the heart of what is entailed in interdisciplinary working, the related concepts of pluridisciplarity, multidisciplinarity, and transdisciplinarity were raised. For example, many environmental science courses do not follow a truly interdisciplinary approach, but instead provide a collection of disciplines throughout different modules and levels; however, it is recognised that interdisicplinarity is more than this; it is where the academic crosses the divide and creates a new knowledge. It involves true collaborative learning – bringing different perspectives from the culture of the 'home' discipline, and being open to perspectives from other disciplines. The communities of

disciplinary practice interact through boundary negotiation and communication (Wenger, 1998).

Transdisciplinarity is an expression of a unitary type of inquiry emerging, where disciplines are integrated to the point beyond demarcations, whereas interdisciplinarity comprises a dynamic of supplement, complement and critique. One demand during the US student protests of the 1960s was for a move within university education towards more holistic concepts that related more to real life than the disciplinary structures. Interdisciplinarity came to denote reform, innovation and progress. Metaphors of knowledge production moved from static logic of foundations and structures to dynamic conceptions of networks, webs, systems and fields (Chettiparambil, 2006).

Interdisciplinary working is said to foster deep, or third-order, learning - or, alternatively, critics have suggested that interdisciplinarity leads to a superficiality, dilettantism and blandness with its own bureaucratic machinery. Familiarity with the main principles, concepts, theories and debates of a discipline has been seen as the best way to produce graduates with the knowledge, skills and values that are needed by individuals, society and the economy. However, an OECD report (1982) noted that: 'communities have problems, universities have departments'.

The group discussed how the term interdisciplinarity is used to convey both a process and an outcome. The problems being addressed and the solutions arrived at can be interdisciplinary, but the process of exploring them is, by and large, still discipline-based. This raises the questions of whether interdisciplinarity needs to be explicit or implicit, and whether the entire curriculum needs to be interdisciplinary-based.

Approaches to teaching

There are some aspects of learning and teaching that foster interdisciplinarity, or indeed that cannot take place without an interdisciplinary approach. These include problem-based learning, fieldwork, IT (e.g. GIS, simulation, models), and collaborative work. One simple example is an exercise with first-year students to show the need for interdisciplinary perspectives. They are asked to write up global and national issues, such as climate change and globalisation on a board, and draw the links between them. It becomes obvious that these problems cannot be tackled in isolation – just like the interconnected disciplines.

Problem-based learning is a resource for interdisciplinarity working, as it can be taught in groups of, say, 12-15, which students generally have been used to in their sixth forms. During the swap-shop session at the Plymouth conference, PBL had been promoted as an approach for deep learning; it is a process in which the idea of the 'discipline expert' is dispensed with. The PBL literature says that the process should be as 'real' as possible, with the problem to be defined very broadly.

Interdisciplinarity needs to be lived from the beginning of a course and demonstrably valued. The fact that students come in with fixed ideas from the school curriculum provides a main stumbling blocks for learners in taking interdisciplinarity on board. They have already constructed a learner identity – a sense of personal and group belonging, status, tribe and territory. Students will be thinking of themselves as being of a particular discipline, and need to have the idea of interdisciplinarity explained from day one with total conviction – they don't know what to expect in their first year, so the opportunity needs to be seized then.

Most interdisciplinary courses are based on active learning strategies and promote higher-order critical thinking skills, of analysis, synthesis, application and evaluation. They include methods such as:

> "collaborative, cooperative learning, discovery and problem-based learning, writing and maths across the curriculum, and methods of assessment that are multi-dimensional, including qualitative and quantitative measures, normed measures, and self-assessments." [www.unm.edu/~castl/Castl_Docs/Packet1/Interdisciplinary%20Teaching%20]

Types of learning involved in interdisciplinary working are seen to be those that are: self-directed, creative, expressive, feeling, online, continual, reflexive. The OECD (1972) noted key aspects of interdisciplinarity to involve:

> Teaching relationship: facilitator
> Level 1: Guidance and personal development
> Level 2: Specialisation and vocational training
> Level 3: Introduction to research

It is both within the process and product of the curriculum, and from the very beginning (i.e. induction), that the nature, value and necessity of interdisciplinarity needs to be made, both implicitly and explicitly. The approach needs to be overt, covert and integrated in order to be successful. A field course is often the place for GEES students where this is made clear – i.e. a 'real world' situation.

Although there is a continuum of knowledge, within education the paradigm is that of discreet blocks of knowledge, skills and understandings. Students who have grown up with a disciplinary paradigm need to move from absolute to parallel truths and knowledge. They need to take on different views of 'the truth' and accept that different people in a discipline have different views; even within one department, it is unlikely that there will be a collective view. In terms of a passage through threshold concepts, the disciplinary structure can be perceived as in Boulding's General Systems Theory, through a 'hierarchical arrangement of complexity' enabling a building of knowledge – an epistemological hierarchy (see Box opposite).

Futures for interdisciplinarity

Several steps need to be taken before interdisciplinarity can become a reality within most higher education institutions. There are artificial boundaries that need to be removed in order to enable working across disciplinary borders. The structures in the institution, e.g. timetabling, modular curricula and facilities, are oten major stumbling blocks – affected also by the flows of money.

Lack of interdisciplinary working can be variously attributed to unwillingness, the fact that it involves stepping outside of individual comfort zones, or a lack of opportunity. Commitment to interdisciplinary working is not seen as a route to academic success. Instead, interdisciplinarity can be seen as a burden in teaching; it is no longer the enthusiast who collaborates, but rather the person that the department needs to do more teaching hours – rationalisation has taken its toll.

It is important to develop a collective vision amongst staff; there needs to be an opportunity for academics to experience the nature of interdisciplinarity, to enhance staff collegiality. This requires commitment, tolerance, understanding – perhaps not easy – and, of course, the resources (time and space) in order to allow this to happen.

Students need to be given the vocabulary, especially for interdisciplinarity related to employability. During the induction, in

Boulding's Systems Levels:

Frameworks: static structures, atoms, anatomy, etc.
Simple dynamic: clockworks, machines, both simple and complex.
Control or cybernetic: the thermostat. Transmitting, interpreting and acting on information to maintain a variable around a constant level.
Open: self-maintaining structure, e.g. the cell.
Genetic-societal: e.g. the plant, a 'cell society'.
Animal kingdom: mobility, teleological behaviour and self-awareness.
Human level: self-consciousness, self-reflexive.
Social organisation: set of roles and transmission of knowledge, symbols, emotions, etc.
Transcendental: ultimates, absolutes and inescapable unknowables.

Adapted from Chettiparambil, 2006

first, second and third years, the students need to be explicitly informed about how their endeavours to date have drawn on interdisciplinary perspectives. The links with developing the key skills for future careers can be made: communication, groupworking, etc. are all attributes that are fostered through working with other 'tribes' and perspectives.

Bringing together students from different disciplines to work together is instructive for most; for example, at Plymouth, a group of students from different departments have been looking at the problem of a disaster in the Plymouth Naval Dockyard. At Hertfordshire, there is twinning between certain courses, e.g. journalists and environmental scientists, however this is known to be logistically difficult, and so requires commitment from a team or individual.

The Experiential CETL at Plymouth will also be aiming to help different disciplines work together, for example, in joint field courses. This requires careful forward planning in order to be successful. Fieldwork is all about observing, recording and reflecting - skills which cross any disciplinary divide. In one example, academics from fine art, sociology and geography were all taken to the same area and asked what they would do in terms of fieldwork. Although they expressed it differently, their ideas indeed involved the same processes of observing, recording and reflecting. Such joint experiences provide opportunities for rich crossover. (See Harland (2006) on fieldwork for all disciplines.)

Even to ringfence just one day in the timetable for interdisciplinarity working would enable this cross-fertilisation and learning to happen to some extent. Case studies of successful interdisciplinarity working do indeed exist, with many examples from the US, and increasingly more within the UK.

Interdisciplinarity involves changes to the current political economy of knowledge production. The Dearing Report (1997) notes that different students will want different depth and breadth, but goes on to recommend:

> "we believe that introducing breadth more extensively would assist students to respond to the social, economic and cultural changes they will be facing throughout their lives by assisting them to think divergently and to integrate information and knowledge from a variety of sources."

It called for courses broad enough to "enable specialists to understand their specialism within its context." Richard Paul (1987) contends that interdisciplinary courses do produce strong critical thinking, i.e.:

> "distinguishing evidence from conclusions, relevant from irrelevant facts, and facts from ideals; assessing the validity of assumptions and arguments and recognising internal contradictions, implicit value judgements, unstated implications of arguments, and the power and appropriateness of rhetorical devices."

In other words, interdisciplinarity encourages 'multilogical' thinking – the ability to think accurately and fair-mindedly within opposing points of view and contradictory frames of reference. It is exactly these high level analytical skills that employers are often looking for rather than a discipline-specific expertise: Chettiparambil (2006) notes that 40% of jobs for graduates recently advertised in the UK are open to applicants from most if not all disciplines. In essence, interdisciplinarity is a state of mind:

> "an attitude that combines humility with open mindedness and curiosity, a willingness to engage in dialogue, and, hence, the capacity for assimilation and synthesis." (Emory University, Appendix C).

The group concluded: interdisciplinary working is not going to be easy, but it is definitely worthwhile.

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