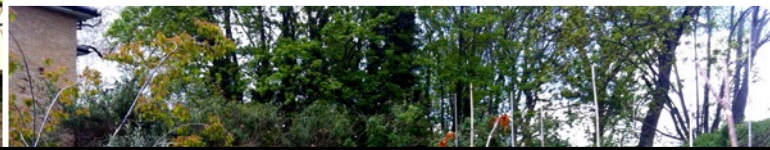




Universiteit Utrecht



M.Sc. Thesis- Collective Action in UK Urban Community Growing Projects: A Comparative Analysis



Name: Anna Butler
Email Address: A.R.H.Butler@students.uu.nl
Correspondence Address: 10 Palace Road, Brixton, SW2 3NG, London, UK
Student Number: 3733939
Masters Programme: Sustainable Development
Track: Environmental Governance
Institution: Utrecht University
ECTS to be obtained: 45EC
Supervisor: Dr. Frank van Laerhoven
2nd Reader: Dr. Walter Vermeulen
Date of Submission: 12th August 2013

Abstract

Instead of a tragedy of the commons occurring in which resources used in common are degraded over time as individuals act in their own self-interest, many scholars have shown that these common resources can be successfully managed through a process of collective action. This study examines the conditions required for sustainable collective action in urban community gardens, as a community garden is a resource used in common by local people. The research takes a comparative case study approach by investigating seven community gardens in the UK. The data collection method used was interviews and documentation analysis. The results of the research were compared to a conceptual model for successful collective action developed in light of the theoretical propositions put forward in the literature. This conceptual model was derived from the Institutional Analysis and Development (IAD) framework. The results of this research showed that five of the seven case studies can be classified as sustainable and durable collective action whilst two of the cases were analysed as unsuccessful. The picture across the case studies was highly complex, no one case study was completely in line with the theory as different variables were present in different cases. Some of the findings were largely in line with the theoretical propositions however in two of the case studies the conditions of appropriations rules, sanctions and monitoring were not sufficiently apparent; yet these cases still clearly demonstrated successful collective action contrary to the theory. The principle conclusions that can be drawn are as follows: not all the design principle conditions are required to be present for successful collective action to be achieved; common understanding, leadership, trust and knowledge are all important variables for successful collective action although size and homogeneity do not appear to be significant.

Acknowledgements

Firstly, I would like to thank all the participants from the community gardens that made this research possible. I wish to express particular thanks to the coordinators of each of the gardens who acted as my initial point of contact and were invaluable setting up interviews with other members of their group. All of their enthusiasm, kindness and generosity was duly noted. Every community garden welcomed me with open arms and for that I am truly indebted to each and every one I visited.

Secondly, I am extremely grateful for all the guidance, advice, encouragement and continued support showed by my supervisor Dr. Frank van Laerhoven. His exceptional level of knowledge in this subject area has been invaluable. He has been patient and accommodating throughout for which I am eternally thankful.

I wish to express my deepest gratitude to all my friends and family who have supported me throughout this process and for their persistent patience especially to family in the UK who have provided unparalleled encouragement and advice.

Lastly, I wish to acknowledge the centrality of the scholarly work of the late Elinor Ostrom in this research and her tireless endeavour to demonstrate the importance of community management for ensuring the continued sustainability of the earth's resources. Without her pioneering academic work this research would not have been possible.

Table of Contents

| | |
|--|-----------|
| Chapter 1: Introduction | 1 |
| 1.1 Tragedy of the Commons..... | 1 |
| 1.2 The Collective Action Problem and Free-riding..... | 1 |
| 1.3 Ostrom’s Law | 2 |
| 1.4 Aim | 3 |
| 1.5 Research Question | 3 |
| Chapter 2: Literature Review | 5 |
| 2.1 Community Gardens Research | 5 |
| 2.1.1 Social-Ecological Systems | 6 |
| 2.1.2 Benefits of Community Gardens | 6 |
| 2.2 Governance and Collective Action..... | 7 |
| 2.3 Institutions..... | 8 |
| 2.4 The Nature of Man in Collective Action | 9 |
| 2.5 Commons..... | 10 |
| 2.5.1 New Commons..... | 10 |
| 2.5.2 Neighbourhood Commons | 11 |
| 2.5.3 Urban Commons | 11 |
| 2.5.4 Urban Green Commons | 12 |
| 2.5.5 Justification for Community Gardens as Commons | 13 |
| 2.6 Community Gardens in the UK and UK policy | 14 |
| Chapter 3: Conceptual Framework | 17 |
| 3.1 IAD Framework..... | 17 |
| 3.2 Level of Analysis..... | 18 |
| 3.3 From the IAD Framework to the Conceptual Framework..... | 19 |
| 3.3.1 Independent Variables | 21 |
| 3.3.2 Dependent Variables..... | 25 |
| 3.3.3 Control Variables..... | 26 |
| 3.3.4 Conceptual Model (including all variables) and Hypothesis..... | 26 |
| Chapter 4: Methodology | 28 |
| 4.1 Approach | 28 |
| 4.2 Case Study Method..... | 29 |
| 4.2.1 Justification for a Case Study Approach | 29 |
| 4.2.2 Unit of Analysis | 30 |
| 4.3 Data Collection | 32 |
| 4.3.1 Interviews | 32 |
| 4.3.2 Documentation | 33 |
| 4.4 The Cases | 34 |
| 4.5 Operationalisation of Variables | 36 |
| 4.5.1 Operationalisation of Independent Variables | 36 |
| 4.5.2 Operationalisation of Dependent Variables..... | 38 |
| 4.5.3 Operationalisation of Control Variables..... | 39 |

| | |
|--|-----------|
| Chapter 5: Case Study 1 - Grow Heathrow | 40 |
| 5.1 Background | 40 |
| 5.2 Independent Variables..... | 40 |
| 5.2.1 Design Principles | 40 |
| 5.2.2 Attributes of the Community | 44 |
| 5.3 Dependent Variables..... | 46 |
| 5.4 Conclusions..... | 47 |
| Chapter 6: Case Study 2 - Brockwell Park Community Greenhouses | 49 |
| 6.1 Background | 49 |
| 6.2 Independent Variables..... | 49 |
| 6.2.1 Design Principles | 49 |
| 6.2.2 Attributes of the Community | 53 |
| 6.3 Dependent Variables..... | 54 |
| 6.4 Conclusions..... | 55 |
| Chapter 7: Case Study 3 - Abbey Gardens | 57 |
| 7.1 Background | 57 |
| 7.2 Independent Variables..... | 57 |
| 7.2.1 Design Principles | 57 |
| 7.2.2 Attributes of the Community | 60 |
| 7.3 Dependent Variables..... | 61 |
| 7.4 Conclusions..... | 61 |
| Chapter 8: Case Study 4 - Culpeper Community Garden..... | 63 |
| 8.1 Background | 63 |
| 8.2 Independent Variables..... | 63 |
| 8.2.1 Design Principles | 63 |
| 8.2.2 Attributes of the Community | 66 |
| 8.3 Dependent Variables..... | 67 |
| 8.4 Conclusions..... | 68 |
| Chapter 9: Case Study 5 - King Henry’s Walk Garden | 70 |
| 9.1 Background | 70 |
| 9.2 Independent Variables..... | 70 |
| 9.2.1 Design Principles | 70 |
| 9.2.2 Attributes of the Community | 72 |
| 9.3 Dependent Variables..... | 74 |
| 9.4 Conclusions..... | 74 |
| Chapter 10: Case Study 6 - Easton Community Allotment | 76 |
| 10.1 Background | 76 |
| 10.2 Independent Variables..... | 76 |
| 10.2.1 Design Principles | 76 |
| 10.2.2 Attributes of the Community | 77 |
| 10.3 Dependent Variables | 78 |
| 10.4 Conclusions..... | 79 |
| Chapter 11: Case Study 7 - Hillside Harvest..... | 81 |
| 11.1 Background | 81 |

| | |
|--|------------|
| 11.2 Independent Variables | 81 |
| 11.2.1 Design Principles | 81 |
| 11.2.2 Attributes of the Community | 83 |
| 11.3 Dependent Variables | 84 |
| 11.4 Conclusions | 85 |
| Chapter 12: Comparative Analysis | 87 |
| 12.1 Overview of Comparison | 87 |
| 12.2 Design Principles Analysis | 91 |
| 12.2.1 Clearly Defined Boundaries | 91 |
| 12.2.2 Appropriation Rules, Monitoring and Graduated Sanctions | 93 |
| 12.2.3 Collective-Choice Rules | 94 |
| 12.2.4 Access to Low Cost Conflict Resolution Mechanisms | 95 |
| 12.2.5 Minimal Recognition of Rights to Organise | 95 |
| 12.3 Attributes of the Community | 95 |
| 12.3.1 Trust | 95 |
| 12.3.2 Reciprocity | 96 |
| 12.3.3 Size and Heterogeneity | 97 |
| 12.3.4 Common Understanding | 97 |
| 12.3.5 Leadership and Knowledge..... | 97 |
| 12.4 Dependent Variables | 98 |
| Chapter 13: Discussion | 100 |
| 13.1 Conditions for Successful Collective Action | 100 |
| 13.1.1 Reflections on the Hypothesis..... | 100 |
| 13.2 Context and Complexity | 101 |
| 13.3 The Tragedy of the Commons | 102 |
| 13.4 Limitations | 102 |
| Chapter 14: Conclusion | 105 |
| 14.1 Overall Conclusions | 105 |
| 14.2 Theoretical Contributions | 106 |
| 14.3 Further Research | 106 |
| References | 108 |
| APPENDICES | 116 |
| Appendix 1: Example Questions | 117 |
| Appendix 2: Data Sources Per Case Study | 119 |
| Appendix 3: Data Analysis | 121 |

List of Figures

| | |
|---|----|
| Figure 1: The position of community gardens within new commons..... | 13 |
| Figure 2: Theories, frameworks and systems | 17 |
| Figure 3: The IAD framework | 18 |
| Figure 4: Multiple levels of analysis | 19 |
| Figure 5: Conceptual framework | 21 |
| Figure 6: Conceptual model | 27 |
| Figure 7: Types of design for case studies | 31 |
| Figure 8: Location of case studies | 36 |

List of Tables

| | |
|---|-----|
| Table 1: Operationalisation of independent variables | 37 |
| Table 2: Operationalisation of dependent variables | 39 |
| Table 3: Operationalisation of control variables | 39 |
| Table 4: Summary of case study 1 | 48 |
| Table 5: Summary of case study 2 | 56 |
| Table 6: Summary of case study 3 | 62 |
| Table 7: Summary of case study 4 | 69 |
| Table 8: Summary of case study 5 | 75 |
| Table 9: Summary of case study 6 | 80 |
| Table 10: Summary of case study 7 | 86 |
| Table 11: Comparative analysis | 90 |
| Table 12: Design principle comparison | 91 |
| Table 13: Attributes of the community and the research hypothesis | 101 |

List of Abbreviations

| | |
|-------|--|
| AGM | Annual General Meeting |
| CA | Collective Action |
| CPR | Common Pool Resource |
| DCLG | Department for Communities and Local Government |
| DEFRA | Department for Environment, Food and Rural Affairs |
| EGM | Emergency General Meeting |
| EU | Embedded Unit of Analysis |
| IAD | Institutional Analysis and Development (IAD) framework |
| SES | Socio-Ecological System |

Chapter 1: Introduction

1.1 Tragedy of the Commons

Hardin (1968) famously predicted the tragedy of the commons in which he warned of the depletion of open-access natural resources in situations where it is difficult to exclude potential users, as there is a lack of incentive to conserve or sustainably use the resource. He used the analogy of rational herders in a situation where the grazing pasture was open to all. Each herder directly benefits from his own animals and therefore is motivated to add more and more animals to graze on the land to gain the additional benefit of having more healthy livestock. As the number of users is limitless, this then leads to overgrazing and thus the degradation of the resource, hence a tragedy of the commons. This tragedy can be seen as a symbol of the degradation of the environment that can be expected whenever numerous individuals are using a scarce resource in common (Ostrom, 1990).

Community gardens are the focus of this research and Foster (2011) expresses how collectively shared urban resources suffer from the same rivalry and free-riding problems that Hardin (1968) described. In short, community gardens are subject to Hardin's (1968) tragedy of the commons as community gardens can be seen as a Common Pool Resource (CPR) in that the resource is rivalrous and non-excludable. A community garden can be classified as a CPR as it is a rivalrous situation, as for example, if one person damages the land used for growing by the irresponsible use of pesticides which reduces the soil quality, this will affect the ability of others to use the land for growing. Furthermore, if the produce is cultivated all together and one person takes all the produce this gives rise to a rivalrous situation. The community garden is also non-excludable as it is often open to all members of the community. Community gardens are collective self-organised systems in which the community has an interest. This gives a brief indication of why community gardens can be classified as CPRs however this point will be investigated in much greater detail in the subsequent sections.

1.2 The Collective Action Problem and Free-riding

In order for a community garden to abate a tragedy of the commons and to ensure its effective functioning, a system of collective action is required. Therefore, achieving universal collective action is vital. However this is a far from simple process.

There is an inherent link between the concept of the tragedy of the commons and the problem of collective action as effective collective action is an instrument for mitigating the perils of a tragedy of the commons. The problem of collective action was proposed in Olson's (1965) *Logic of Collective Action*. It has long been disputed whether collective action is an inherent trait of human nature with Olson (1965) challenging the idea that groups of people

will undertake collective action when members jointly benefit, leading to the zero contribution thesis. Olson (1965) argues that if an individual cannot be excluded from receiving the benefits of a collective good there is little incentive to contribute to the provision of that good (Cited in Ostrom, 1990). However, Olson's (1965) proposal has since been questioned by many, most notably by Ostrom (2000) who, with others has shown that collective action is possible. As this is a highly debated issue it is therefore essential to investigate under what conditions collective action will develop. This is the aim of this research. Ostrom (1990) warns of the danger of models such as the logic of collective action and the tragedy of the commons as they can and have been used as a foundation for policy.

If collective action can indeed occur then this raises another concern, the problem of free-riding. Free-riding undermines the willingness of others to participate thus affecting the functioning of collective action. If there are no constraints in the system of governance then the level of free-riding will increase (Bergstrom, 2010). 'Whenever one person cannot be excluded from the benefits of what others provide, each person is motivated not to contribute to the joint effort but to free-ride on the efforts of others' (Ostrom, 1990, p.6). In light of the free-riding problem, collective action, involving a group of individuals working to further their common interests is unlikely to occur. Furthermore, field-research confirms that the temptation to become a free-rider when collective benefits are available is a universal problem (Ostrom, 2000). However Ostrom (2000, 1990) has demonstrated that this problem can be overcome. This issue leads to the need for institutions to be in place (which in this instance refers to a clear system of community governance) as they decrease free-riding, uncertainty and lower transaction costs (Bergstrom, 2010). Ostrom's work, through a multitude of empirical research, shows that many social groups have successfully struggled against threats of resource degradation by developing and maintaining self-governing institutions (Foster, 2011).

1.3 Ostrom's Law

Ostrom's law as cited in Berge and van Laerhoven (2011, p.179) states that:

A resource arrangement that works in practice can work in theory, to the phenomenon of complexity. As long as we see that communities sometimes are successful in designing sustainable systems governing complex resources in a complex setting we should accept that there must be a theory that can explain how it is done.

This statement can be seen as the driving force behind the research as the aim of the research is to understand the theory behind what is happening in practice through the use of empirical examples. The research aims to investigate the theory of collective action and CPR and to see if that theory is

congruent with the practices evident in the real world. In relation to community gardens the practice involves: how the garden is managed and by whom? How it is appropriated and what are the characteristics of the members of the community?

1.4 Aim

The aim of this research is to gain insight into the conditions that are needed for successful collective action in community gardens in an urban context. This will be achieved through an explanatory approach by testing the theory of collective action against empirical cases in order to establish whether they are indeed consistent. The focus of the research is on self-organising regimes and in line with the previous research undertaken by Ostrom (1990) to gain insight into how groups of individuals who are in an interdependent situation can organise and govern themselves to achieve joint benefits. The researcher aims to address questions such as how can collective action be achieved and sustained in community gardens and why collective action has been able to flourish in light of free-rider and other problems?

The aim of this analysis is not to dictate a strict and prescriptive list of conditions and measures that must always be put in place for collective action in community gardens to be successfully achieved; the research wishes to investigate conditions for the effective governance of this resource. At this point a word of caution must be given in that the success or failure of collective action is often highly dependent on context and thus this research will not provide universal principles. In addition, the use of a case study approach means that the research will, to an extent, be exploratory as the research will be unable to produce strong evidence for hypothesis testing. Instead the research, although based on hypothesis testing, strives for increasing the level of understanding and knowledge on the phenomenon of collective action.

Another aim of the research is to address the imbalance in the field of collective action research. Foster (2011) states that in the field of urban resources collective action has been under researched and this research aims at least in part to readdress the balance. The research also hopes to go beyond contributing only to the community garden literature but also to add additional weight to the field of collective action and CPR research.

1.5 Research Question

Based on the aim of the research the research question derived is as follows:

What are the conditions necessary for successful collective action in urban community gardens based on evidence from a number of empirical examples in the UK?

In order to address the research question a number of sub-questions need to

be investigated and these are:

- *Based on the literature how can community gardens be categorised as a Common Pool Resource?*
- *Based on the literature what are the theoretical conditions necessary for achieving successful collective action?*
- *How can successful collective action be assessed?*
- *To what extent can the case studies be classified as successful examples of sustainable and durable collective action?*
- *To what extent does the empirical evidence from the community gardens reinforce or counter the theoretical propositions put forward in terms of the conditions necessary for successful collective action?*

Chapter 2: Literature Review

2.1 Community Gardens Research

Before concepts of governance, collective action and CPRs are explored in detail it is first necessary to provide a brief background on community gardens and the academic literature that has been published to date.

A community garden is defined as a plot of land used for growing food by a group of people, typically urban dwellers (Okvat & Zautra, 2011). Community gardens are bottom-up community based collaborative efforts to grow food which are tended to as a whole by a group of citizen volunteers (Okvat & Zautra, 2011, p. 374). Furthermore, Guitart et al., (2012, p. 364) define community gardens as 'open spaces which are managed and operated by members of the local community in which food or flowers are cultivated'.

Community gardens are growing in popularity and with this there has also been an increase in the number of relevant studies (Guitart et al., 2012). Today more than half the world's population live in cities (UNFPA, 2007) and this is putting increased pressure on the agricultural system. Urban ecosystems are important as they provide essential ecosystem services (Mincey et al., 2013). Research into urban agriculture helps to facilitate debate on how to achieve and develop sustainable cities. Guitart et al., (2012) believe the rise in the popularity of community gardens can be explained by the growing concerns regarding the quality and cost of food and to issues surrounding food insecurity. The advent of urbanisation has led to a trend towards people seeking to gain 'green experiences' (Kaplan, 1978 cited in Okvat & Zautra, 2011) with the natural environment. This is the deeply rooted concept in Western philosophy that contact with nature leads to greater psychological well-being (Parry-Jones, 1990 cited in Okvat & Zautra, 2011). Community gardens also have a multitude of benefits such as providing social development or cohesion, enhanced health, access to fresh foods, saving or making money and promoting education (Guitart et al., 2012). The majority of the research carried out on community gardens is based on cases in US cities (Glover, 2004; Alaimo et al., 2010; Armstrong, 2000; Carney et al., 2012; Colding & Barthel, 2013) and the focus is on assessing characteristics of the gardens such as the crops grown, groups involved, and land tenure (Guitart et al., 2012).

Community gardens are not a new concept; New York City has a long history of Green Guerrilla gardens which started in the 1970s. The term Green Guerrilla garden refers to inhabitants squatting vacant land awaiting construction and putting it into productive use (Colding & Barthel, 2013). Moreover, historically, community gardens have come to fruition in response to a crisis for example again in New York City during the Great Depression and during the Second World War 'Victory Gardens' sprung up as a response

to food shortages in the UK (Okvat & Zautra, 2011). An often-cited successful example of community gardens that came too proliferation due to a crisis is Cuba's urban agricultural system that was developed after the country in effect experienced Peak Oil in light of US oil embargos (Altieri et al., 1999). This example is seen by some as an indication of a more sustainable future in which urban agriculture has a central position in society thus addressing future food security concerns.

2.1.1 Social-Ecological Systems

Much of the work undertaken on community gardens has been done so in relation to Social-Ecological Systems (SESs) research (Barthel & Isendahl, 2013; Colding & Barthel, 2013; Barthel et al., 2010). SESs comprise of biophysical elements and social elements. SESs are complex, unpredictable, non-linear, cross-scalar, and evolutionary involving subsystems within the larger system (Ostrom, 2007^a). SES sustainability, the ultimate goal of community gardens, encompasses both ecological resilience and engineered robustness (Mincey et al., 2013). Adaptive management is required in a SESs. Ostrom (2007^a) states how SESs call for a halt to simple solutions to complex problems. As systems are complex there are multiple variables affecting the outcome and this increases the difficulty of studying subjects such as community gardens due to the number of variables that need to be analysed.

Urban ecosystems have been studied through the joint lens of both the biophysical and social systems, including human institutions and interactions (Mincey et al., 2013). This is within the context of the larger SES. Mincey et al., (2013) go on to express how frameworks for analysing human institutions have been widely applied to many rural SES settings but that less research has been conducted on formalising institutional dimensions for the study of social-ecological dynamics in urban systems.

The connection to research on commons and collective action is that SESs are the broad, overarching system in which the study of community gardens and collective action fits (Ostrom, 2011), it is therefore a meta concept.

2.1.2 Benefits of Community Gardens

It is now necessary to explore why community gardens are important and expand on what has been found about the benefits of community gardens which is one of the largest research areas on this subject. The benefits are wide ranging. Carney et al., (2012) found the benefits to be: physical, mental, economic and social. Carney et al.,'s (2012) research on community gardens found that food insecurity reduced from thirty three per cent before the respondents had access to community gardens to three per cent after. Dietary intake also improved (there was a four-fold increase in vegetable intake amongst adults in the programme) and the community garden strengthens family ties as a sense of togetherness was established (Carney et al., 2012).

In relation to SESs this area of research draws the connection between the environmental benefits and the importance of social capital in community gardens. The importance of social capital was confirmed in the studies by Alaimo et al., (2010) and Glover (2004), with Alaimo et al., (2010) showing that community gardens increase norms of reciprocity, sense of community and shared obligation. Social capital is defined as 'a collective asset that grants members social "credits" that can be used as capital to facilitate purposive actions' (Glover, 2004, p. 145) with community gardens being a symbol of collective achievement within the neighbourhood.

Community gardens are seen as a locus of resilience, an important concept within SES research (Barthel et al., 2010; King, 2008). This resilience is created through enhancing space for communication, information sharing and producing co-learning (King, 2008). Ecological resilience is achieved through increased self-sufficiency (King, 2008). Colding and Barthel (2013) cite a multitude of reasons why community gardens are important and among these are that they contribute to place making (also cited by Andersson et al., 2007), community empowerment and development. Additional benefits are that as people interact when they garden, social integration occurs, increased health is obtained and the value of properties rises. Moreover, community gardens provide important ecosystem services such as pollination and pest regulation (Andersson et al., 2007; Barthel et al., 2010). In an investigation into the social-ecological memory found in urban gardens Barthel et al., (2010) concluded that this social-ecological memory can be seen as a source of resilience for the community with ecological knowledge being transferred within the community. The characteristic of resilience through socio-ecological memory demonstrates the importance of community gardens and indicates that they are able to act as a counter force to the recent decline in ecosystem services (Barthel et al., 2010). In short, the overall conclusion of Barthel et al.,'s (2010) research was that, based on allotment gardens in Stockholm, they act as communities-of-practice and social-ecological memory is a shared source of resilience.

Further benefits which were assessed by Okvat and Zautra, (2011) and based on empirical studies are: cognitive benefits, social network benefits, crime reduction, multiculturalism, nutrition, economic benefits and climate change mitigation (Okvat & Zautra, 2011).

The health benefits are direct in relation to vegetable intake (Carney et al., 2012; Armstrong, 2000) and the physical exercise of gardening. As well as contributing to one's mental health through improving psychological well-being (Armstrong, 2000) which in term can be linked to social capital (Alaimo et al., 2010).

2.2 Governance and Collective Action

In order for these community gardens to be successful and so that they are

able to provide all of the significant benefits described above collective action is necessary. Collective action is a form of governance. Governance is a multifaceted concept and has several meanings depending on the context (Arnouts, 2010) however in this context governance refers to:

‘the totality of interactions, in which public as well as private actors participate, aimed at solving societal problems or creating societal opportunities; attending to the institutions as contexts for these governing interactions; and establishing a normative foundation for all those activities’ (Kooiman, 2003, p. 4).

Tang (1992, cited in Ostrom, 2000) showed the importance of self-governance in the effective management of natural resources such as in the case of community gardens. Ostrom (1999^a) found that if users of a resource devise and enforce their own rules the management of the resource turns out to be more sustainable. A self-governing system has a number of principle advantages including: local knowledge, trustworthy participants, reliance on disaggregated knowledge, better adapted rules/efficient monitoring and lower enforcement costs (Ostrom, 1999^a). All of these would be highly useful to a management system of a community garden. Furthermore, when local communities engage in building their own institutional arrangements social capital is increased (Ostrom, 1990); the importance of social capital was highlighted above in relation to social-ecological memory. It must also be noted there are several limitations associated with self-governance a primary one being conflict (Ostrom, 1999^a). Moreover, ‘the problem of collective action is perhaps the central theme of Ostrom’s work’ (Berge & van Laerhoven, 2011, p.178) which this study aims to contribute to. Collective action specifically refers to an activity when accomplishment requires more than one person’s efforts and aims to further the joint interests of all participants (Ho & Gao, 2013). Collective action involves a group of people with shared interest undertaking common action in pursuit of that shared interest (Meinzen-Dick et al., 2004). The action should be voluntary and can lead to the development of institutions, resource mobilisation, coordination activities and information sharing (Meinzen-Dick et al., 2004).

2.3 Institutions

Institutions can be taken as forms of governance. Institutions are a central notion within research on collective action and CPRs. Institutions can be seen as a framework for understanding the actions and behaviour of individuals within a collective action arrangement. Furthermore, collective action can lead to the creation of institutions. As expressed above, in self-governing regimes such as in community gardens, local communities build their own institutional arrangements. It is important to investigate institutions as they lower transaction costs, decrease free-riding and lessen uncertainty (Bergstrom, 2010).

The definition of an institution can be very varied rendering it to be seen as invisible (Ostrom, 2007^b). Institutions in this context are defined as rules (shared prescriptions), norms and strategies (Ostrom, 2007^b). These rules can be both formal and informal. Institutions can be a set of working rules used to determine who is eligible to make decisions, what actions are allowed, what aggregation rules will be used, what procedure must be followed, what information must be provided and what payoffs will be assigned to individuals dependent on the actions (Ostrom, 1990, p. 51).

Collective action has multiple meanings and has been described as taking various forms (Meinzen-Dick et al., 2004). In the context of this research it is defined as the development of institutions and the coordination of activities on a communal basis.

The Institutional Analysis and Development (IAD) framework, the framework that is used in this analysis and that will be explained in due course, defines institutions as 'enduring regularities of human action in situations structured by rules, norms, and shared strategies, as well as by the physical world. The rules, norms, and shared strategies are constituted and reconstituted by human interaction in frequently occurring or repetitive situations' (Crawford & Ostrom 1995, p. 582 cited in Imperial, 1999). Institutions are so central to the study of collective action as they provide a means of preventing a tragedy of the commons and of resolving the collective action problem. The IAD framework dictates the steps necessary for undertaking an institutional analysis.

In relation to the notion of institutional analysis Mincey et al., (2013) provide support for the type of research in this analysis. Mincey et al., (2013) state that formal structures for institutional analysis have not yet been fully developed in urban ecosystem studies and that an exciting prospect is to take the insight gained from rural IAD and SES research and adopt it to studying urban systems.

2.4 The Nature of Man in Collective Action

In collective action situations the strategy of individuals is dependent on the perceived costs and benefits of different actions and their associated outcomes. The perceived costs and benefits involve the amount of time and resources that must be put into establishing and maintaining relationships and the values individuals attach to these relationships (Ostrom, 2011). However, some individuals are fallible learners when it comes to calculating the costs and benefits and whether they are or not is dependent on the number of other persons whose perceived benefits and costs they see as important and in terms of their personal commitment and attitude to honouring reciprocity given to them (Ostrom, 2011). The situation which this research is trying to address involves a social dilemma which is characterised by uncertainty and complexity; this means that it is necessary to replace the concept of utility

maximisation and perfect information with bounded rationality. This is because individuals often make choices based on incomplete knowledge (Ostrom, 2011). However through time they are able to acquire a greater understanding of their situation and therefore adopt strategies with higher returns (Ostrom, 2011). A pivotal argument within Ostrom's (2005) research is that humans do not always act as rational egoists but that they are bounded rational, in that they are able to follow norms and rules and hold a degree of flexibility which enables them to adapt to collectively organised institutional arrangements (Ostrom, 2005).

2.5 Commons

The notion of a Common Pool Resource (CPR) is seen as key to understanding the conditions necessary for resources to be managed in a sustainable manner (Ostrom, 1990). There is much debate surrounding what constitutes the 'commons'. CPRs are natural or human-made resources where one person's use subtracts from another's use and where it is often necessary, but difficult and costly, to exclude other users outside the group from using the resource (Ostrom, 1990). Within CPR research it is necessary to distinguish between the resource system and the flow of resource units (Ostrom, 1990). Appropriation entails withdrawing resource units from a resource system and an appropriator undertakes this. The resource system is subject to joint use and not the resource unit hence it is a subtractable good (Ostrom, 1990). The subtractability of the resource is what distinguishes a CPR from a collective good. Access to the resource can be limited to a single individual or firm or to multiple individuals or teams of individuals (Ostrom, 1990, p.30). Organising the appropriators to undertake collective action of a CPR is usually uncertain and complex which can be related to the notion of SESs and their high level of complexity.

Berge and van Laerhoven (2011, p.161) define a commons by use of a very broad definition which states that a commons is 'any natural or manmade resource that is or could be held and used in common.' Traditional CPR research has been undertaken on rural communities involved in natural resource management in the developing world (Rabinowitz, 2012). Principle areas of research have been fisheries, forests, grazing systems, wildlife, water resources, irrigation systems, agriculture, land tenure and use, social organisation, theory and global commons (Ostrom, 1990; Poteete & Ostrom, 2004^a; Agrawal et al., 2013; Stern, 2011). Although the research that will be conducted on community gardens provides a very different context, parallels can still be drawn and justification for categorising community gardens as a CPR can be found in the developing notion of 'new commons'.

2.5.1 New Commons

The different categorisations of a commons that have been developed depict the research areas being undertaken in CPR research. Hess (2008) conducted a very extensive analysis of the meaning of a commons and

subsequently devised the concept of new commons. However defining this new term is problematic due to the 'limitless diversity' of the concept (Hess, 2008, p.3) such as the revolutionary movement in Mexico, to the second enclosure movement to smartmobs and online peer production. Hess (2008) goes on to state that other new types of commons are publicly shared resources that have been reconceptualised as commons and this field covers urban gardens. Hess (2008) defines the new commons as 'shared resources without pre-existing rules or clear institutional arrangements' (Hess 2008, p.1) and proposes a broad definition of a commons as 'resources shared by a group where the resource is vulnerable to enclosure, overuse, and social dilemmas' (Hess 2008, p.37). The subdivisions of new commons put forward by Hess (2008) are: cultural commons, knowledge commons, medical and health commons, neighbourhood commons, infrastructure commons, global commons and markets as commons. Moreover van Laerhoven and Ostrom (2007) demonstrate, through their literature review of commons research, that there is a growing body of publications on the new commons.

2.5.2 Neighbourhood Commons

Hess (2008) defines neighbourhood commons as both urban and rural commons where members of the local community come together to strengthen, manage, preserve, or protect a local resource, as in the case of community gardens. Recent research on neighbourhood commons has investigated the rise of dog parks in the US (Matisoff & Noonan, 2012). This research applied the lessons learnt from the CPR literature to dog parks. Community gardens fit into the neighbourhood model of commons due to the shared nature of the resource, the way the resource is managed, the potential of physical degradation and the difficulties associated with maintaining the resource's (the community garden) conditions (Matisoff & Noonan, 2012).

2.5.3 Urban Commons

At a sublevel below neighbourhood commons, Foster (2011) investigates the notion of urban commons and states how urban residents share access to both tangible and intangible resources in which they have a common stake thus equating to a commons. Foster (2011) goes on to explain that urban commons can be seen as traditional public goods as they are non-rivalrous and non-excludable. However they become rivalrous and thus a CPR when regulatory slippage occurs for example when a park becomes overused and users do not abide by the rules of the park, specifically if a dog walker and dog enters a children's play area. However in relation to community gardens, the subject of this research, although they are an urban common they are rivalrous as if one person for example takes all the food that the community is growing or decides that they want to have their own patch of land others will not be able to use that land to grow food or consume that crop and therefore a rivalrous situation has arisen.

Foster (2011) takes urban commons examples to demonstrate how small homogenous groups cooperatively and sustainably manage an urban resource in the absence of strong government. Foster (2011) draws on the example of community gardens and explains how groups of local residents come together to clear vacant plots of land and put the area to productive use through cultivation. He describes how local residents collectively manage and maintain these small areas and how consequently social capital and norms are generated which enables residents to work together cooperatively (Foster, 2011).

Rabinowitz (2012) has undertaken further research on urban commons. He puts forward the idea of a new sub-set of CPRs known as Residual Residential Space; this concept denotes shared space in residential complexes (Rabinowitz, 2012). Ho and Gao's (2013) work on residential apartment blocks as a form of man-made resources has complemented Rabinowitz's (2012) research.

2.5.4 Urban Green Commons

Colding and Barthel (2013) state that the frequently used notion of the commons as public and 'non-excludable' can be misleading and thus neglects literature in resource management under common property systems in which rights to the resources are vested in the local community. In light of this notion they concluded that urban green commons, which are the focus of this research as community gardens belong to that clustering of commons (See figure 1), cannot be equated to open public places, instead urban green commons are defined as:

'physical green spaces in urban settings of diverse land ownership that depend on collective organisation and management and to which individuals and interest groups participating in management hold a rich set of bundles of rights, including rights to craft their own institutions and to decide whom they want to include in such management schemes' (Colding & Barthel, 2013, p.159).

Such a criteria will be used in this analysis however this does not imply that the community gardens cannot sometimes be open public places but this is not exclusively the case. Furthermore, Colding and Barthel (2013) express that a central feature of urban green commons is not land ownership but that importance is placed on the practical management of the land. Community gardening is seen as an urban green common as it involves the collective management of green spaces and success depends on a collaborative effort. Having said that, a great deal of research has been undertaken on public-access community gardens (Brendt et al., 2013) which Colding and Barthel (2013, p.159) cite as a 'particularly interesting form of collective management'. The research on public-access community gardens aims to investigate case

studies in which public green spaces are collectively managed by civil society groups and where the space is available to all (Brendt et al., 2013).

Linn (2008) devoted his entire life's work to researching community spaces and in his autobiographical account of the experiences of building urban commons documented through photographs, he describes commons in the sense of community gardens as gathering spaces that people have personalised to meet the needs of their community. Furthermore, he cites community gardens as neighbourhood commons.

To summarise the different notions of a commons, a graphic representation of new commons and its sub-sets has been developed (Figure 1). In short, a community garden is a microcosm example of a system of self-governance that aims to achieve the sustainable management of their resource.

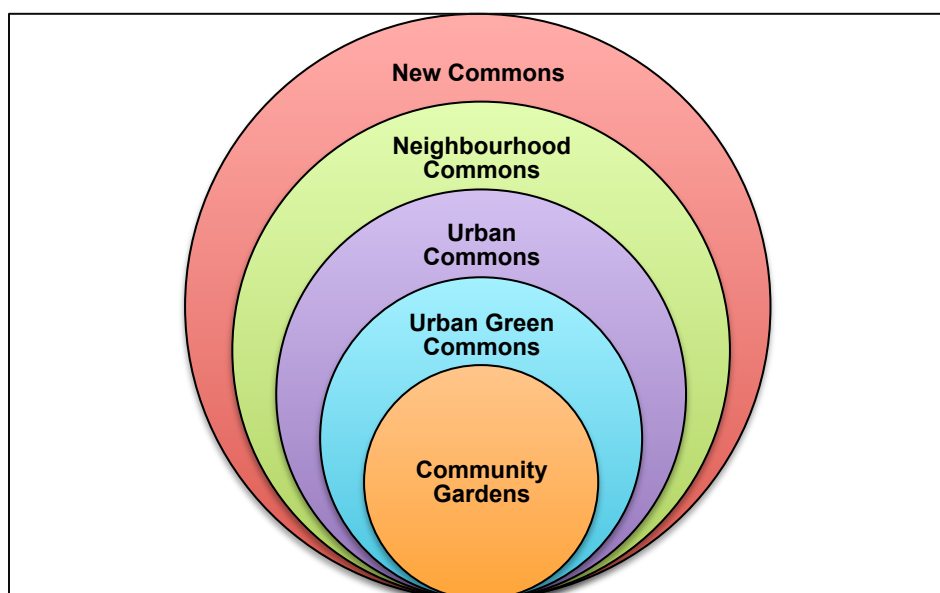


Figure 1: The position of community gardens within new commons

2.5.5 Justification for Community Gardens as Commons

It is necessary to explicitly state the reason why community gardens and urban community agriculture can be seen as a commons and therefore is able to be studied from the perspective of CPR literature.

When undertaking research on CPR a number of key terms expressed in the classical commons literature need to be defined and this process will aid the establishment of community gardens as a CPR. The resource system, a stock variable (Ostrom, 1990) in this instance, refers to the ground and the soil available for growing produce. The resource unit is what individuals appropriate or take from the resource system (Ostrom, 1990). In the case of this research the resource unit refers to the food received by each individual in Kilograms and the related growing space that it took to produce that food. The appropriators are the individuals who receive food from the community

garden as they are withdrawing resource units. The producers are defined as anyone who is involved in construction, repairs or an action to ensure the long-term survival of the resource (Ostrom, 1990). This therefore accounts for anyone who participates in the upkeep and maintenance of the community garden. The providers arrange for the provision of the resource (Ostrom, 1990) and are therefore usually, although not exclusively, the local government as they often own the land.

Community gardens comprise of a rivalrous situation because, as stated above, the use of the resource, which in this case refers to the land, the soil and the ability to produce food from the land if not undertaken properly and in a cooperative fashion by one user will be at the detriment to other uses of the resource. For example if one person decides to use pesticides this will affect the quality of the soil for everyone. The consequence of this would be that the resource becomes rivalrous. The situation is subtractable as if one person takes some of the produce that has been jointly cultivated others are not able to have that food but if all the food is jointly cooked and eaten by everyone then it is a collective good. Furthermore, if one person uses the collective land to grow and harvest their own food making it unavailable to others then this is a subtractable situation. Subtractability also implies the possibility of reaching a limit as to the number of resource units supplied by the CPR e.g. the ground available to grow food on or the amount of food the area of the community garden can produce.

Moreover, community gardens and urban community agricultural projects are often open to all and any member of the local community is able to participate. This is an example of open access in terms of participation and therefore the resource is non-excludable, a defining characteristic of a CPR. Community gardens are most likely to be accessible by multiple individuals based on Ostrom's (1990) categorisation.

Furthermore, all of the above cited literature demonstrates the argument for community gardens as CPRs. Stand-out reasons for this categorisation are that: community gardens are collectively organised and managed (Colding & Barthel, 2013) thus requiring a system of self-governance and users have a common stake (Foster, 2011) in the resource. The practical management of the resource is what is significant and community garden management clearly fits into what Colding and Barthel, (2013) describe as resource management under common property systems in which rights to the resources are vested in the local community.

2.6 Community Gardens in the UK and UK policy

Allotments (referring predominantly although not exclusively to small growing plots managed on an individual basis but that can also be collectively managed and is thus referred to as a community allotment or garden) have had a long and protracted history in the UK. Citizens of UK cities have

cultivated their land to produce food for thousands of years. At times in the UK's history, the food produced from allotments accounted for a significant percentage of the cities' intake of fresh fruit and vegetables. Allotments are thus seen as an urban institution of UK towns and cities (Garnett, 1996). The 'Dig for Victory' policy in the UK during the Second World War was an attributing factor to the country's success during the war. The UK has passed a number of Acts regarding allotments such as the Allotment Acts of 1887 and 1908 (Harrison, 2013). These pieces of legislation state that the parish or local authority is obligated to provide allotments to anyone who wished to participate in the activity within their parish boundaries.

In the UK the vast majority of community gardens are owned by the local council and leased to community groups on either a statutory (freehold or long lease) or temporary basis (Harrison, 2013). Statutory agreements have significant permanency as the Allotment Act of 1925 means that local authorities have to seek permission from the Secretary of State before the use of the land can change (Harrison, 2013). With regard to whether the site is completely open access at any time or open access during specific time periods this is dependent on the lease arrangements.

In recent years, after the number of community gardens (used in the UK interchangeably with the term community allotment) had been steadily decreasing over the last decades of the twentieth century, they have experienced somewhat of an urban renaissance. Growing your own food is now very much in vogue in the UK and that is reflected in current UK policy developments. A key catalyst behind the renaissance of the community allotment and interest in growing your own food can be put down to the document 'Growing Food in Cities' which was published in 1996 by Garnett. The report highlighted the benefits of 'grow your own' and the driving force behind the report is cited to the Rio 1992 Earth Summit where for the first time sustainability was put on the international agenda. The publication set out recommendations to UK government that policy makers should integrate into their work the promotion and support of urban food growing in the UK, as well as a call for funding, support, promotion and land to increase urban agriculture in the UK (Garnett, 1996).

Currently there are over 300,000 allotments in the UK (Harris, 2013) although only a very small percentage of this total number are community gardens. There is no accurate figure for the number of community gardens in the UK but the Federation of City Farms and Community Gardens (2013^a) has registered over 1000 community gardens.

Although there is a growing interest in allotments and increased demand, recently allotments have come under pressure. The selling-off of allotment land by local authorities for redevelopment is becoming increasingly common. This can be put down to the economic crisis and shrinking local authority

budgets (Harris, 2013). The selling-off of allotment land requires permission from central government due to the Allotment Act however this permission is increasingly being granted (Harris, 2013). Other councils have chosen not to sell the allotments but to charge massively inflated rents as a solution to their strained economic situation (Harris, 2013). All this of course is having a profound affect on allotments in the UK.

Alongside this recent negative development there is a proliferation of policies, initiatives and funding sources which have been put in place to increase urban agriculture in the UK. Since the turn of the century a number of measures have been introduced to stimulate and realise this 'grow your own' philosophy. To name but a few such initiatives: the Green Infrastructure Partnership was set up by the Department for Environment, Food and Rural Affairs (DEFRA) and is designed to help communities make innovative use of grey infrastructure by creating, amongst other things, small community gardens (The Stationery Office, 2011). The Community Right to Reclaim Land policy was introduced by the Department for Communities and Local Government (DCLG) in 2012. This policy enables communities to check who owns what land and therefore where the best use of the land is not being made, communities will have a better chance of bringing this under-used publicly owned land back into common use (DCLG, 2012). The idea is to redevelop the land as community grow spaces.

A number of funding schemes have been set up to facilitate the development of community gardens, for example, the Local Food scheme is a £59.8 million programme which distributes grants from the Big Lottery Fund to 'food-related projects that are helping to make locally grown food accessible and affordable to local communities' (Local Food, 2013). The scheme has helped with the realisation of nearly 500 different projects across the UK (Local Food, 2013). Another similar fund that was recently launched was the Community Space Fund, which is a £57.5 million open grants programme funded through the Big Lottery Fund (Groundwork UK, 2013). Community Spaces empowers community groups in England to improve public spaces in their neighbourhood such as by creating community gardens (Groundwork UK, 2013). Aside from this, London has developed the scheme called Capital Growth. Capital Growth set a target to create 2,012 new community food growing spaces across London by the end of 2012 which was achieved (Capital Growth, 2013).

The impact of all these initiatives is that now there are much greater numbers of community gardens in the UK and there has also been an increase in awareness of members of the general public regarding the importance of local food and growing your own food.

Chapter 3: Conceptual Framework

3.1 IAD Framework

The Institutional Analysis and Development (IAD) framework, first developed by Kiser and Ostrom (1982), aims to assess how biophysical conditions of the resource, community attributes and rules affect the behaviour of actors and the subsequent outcomes. The IAD framework is used to analyse interorganisational networks associated with collaborative environmental management efforts (Hardy & Kootnz, 2009). However it is also used to model operational decision-making, a use more applicable to this analysis. The framework aims to explain human behaviour and analyse policy processes and their outcomes (Ostrom, 2011). It organises and frames the research. The IAD framework puts forward major categories of structural variables that are to an extent present in all institutional arrangements, but whose values differ from one type of institutional arrangement to another (Ostrom, 2011, p.9). The advantages of the framework are three-fold; it accounts for the transaction costs related to policy implementation, assesses contextual variables and is devoid of normative bias regarding the type of institutional arrangement (Imperial, 1999). This IAD framework provides generalised relationships and elements that one should consider when undertaking an institutional analysis and provides a broad overview for the line of enquiry, thus it is a meta-theoretical language congruent with multiple theories (Ostrom, 2011). This research will use CPR theory as a nested concept within the IAD framework. Both these constituent parts are situated within the overall and highly complex SES. Subsystems and sub categorisations are symptomatic of SESs (Ostrom, 2007^a). A further connection to the SES is that the IAD framework has been used in a diverse range of settings to develop the design principles (a set of theories relating to CPR management) and these design principles demonstrate key features that will lead to sustainable SESs (Mincey et al., 2013) as displayed in figure 2.

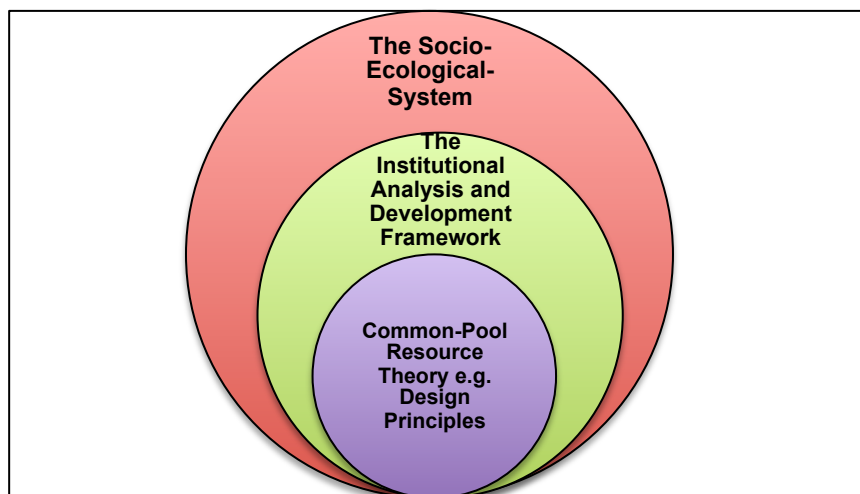


Figure 2: Theories, frameworks and systems

The IAD framework has four principle domains, the exogenous variables (physical conditions, attributes of the community and rules-in-use), the action arena (made up of the action situation and the actors), the interaction/outcome stage (the interactions are a result of the action arena and the interactions lead to outcomes) and the evaluative criteria (to assess the outcomes and interactions) (Figure 3).

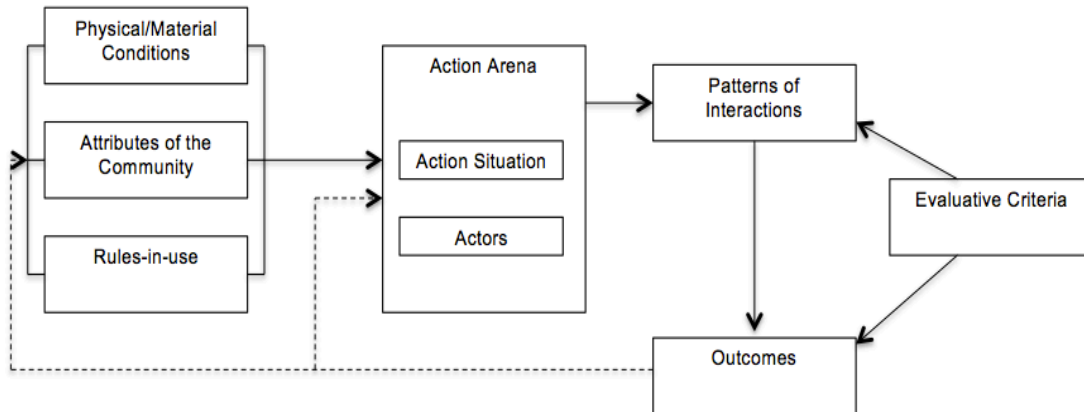


Figure 3: The IAD framework

3.2 Level of Analysis

When making use of the IAD framework in research the level of analysis is an important consideration. The IAD framework denotes three levels of analysis each of which are nested within one another (Hardy & Kootnz, 2009, see figure 4). The three levels are: the operational rules, the collective-choice rules and the constitutional rules. In the worked example put forward by Mincey et al., (2013) on urban forest management the operational level involves the on-the-ground actors and the collective-choice level involves the policy-makers that influence urban planning, land-use and development. The same principle can be applied to community gardens. The research will predominately focus on the operational level in order to reduce the complexity of the analysis. However collective-choice and constitutional rules will be investigated as part of the design principles.

The operational level is the day-to-day actions that individuals take regarding the resource involving appropriation, provision, monitoring and enforcement (Ostrom, 1990): the when, where, how and who of resource management. This involves questions such as who should monitor the actions of others and how and what information should be exchanged or withheld, and what rewards or sanctions will be assigned to different actions and outcomes (Ostrom, 1990, p. 52). This level of analysis assumes that the rules and constraints do not change throughout the duration of the research this means the actions of individuals directly and physically affects the resource, as resource units are withdrawn (Ostrom, 1990). Actors interact due to the incentives of potential outcomes from the resource (Ostrom, 2007^b).

The collective-choice level involves interactions amongst a group of decision makers in order to plan for the undertaking of operational activities, for example, producing a set of operational rules or making policy (Hardy & Kootnz, 2009). In this instance the collective-choice level refers to the individuals involved in the community garden collectively deciding what the operational rules will be.

The constitutional level establishes who is able to participate in the collective-choice decision making process and how it will be carried out and adjusted (Ostrom, 1990). This could involve the local government's environmental department deciding which group will be able to manage the land put aside for community growing space.

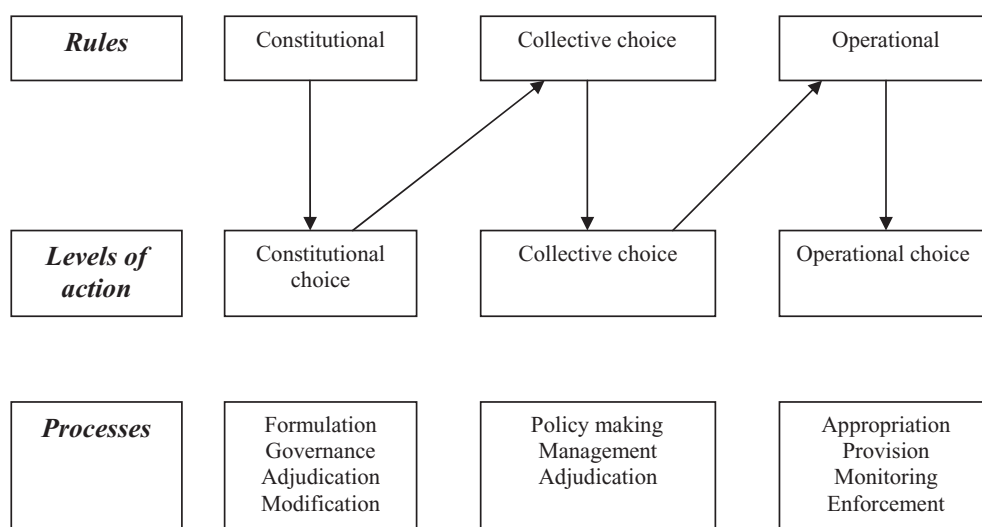


Figure 4: Multiple levels of analysis (Hardy & Kootnz, 2009)

3.3 From the IAD Framework to the Conceptual Framework

Meinzen-Dick et al., (2004) state that there are three major problems encountered when studying collective action and these are: conceptualising collective action, developing an analytical framework for studying collective action and operationalising the framework for empirical research. The first issue has already been addressed however the second two will now be analysed.

The conceptual framework consists of applying the IAD framework to the topic of community gardens. The exogenous variables in this analysis are taken to be the independent variables and are explained in greater detail in the proceeding sections. The initial section of the framework comprises of three groups of exogenous variables, one of which is the biophysical condition of the resource, which consists of the characteristics and conditions of the community garden in question. The second exogenous variable is the attributes of the community and these attributes make up a subset of variables, they are notions such as norms and the level of understanding amongst participants. The third exogenous variable group is the rules-in-use.

All of the exogenous variables affect the action arena. The action arena equates to the behaviour of the individuals engaged in the use of the CPR. An action arena is made up of an action situation, the conceptual unit used to explain behaviour within the institutional arrangement and the actors. The action situation in this instance is collective action in urban community growing projects. Action situations are defined by Ostrom (2011) as 'the social spaces where individuals interact, exchange goods and services, solve problems, dominate one another, or fight' (p.11) and it is an analytical concept which facilitates the isolation of structural variables affecting a process of interest for explaining patterns in human actions. An action arena also comprises of the actors and these actors have a dynamic relationship with the action situation. In the case of this analysis the actors are the individuals that participate in community gardens. Ostrom (2011) outlines a set of variables that should be used to describe an action arena however as the action arena is not the central focus of the study these seven variables will not be independently investigated. In addition there is considerable overlap between the action arena and rules-in-use variables as for example assessing the set of actors involves looking at how many people participate. In this analysis this is taken to be an attribute of the community. Allowable actions, a variable put forward by Ostrom (2011) can be seen as a variable belonging to the rules-in-use exogenous variable subset as this involves questions such as the type of technology allowed for harvesting. The positions available to participants is also a variable and this will be assessed in the context of background information on the cases. The outcome of the action arena is a pattern of interaction. This interaction then leads to the outcome of the sustainable management of the urban community garden resource, the ultimate aim.

The dependent variables in this research are the function of collective action and the level of sustainable management of the urban community garden resource. These two variables are the evaluative criteria part of the IAD framework. The outcomes of the action arena produce a cyclical process thus affecting the action arena or the exogenous variables.

In this research the IAD framework has been applied in community gardens and this gives rise to the conceptual framework (Figure 5).

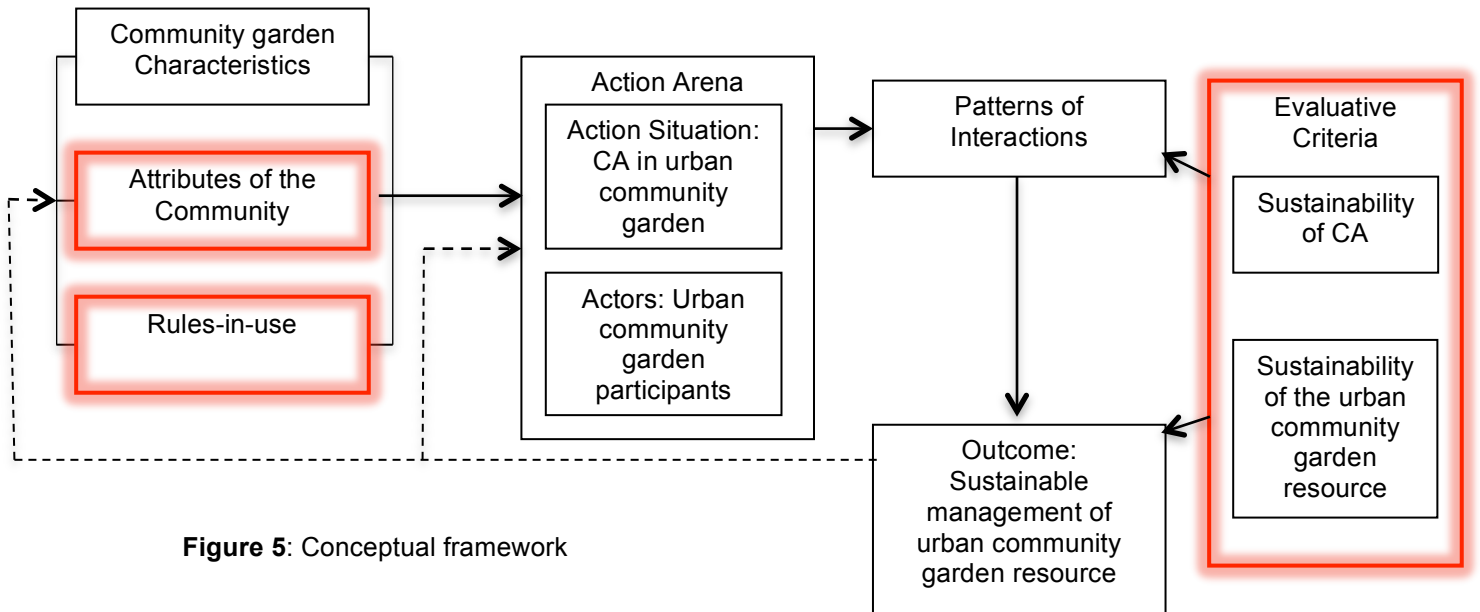


Figure 5: Conceptual framework

3.3.1 Independent Variables

A large number of variables affect collective action, the feedback relationships among the variables (Agrawal, 2001) and the adaptive nature of collective action (Meinzen-Dick et al., 2004). This is an additional dimension that further complicates the study of collective action. The literature on collective action is extensive in nature regarding the conditions necessary to achieve successful collective action. These insights have been based on over 20 years of empirical work. This section presents an outline of the independent variables highlighted in the literature that are most relevant to the analysis however, it must be noted that the variables should not be seen as a definitive list but a list of the conditions that are most applicable and salient. It must be appreciated that the proposed variables are an amalgamation of a number of different studies which give different weighting to certain characteristics. Agrawal (2001) cited over thirty variables that influence the sustainable management of a resource and it is not possible in this analysis to assess all thirty therefore only the most relevant variables will be investigated. Ostrom's (2007^b) comment on Agrawal's (2001) long list of variables is that this is a further indication of the SES in which all of this research is positioned demonstrating the previously expressed high level of complexity. Ostrom (2007^b) states the importance of classes and subclasses to organise the research.

The independent variables will be primarily focused on Ostrom's Design Principles (Ostrom, 1990) but complemented by a number of additional conditions. These design principles are theories on CPR management encapsulated within the IAD framework.

Rules-in-use are pivotal to successful collective action. Rules are 'shared understandings about what actions are *required*, *prohibited*, or *permitted* and the enforced consequences of following or not following them' (Ostrom, 1999^a, p. 50). Rules can be both formal and informal, formal rules include:

laws, policies and regulations and on the other hand informal rules are based on norms (Imperial, 1999). Rules can be seen as institutional prescriptions for behaviour (Mincey et al., 2013) as such the 'do's and don't' of the system. Barthel et al., (2010) in their study of urban community gardens found that rules-in-use contribute to the social-ecological memory evident in urban gardens. In Matisoff and Noonan's (2012) analysis of dog parks they found that users who perceive the design principles to be at work also tend to contribute more to maintaining the commons demonstrating the importance of the design principles in neighbourhood commons. Rules-in-use or institutions are points of reference around which gardeners can organise negotiation of meaning. For instance, the spatial size and form of structures as well as the appearance of garden plots are determined by strict self-organised rules (Barthel et al., 2010). The rules-in-use aid social structure for participation, like norms for cooperation and the decision-making process. There are also often rules-in-use that guide behaviour towards the ecosystem e.g. use of pesticides (Barthel et al., 2010). As rules are interrupted as actions that are *required, prohibited, or permitted* and their enforced consequences, in this analysis the rule-in-use are taken to be the design principles proposed by Ostrom (1990). The design principles detail a set of actions that are required or prohibited and set out the consequences of violating the rules. The rules in this context are both social and physical rules; indeed physical rules are often defined socially.

Ostrom (1990) proposes a number of design principles and they can be seen as structural mechanisms for collective action. These design principles will form the central part of the analysis. The design principles are characteristics of all long-enduring CPR institutions and are based on empirical research (Ostrom, 1990). The term design principles denotes essential components or conditions that contribute to the success of institutions in sustaining the CPR (Ostrom, 1990). Eight design principles are put forward by Ostrom (1990) and these are: *clearly defined boundaries, appropriation rules, collective-choice rules, monitoring, graduated sanctions, access to low cost conflict resolution mechanisms, minimal recognition of rights to organise and nested enterprises.*

Clearly defined boundaries is the first design principle and this is an indication that the group needs to be bounded as this fosters knowledge regarding what others are contributing, strengthening collective action (Meinzen-Dick et al., 2004). However in many instances of collective action the group is not clearly defined or the boundaries fixed. Therefore the group is rather fluid (some people may participate at one time, others at another) but collective action still takes place (Meinzen-Dick et al., 2004). Thus, there is a 'grey area between organised and bounded collective action' (Meinzen-Dick et al., 2004, p.200). The research aims to investigate this point. Clearly defined boundaries involves two ideas; that the individuals who have the right to withdraw the resource unit is clearly set out and the boundary to the resource itself is clear. These can both be seen as a set of rules. Without clear indication of who can

use the resource local appropriators run the risk of the benefits of their efforts going to others who may not have contributed (Ostrom, 1990).

Appropriation rules restrict time, place, technology and or the quantity of the resource unit (Ostrom, 1990). This principle relates to the actions that are prohibited. Regarding collective-choice arrangements, most of the individuals affected by the operational rules of the resource should be able to participate in modifying these rules. The monitoring design principle is a set requirement and means that monitors actively assess the condition of the CPR and the appropriators' behaviour (Ostrom, 1990). The importance of monitoring is highlighted by the fact it is mentioned in numerous publications (Ostrom et al., 1992; Ostrom, 1990; Ostrom, 1999^a; Rydin & Pennington, 2000). Regarding graduated sanctions this means that appropriators who violate the rules will receive sanctions that gradually increase in severity and this is a consequence of violation. An action required is that there is access to low cost conflict resolution mechanisms meaning that appropriators have rapid access to local and low cost arenas to resolve conflicts (Ostrom, 1990). Minimal recognition of rights to organise ensures that appropriators have the right to devise their own institutions and that this is not challenged by an external government authority (Ostrom, 1990). The final variable nested enterprise will not be investigated as this is deemed as most applicable to larger CPRs.

In addition to the design principles there are a number of contextual variables that need to be assessed and these variables are situated within the three exogenous variable categorisations. Attributes of the community includes the condition of trust and it is cited as a critical condition in the literature for achieving successful collective action (Ostrom, 1999^a; Ostrom, 2000; Meinzen-Dick et al., 2004). Trust has the ability to decrease transaction costs (van Laerhoven, 2010). An additional independent variable is reciprocity and Ostrom (2000) states that this variable is needed for regimes to be successfully organised. Ostrom (2000; 2001) outlines an extensive list of contextual variables that are related to collective action, the most relevant to the attributes of the community have been selected and include: the size of the group; the heterogeneity of the group; common understanding of the group and the presence of leadership.

Several of the variables highlighted necessitate further detail. The variable heterogeneity remains inconclusive and differs from one study to the next (Adhikari & Lovett, 2006). This indicates that flexibility is key, such that local context can be accounted for. It has been argued that cooperative behaviour is more challenging in highly heterogeneous communities due to different interests and as it increases transaction costs. However, Olson (1965) puts forward the argument that in groups where significant heterogeneity exists success may be more likely as long as the actors with the most economic interests and power initiate collective action. Finally, homogeneity can lower the costs of anticipating the behaviour of others (van Laerhoven, 2010;

Imperial, 1999). Much of the research on heterogeneity has focused on economic heterogeneity but this can also be assessed in terms of values (Poteete, & Ostrom, 2004^b).

The widespread conclusion from the literature is that group size negatively correlates with solving collective action problems. Having said this, Tang (1992) found no statistical evidence for this notion (cited in Ostrom, 2001). Furthermore, van Laerhoven (2010) indicates from empirical evidence that small groups are not necessarily better at sustainable resource management. An argument put toward is that the perceived impact of individual contributions to collective efforts decreases with group size and the size of collective benefit is seen as an important variable. Furthermore, transaction costs of collective action increase with group size (Olson, 1965). There is however no common frame of reference regarding what constitutes a small or large group (Poteete & Ostrom^b). The research aims to contribute to this argument by assessing the size of each case study. The conditions of a small group size and homogeneity will be used as Foster (2011) found from research on urban commons that small homogenous groups act cooperatively.

Common understanding has already been cited as an important variable and this is complemented by Agrawal and Gibson (2001) in work where they state the centrality of shared norms. This entails generally accepted norms of behaviour (Imperial, 1999) and institutional prescriptions of behaviour without defined sanctions (Ostrom, 1990). Consequently, the two notions are grouped into one variable called common understanding. Ostrom (2000) found that shared norms support cooperation. Moreover, participants need to have a shared understanding of what collective action is (Matta & Alavalapati, 2006).

Knowledge is also an important variable as it improves cross-level communication within the community, between different levels of authority and between different groups (Rahman et al., 2012). High levels of knowledge about the resource itself can lead to more sustainable resource use and extraction (Rahman et al., 2012).

Finally, threats to community governance and collective action need to be accounted for. Ostrom (2000) cites a number of threats of which the most applicable are: out-and in-migration, transmission failure from one group to the next, turning to external help too frequently, and opportunistic behaviour. Therefore, a rule regarding what happens if people leave the community and how new people can join is necessary to ensure trust and the establishment of similar social norms. A clear structure for passing on information needs to be established. Finally, the community needs first and foremost to try and solve problems by themselves and opportunistic behaviour needs to be addressed through sanctions. These threats to collective action are not part of the assessed variables however these points will be considered in relation to the findings.

3.3.2 Dependent Variables

The dependent variables in this research constitute the evaluative criteria in relation to the IAD framework. The dependent variables in this research are two fold, firstly they relate to the functioning and durability of collective action and secondly to the resource itself. Collective action is a notoriously difficult measure to assess (Meinzen-Dick et al., 2004) and the measuring process possesses considerable overlap with the exogenous variables for example the functioning of collective action is commonly referred to as regular meetings, the presence of rules on entry, harvesting and monitoring and the presence of a system to enforce the rules (Poteete & Ostrom, 2004^a). The latter two variables evidently have considerable overlap with the design principles and therefore will not be used in this analysis. The design principles in this analysis are taken to be the rules-in-use and therefore are a required condition and not an evaluative criterion. This is one of the significant drawbacks of the IAD framework as it is often unclear which concepts should be used at the start of the process and which at the end as the process is cyclical. The dependent variables for the functioning of collective action will therefore be taken to mean the number of meetings held by the group.

Additional measures draw on the notion of the durability of collective action (Barnes & van Laerhoven, 2013; Markelova & Mwangi, 2010; Rahman et al., 2012) and these are numerous. Markelova and Mwangi (2010) state that the sustainability of collective action is based on the durability of the group and its level of stability. The first variable involves how informed the participants are which relates to the idea of the level of awareness of participants and this is important for the durability of collective action as resource users need to be aware of the rules and committee outcomes (Ansonga & Røskafte 2011; Cundill & Fabricius 2009 cited in Barnes & van Laerhoven, 2013). The level of connection is significant for the durability of collective action and this refers to if they are connected to other similar communities and outside organisations (Ostrom, 1990; Ostrom, 2005). Durability is also dependent on having sufficient financial and material resources to operate the resource system (Chirwa et al., 2005; Devaux et al 2009; Markelova & Mwangi, 2010 cited in Barnes & van Laerhoven, 2013). Rahman et al., (2012) also promote the importance of financial capital for durable and efficient collective action. A final consideration to calculate the sustainability of collective action is whether the number of participants increases or decreases year-on-year. This concept is based on Ostrom (2011) stating that sustainability is an evaluative criterion and in the case of this research sustainability can be seen in terms of the number of people involved in resource management as if the number is decreasing year-on-year this is not sustainable. Moreover Markelova and Mwangi's (2010) notion of the sustainability of collective action is based on both durability and stability. Stability in this instance is interpreted as year-on-year there being enough people to manage the resource.

The other variable is the sustainability of the urban community garden resource and this concept is much easier to define. This requires that the

condition of the physical resource is not degraded but remains constant or increases e.g. the amount of produce increases or remains the same year-on-year. Quality of the resource is seen as a dependent variable as it is reliant on the attributes of the community and the design principles to be sustained over time. Rahman et al., (2012) state that the determinant of success regarding collective action in the stock of the natural resource equates to how much produce is being produced and this criterion will be used in this research. A similar approach was also used by Gautam and Shivakoti (2005), the assessment they used was to measure the changes in the condition of the resource. This meant that through a qualitative methodology they asked questions such as if the forest area (the resource was a forest in the study) has increased or decreased over the last five years.

3.3.3 Control Variables

The control variables are important to ensure comparability between the cases and in order to isolate the independent variables in the analysis ensuring as far as possible that no other variable is contributing to the outcome. The control variables in this analysis relate to the characteristics of the resource. This subset of variables is taken from the variables that Agrawal (2001) proposed for resource system characteristics. The variables are as follows: size of the resource, level of mobility, predictability and the possibilities of storage. As the case studies all involve the resource of food growing and cultivation of the land these characteristics will remain constant. The size of the resource, in terms of the area of the community garden will be similar, there will be a some amount of variation. Community gardens are small in area as they are in urban spaces where space it is a premium and local authorities will only have a limited amount of space that is suitable for food growing. The resource is also stationary and is therefore immobile as food and soil are not able to move. Storage of this resource is limited as although certain foodstuffs can be preserved this applies to a limited amount of food and also requires additional resources that the community may not possess. If taken in its natural form all vegetables and fruits will perish and only last for a brief period of time. The predictability of the resource is the same for each community garden as this is climate dependent. There will be slight variation depending on where in the country the community garden is located but climate variations year-on-year will affect the whole country and this will have a significant impact of the resource itself.

3.3.4 Conceptual Model (including all variables) and Hypothesis

As a large number of variables have been outlined in the preceding sections it is necessary to provide a definitive model which details all variables used in the analysis and display how they are positioned within the conceptual framework. Figure 6 provides such a definitive depiction and can be seen as an overview of the analysis.

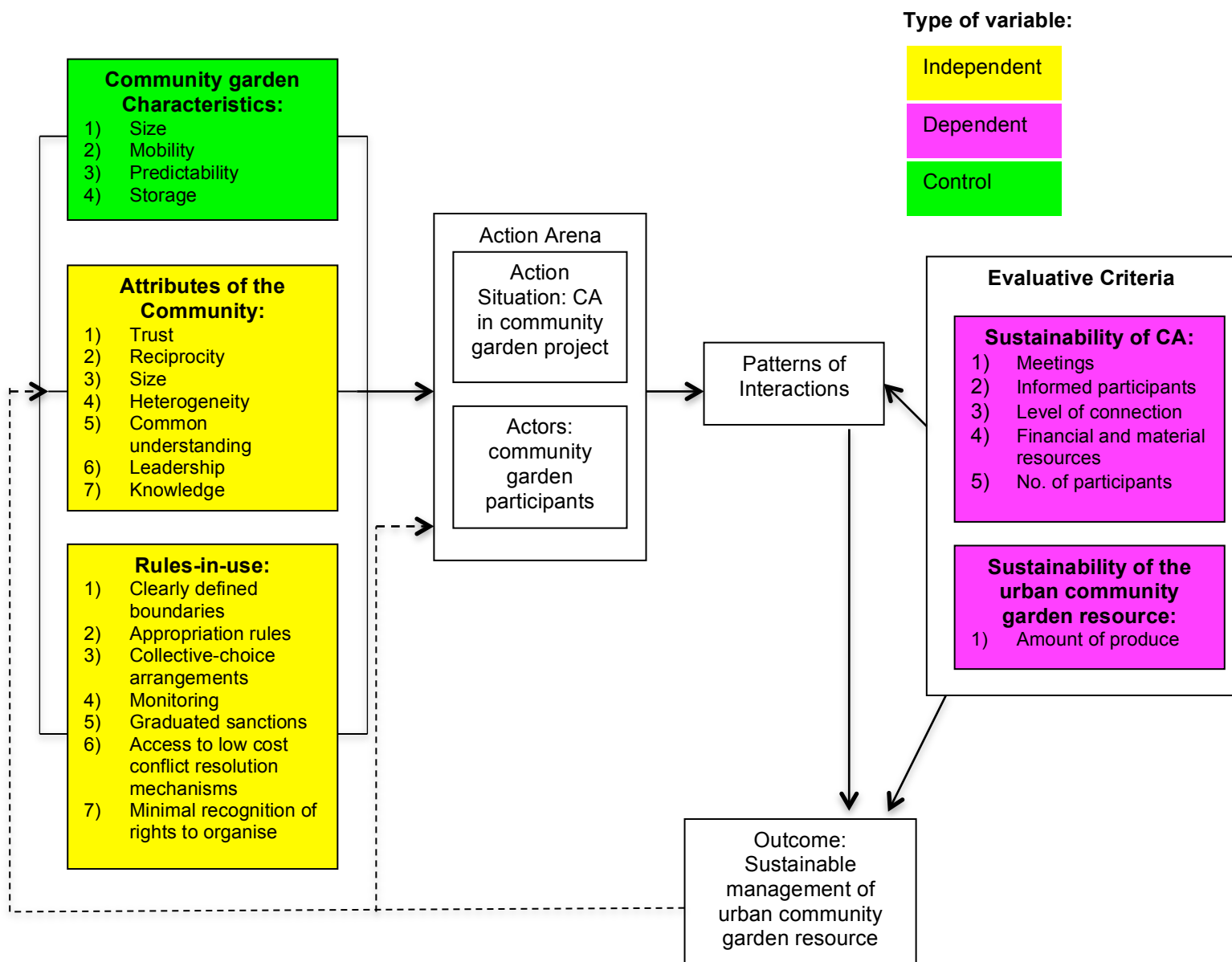


Figure 6: Conceptual model

The framework means that the following hypothesis can be explored.

Collective action is more likely to be successful when:

The group is small in size and homogenous; there is common understanding and shared norms; leadership is present; trust, reciprocity and knowledge are high. Defined boundaries, appropriation rules, collective-choice rules, monitoring of compliance, graduated sanctions, access to low cost arena to resolve conflict and minimal recognition of rights to organise are all present.

Chapter 4: Methodology

4.1 Approach

The methodology used for this research was a comparative case study analysis. Thus the research has opted for a qualitative approach. The data collection method was semi-structured interviews. The case studies allow for in-depth and rich findings. Seven case studies were analysed in total, detail of the case studies will be provided in the subsequent sections. At the end of this chapter based on the conceptual model, the operationalisation of the variables will be outlined.

Before the use of a case study approach can be explored it is necessary to provide justification for undertaking qualitative research, this is the broader research strategy used within the study. A qualitative analysis was conducted as the case study design favours qualitative methods such as semi-structured interviews due to the fact that this method is able to produce an intensive and detailed analysis of the cases in question (Bryman, 2012). A qualitative approach allows events in the social world to be seen through the eyes of the people that are being studied and allows for greater consideration of people's views and the context in which they are embedded (Bryman, 2012). It is also able to produce in-depth understanding of complex social behaviour which is the aim of this research. However a consideration of principle concern is that qualitative research has traditionally been associated with the generation of theory rather than the testing of a theory, which this research aims to do. However Bryman (2012) cites there to be a number of studies which undertook theory testing rather than theory generation by deploying a qualitative approach, for example Adler and Adler (1985). This point is further emphasised by Silverman (1993) who states that qualitative data has an important role to play in testing theories.

Although a qualitative approach allows for greater depth of the analysis to be achieved the method also possesses a number of drawbacks. These drawbacks concern the criteria for assessing the quality of the research. A qualitative approach raises questions regarding external validity, in that the extent to which the research can be generalised. The use of case studies in qualitative research, as used in this analysis, decreases the study's ability to generalise its findings. Furthermore, external reliability, the ability of the study to be replicated is an inherent concern when taking a qualitative approach. External reliability cannot be achieved as it is not possible to isolate social settings or the circumstances of the study (leCompte & Goetz, 1982 cited in Bryan, 2012), this is because the study is being conducted within the complex interactions between humans and between humans and their environment. However internal validity is a major strength of a qualitative approach (Bryman, 2012) and there is often congruence between concepts and observations.

In any research there is likely to be a trade-off between the different criteria regarding the quality of the research as expressed above. It appears that qualitative research falls short of a number of the traditional measures for research quality. However scholars such as Lincoln and Guba (1985 cited in Bryman, 2012) and Yardley (2000) have proposed alternative criteria. They state that a like-for-like criterion between quantitative and qualitative research is a false dichotomy and is profoundly misguided. Instead alternative criteria given equal status and importance needs to be developed within academic research. Lincoln and Guba (1985 cited in Bryman, 2012) cite a criterion based on the principles of trustworthiness and authenticity. These two principles can be more readily applied to qualitative research. Trustworthiness is based on: credibility, transferability, dependability and confirmability. Credibility equates to internal validity and can be achieved through triangulation. Transferability has parallels to external validity and can be displayed through thick descriptions that provide rich details of cultural context. Dependability has parallels to reliability and is achieved through having a self-auditing account at every stage of the research which also means, if necessary, others are able to evaluate the research. The final criterion is confirmability relating to the objectivity of the research. This is achieved through the researcher acting in good faith and therefore not allowing personal values to interfere with the research. All of these principles will be taken into consideration and adhered to throughout this research process. Moreover, Bryman (2012) cites four issues in qualitative research: subjectivity, replicability, lack of generalisability and transparency, all of these issues have been negated by Lincoln and Guba's alternative criteria.

4.2 Case Study Method

A case study involves an 'intensive study of a single unit with an aim to generalise across a larger set of units' (Gerring, 2004, p.341). An alternative definition provided by Yin (2009, p.18) is that 'a case study is an empirical inquiry that investigates a contemporary phenomenon in depth and within its real-life context, especially when the boundaries between phenomenon and context are not clearly evident.' Case studies often incorporate a small-N (small number of cases), 'in-the-field' and process-tracing research (Gerring, 2004). However the practice of undertaking case study research frequently falls short of the specificities of scientific research. The method is often ill formulated and the data analysis has been noted to be a 'mysterious and half-thought-out art' (Miles, 1979, p.593). Therefore, in this section it is of critical importance that precise details of the methodological process are laid out.

4.2.1 Justification for a Case Study Approach

Clear justification for the use of case studies is that the IAD framework was developed to aid the accumulation of knowledge and theory based on empirical studies (Ostrom, 2011), these empirical studies frequently taking the form of case studies. Moreover, the approach taken in this analysis is a proven technique for studying collective action and has frequently been used

in the application of the IAD framework (Ostrom, 1990, Meinzen-Dick et al., 2004; Ostrom, 2010; Barnes & van Laerhoven, 2013). Hardy and Koontz (2009) used a similar case study approach and cite the reason for the approach to be that it enables one to understand complex phenomena in real-world settings, where many factors are potentially important. A case study approach enables rich, full and holistic findings to be achieved (Miles, 1979). Furthermore, a case study method should be used when the focus of the research is on contemporary phenomenon within a real-life context (Yin, 2009) which is true of this research.

There is a common misconception established in social science research that research methods possess a hierarchical structure. This hierarchy gives rise to case study research being predominately categorised as exploratory research, however Yin (2009) argues that case studies can also be explanatory and it is from this standpoint that the research was undertaken. Further support for use of a deductive approach is that case study inquiries address distinctive situations in which there are more variables of interest to the researcher than the data points that are available and therefore to overcome this issue, not only is triangulation required but also, as Yin (2009) states, initially consulting prior theoretical propositions can help to guide the data collection and analysis.

As with the issue stated above regarding to quality of the research, Yin (2009) states how internal validity is of critical importance for explanatory research and for establishing causal relationships, which is what this research wishes to do. In order to address concerns of internal validity, Yin (2009) proposes the use of pattern matching, providing explanations, and logical models. The same issues of research quality as set out regarding qualitative research is true of case study research and is highlighted by Yin (2009), particularly the issue of generalisability.

4.2.2 Unit of Analysis

A way of overcoming the shortfall in this methodological approach is to provide and differentiate between the unit of analysis and the cases, a technique explained by Gerring (2004). Furthermore, as the definition of a case study includes the notion of a single unit, defining the unit of measurement is essential. The contextual unit is urban community gardens in England. More specifically, in collective action research the unit of analysis is often taken to be 'the group' this is the group that uses the resource (Poteete & Ostrom, 2004^b). This therefore means that the case, which is synonymous with the case unit of analysis, is a community garden. This research investigates multiple cases and the cases are taken to be a community garden and not an individual as Yin (2009) states that a case can also be some event or entity. The case study approach is one of a 'holistic design' as the relevant theory underlying the case study is holistic in nature (Yin, 2009). The CPR theory takes an all encompassing view, for example, as it

incorporates different levels of analysis. Furthermore, an ‘embedded design’ would not fully account for the broader context. Justification for a multi-case design is that the results of the study will be more robust in nature as you are relying on multiple rather than a single source of evidence. Replication is important for the development of a rich theoretical framework and use of multiple cases allows this to be achieved (Yin, 2009). A summary explanation of the unit of analysis can be found in figure 7.

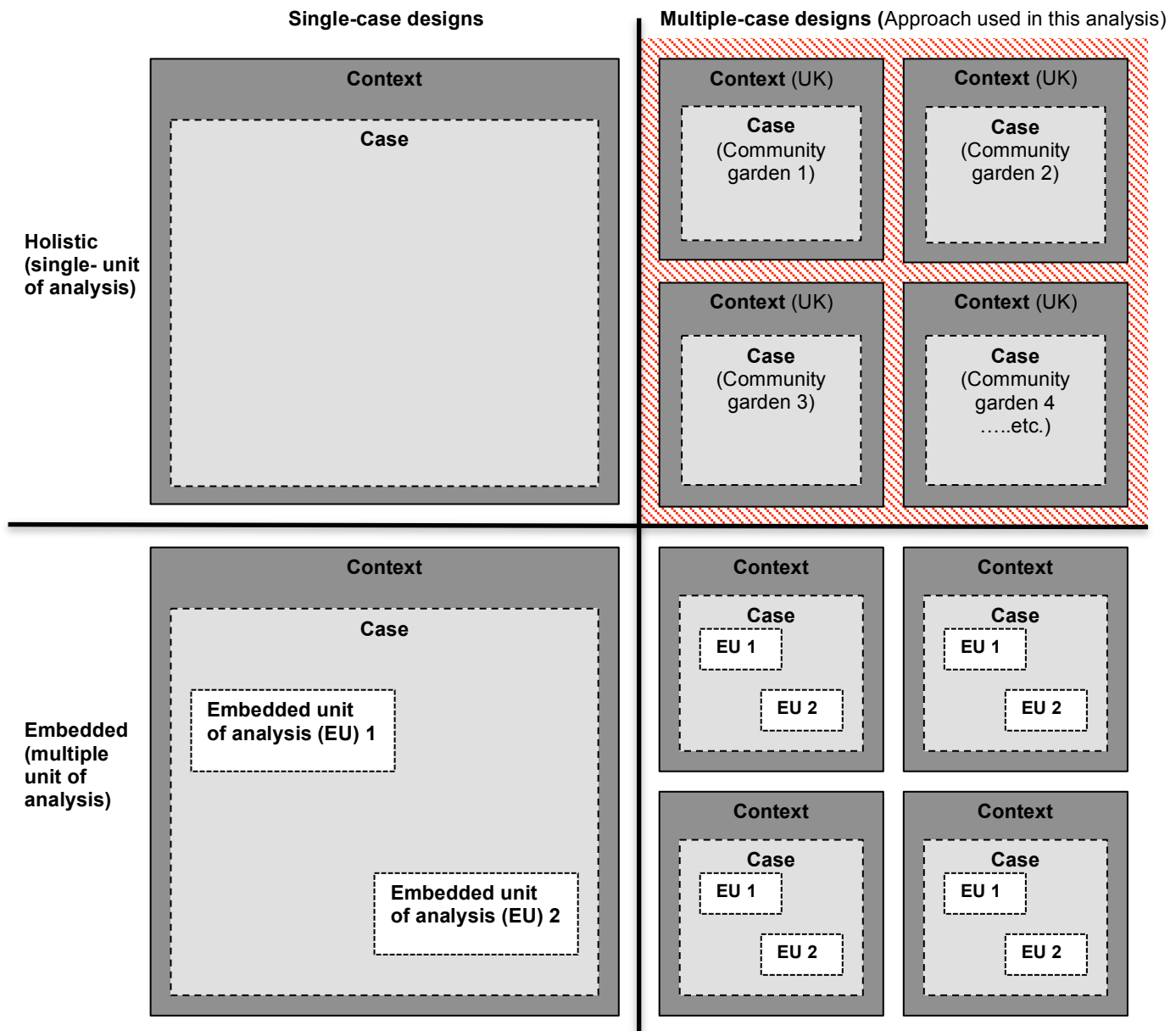


Figure 7: Types of design for case studies (Adapted from Yin, 2009) (NB: EU stands for embedded unit of analysis.)

The research conducts covariation observations within this single larger contextual unit synchronically (Gerring, 2004). Thus the case studies were drawn from anywhere in England. This unit of analysis was chosen as it ensures the national context will be the same in each case increasing comparability (Gerring, 2004), this also aids the stability of the control

variables, although it is appreciated that there will be variation in the green agendas of the different cities. Within unit cases 'consist of all cases that lie at a lower level of analysis relative to the inference under investigation' (Gerring, 2004, p.344). A within-unit approach is necessary as observations at a single point in time without within-unit cases cannot display causality (Gerring, 2004). As it is not possible to measure temporal variation due to the time constraints of the research within-unit research is vital. A single unit approach also has several advantages in that greater depth of the research is achieved and causal mechanisms can be uncovered (Gerring, 2004).

4.3 Data Collection

Yin (2009, p.68) states that in case study research the data collection procedures are not routinised but that this does not give licence for vagueness surrounding the methodological process. It must be noted that there are limits to the time and financial resources available for data collection; there is a trade-off between the number and type of variables (this has already been explored) that can be measured and the number of cases that can be assessed (Poteete & Ostrom, 2004^b). Poteete and Ostrom, (2004^b) suggest that careful sampling can control some of those factors and also reduce bias but that it may not be possible to control for all variables excluded from data collection and analysis.

The rationale behind undertaking in-depth, semi-structured interviews is that firstly, Meinzen-Dick et al., (2004) name semi-structured interviews as a key data collection technique used in studies of collective action based on the experiences of a large number of researchers. Secondly, Hardy and Koontz (2009) used in-depth interviews as their data collection method as it was felt that the informants held specific knowledge, which could be most readily obtained through the interview process and were able to provide factual and personal information. This method of data collection is a tried and tested approach for conducting research on community gardens (Guitart et al., 2012).

When conducting interviews there are also ethical issues that need to be considered. Bryman (2012) and Yin (2009) highlight the potential problem of a lack of informed consent on the part of the participants. This issue was mitigated by the researcher detailing who they are at the start of the interview, what the interview would be used for, asking whether or not they gave consent to the conversation being recorded and presenting the interviewees with an option to review the transcript and to receive a copy of the final research in order to make the process as transparent as possible. In the interest of confidentiality all interviewees were anonymised.

4.3.1 Interviews

In this instance interviews are an essential source of information because this case study research focuses on human affairs and behavioural events (Yin,

2009) which interviews are most readily able to uncover. Interviews produce rich findings and should 'generate data with an authentic insight into people's experiences' and allow respondents to raise issues that the interviewer may not have anticipated (Silverman, 1993, p.91). Interviews allow for targeted and insightful, in the sense of causal inference, analysis to be undertaken and are one of the most important sources of information for case study research (Yin, 2009). The selected communities were interviewed using a semi-structured method with open questions thus allowing for a 'flexible approach' and giving leeway to respondents (Hammersley & Atkinson, 1995, p.152). A semi-structured interview means that similar questions are asked multiple times and this is essential to ensure comparability across the cases (Bryman, 2012). The interviews took place on site giving participants greater opportunity to talk about their environment following the effective method used by Barthel et al., (2010).

Using an interview approach has several possible negative consequences that need to be considered. Bias can occur due to poor questioning and reflexivity when the interviewees give you what you want to hear can also be an issue (Yin, 2009). This was mitigated through the formulation of neutral questions and by piloting questioning to test to what extent interviewees are being led and adjusting the questions accordingly. Bias was also reduced by recording the conversation.

In total twenty-eight interviews were conducted averaging approximately four interviews per case study. An example of the questions posed to the participants can be found in the appendices (Appendix 1).

4.3.2 Documentation

As expressed above there is a need for triangulation to increase the internal validity of the research and therefore alongside the interviews, relevant documentation was analysed. These documents were in the form of agendas, minutes, reports and guidelines of the community gardens: in short any literature that related to the activities and running of the community garden. In addition, using multiple methods means that the benefits of the different data collection methods can be utilised and a case study approach can be adapted to multiple methods. The advantage of this type of data collection is that it is unobtrusive, exact and broad in coverage. However drawbacks relate to accessibility and the potential of selective bias (Yin, 2009). This issue of selective bias was countered by the fact that interviews were also conducted which gave rise to a more balanced argument. Accessibility was not a concern as all of the cases selected had agreed to be interviewed and therefore were also willing to share additional information.

The specific data sources used in each case study can be found in appendix 2.

4.4 Data Analysis

Analysing the data of case study research is often poorly done (Miles, 1979; Yin, 1981) with too much time being spent trying to construct readable narratives (Yin, 1981). Yin (2009) goes as far as to state that 'the analysis of case study evidence is one of the least developed and most difficult aspects of doing case studies' (p.127) with there being few processes to guide the researcher. Therefore only notes are necessary and this is achieved through use of clear substantive topics (Yin, 1981), which in the case of this research refers to the variables that are being investigated. Difficulties occur when cases provide conflicting evidence and therefore the skill to ignore irrelevant variations between cases needs to be established. This was achieved by constructing an adequate meaning of a case singly and by appreciating acceptable levels of modification in the original explanation with each new case (Yin, 1981) with the chain of evidence still being preserved. In order to avoid a situation where the research falls short of the specifics of social science research there should be a clear and traceable evidentiary process to any results (Yin, 2009). Moreover, in order to address the fuzziness surrounding the methodology, a precise coding system consisting of major and sub-codes were developed based on the variables from the conceptual model. This was based on criteria for the different conditions.

The analysis process used was matrix categories (Yin, 2009) in which the data from each community garden are clustered based on the variables set out in the conceptual framework. After this, initial technique pattern matching was conducted. The approach entails comparing the patterns found in empirical research to the theoretical propositions (Yin, 2009). If congruent this is a demonstration of internal validity. These patterns were related to the dependent and independent variables. The pattern matching process then led to a process of explanation building in which for a case study, part of an explanation about what is trying to be found out comes from the case studies' evidence of causal links reflecting a prior theoretical proposition (Yin, 2009). The principle technique used was one of cross-case synthesis (Yin, 2009). This technique treats each case study as a separate study but then combines the findings from each study through qualitative interpretations. Detailed explanation of the analysis process can be found in appendix 3.

4.4 The Cases

Before background to the cases can be provided it is necessary to briefly review the criteria for case selection. Thus the size of the community garden in all cases was confined to below an acre to increase uniformity. The other characteristics of mobility, predictability and storage were constant through the virtue of the resource being the same in every case study, the food that is produced by the community garden. In addition, for increased comparability all cases involved food growing of multiple crops, are located in an English urban setting to ensure contextual comparability, are established and active

(thus extraction of the resource is taking place), have the aim of providing the resource for community benefit, and the public are able to participate.

Deciding on the number of cases to analyse was a dilemma with there being no hard and fast rule for such a decision and it is thus at the researcher's discretion (Yin, 2009). Seven case studies were assessed, five of which are located in London, one in the North of England and one in the West. The decision to investigate seven case studies was based on the resources and time at the disposal of the researcher and the level of depth that it was thought could be achieved. As five of the studies are located in London and the remaining two in different areas of England this study in no way claims to be representative of community gardens in England but instead aims to shed light of some of the conditions that may be important for successful collective action in a community garden projects based on a select few examples. All of the selected cases exhibit collective action as they are a functioning community garden where people are actively engaged in resource production and extraction however, as will become evident, they do differ in the extent to which the cases demonstrate successful collective action. Additionally, the cases selected, when taken together, reflect a range of management and organisational strategies and this was intentionally the case in order for the different independent variables to be assessed. The location of the case studies is found in figure 8 and background to the case studies can be found in the relevant case study chapter.



Figure 8: Location of case studies

4.5 Operationalisation of Variables

The operationalisation of the variables when conducting an investigation of a phenomenon that is highly complex and embedded within the SES is an extremely challenging process. Below, in turn, all variables that been operationalised for the purposes of this study.

4.5.1 Operationalisation of Independent Variables

Based on the conceptual model previously displayed it is now necessary to detail how the independent variables were operationalised. This process involved providing detailed measures that will enable specific variables to be assessed. For the sake of clarity the measures are expressed on the form of a table (Table 1).

| Category | Variable | Measure |
|------------------------------------|---|---|
| Attributes of the Community | Size | Number of people regularly involved in the community garden, includes all volunteers, employees, committee members or general members who actively engage in its upkeep. |
| | Homogenous | The extent to which the participants have similar socio-cultural backgrounds. This is measured by assessing the ethnic heritage of participants. |
| | Common understanding | Whether respondents have similar answers regarding the aim of the project. |
| | Leadership | Participants are able to clearly identify leaders within the group or the structure of the organisation means that some people are in a position of authority. |
| | Trust | Participants feel able to share the responsibilities, as they know others would do a good job. Practical examples of trust are given. |
| | Reciprocity | Participants are asked if individuals within the group put in the same amount of time and effort into the project and if not whether this is an issue or not. |
| | Knowledge | Whether or not knowledge levels are the same within the group. |
| Design Principles | Defined boundaries | 1) Eligibility of participants to participate in the project. 2) The boundary of the CPR is clearly set out. |
| | Appropriation rules | There are rules regarding: 1) The harvesting and consumption of the resource 2) Amount of time participants need to put in 3) The technology allowed to be used 4) The quantity of the resource unit that can be extracted 5) Type of products that can be used on the soil. |
| | Collective-choice rules | Members of the community are able to modify the rules and there is a clear system for undertaking this. |
| | Monitoring of compliance | A system of monitoring is in place regarding: 1) The appropriation rules 2) Effort put in by the participants. |
| | Graduated sanctions | There is a system in place for when rules are violated and individuals are punished with increased severity. |
| | Access to low cost arena to resolve conflict | Low cost norms and procedures exist for resolving disputes. |
| | Minimal recognition of rights to organize | Rules and norms are not challenged by local government. This is assessed in practice through the level of support the local government has given to the community garden. |

Table 1: Operationalisation of independent variables

A number of the variables require further explanation. Firstly this research is not assessing the size of the group but whether or not the group is small in size as it is stated in the literature that this is necessary for successful collective action. However from the literature there is no indication of how a small group should be defined (Poteete & Ostrom^b). For this research a small group size equates to ten people or less as this is a small enough number for all members of the group to be aware of how much effort others are putting in and therefore acting as a sort of informal monitoring system which means in theory that collective action is more likely to be successful. The literature states that homogeneity is needed for successful collective action. However there is a multitude of different measures for heterogeneity. In this research heterogeneity is assessed through similarities in socio-cultural backgrounds of the group (Adhikari & Lovett, 2006).

Ostrom's (1990) first principle, clearly defined boundaries, involved two concepts: that the boundary to the resource itself is clear and that the individuals who have the right to withdraw a resource unit is set. This is why two different measures were used. The second concept of who has the right to withdraw a resource unit commonly takes the form of a user group membership (Ostrom, 1990).

The appropriation rules cover a number of measures however the most salient are the rules surrounding the harvesting process. Appropriation rules refer to restrictions on time, place, technology and quantity of resource unit (Ostrom, 1990). Another important appropriation rule is the prohibited behaviour towards the environment (Barthel et al., 2010). Collective-choice rules mean that individuals affected by the operational rules such as the appropriation rules should be able to modify these rules. This means that all members of the community should be able to have a say in how the resource is managed. Monitoring involves actively assessing the appropriator's behaviour and compliance to the rules. Graduated sanctions are enforcement mechanisms (Agrawal, 2001) and according to Ostrom (1990) appropriators that violate the rules should undergo sanctions of increased severity. The minimal recognition of rights to organise means that the community garden has the right to devise their own institutions and that it is not challenged by external government authority. The external government authority in all cases is the local council as they have statutory power over allotment land and are the landowners.

4.5.2 Operationalisation of Dependent Variables

The operationalisation of the dependent variables is more problematic, especially the variable functioning of collective action as collective action is a dynamic process which involves social relationships that are inherently unpredictable (Meinzein-Dick et al., 2004). Meinzein-Dick et al., (2004) state how often measures can be used for multiple concepts, a commonly used indication of collective action is the number of meetings however it is unclear whether meetings are a transaction cost of collective action or an indication of effectiveness. Despite its shortcoming the number of meetings is used to measure the functioning of collective action as it is convenient and easy to measure. Sustainability in urban community agriculture, the other dependent variable, is easier to measure, as this is a tangible resource that directly relates to the resource itself. The operationalisation process for the two groups of dependent variables is displayed in table 2.

| Category | Variable | Measure |
|--|---|--|
| Functioning of Collective Action | Meetings | How often meetings are held in a year. |
| | Informed | Respondents are aware of the management structure of the community garden and feel informed about what is going on with regard to the community garden as a whole. |
| | Level of connection | The external organisations, networks and/or other similar communities projects which the community garden is connected to. |
| | Financial and material resources | All income sources and expenditure. If use funding grants the length of time funding is secured for. |
| | No. of participants | The number of regular participants per year over a minimum of three years. |
| Sustainability of the urban community garden resource | Amount of produce | Total amount of produce per year in Kgs or quantity of vegetables over a minimum of three years. |

Table 2: Operationalisation of dependent variables

4.5.3 Operationalisation of Control Variables

The operationalisation of the control variables is displayed in table 3.

| Variable | Measure | Controlled |
|-------------------------|--|---|
| Size of Resource | Less than an acre | All urban area in which space is at a premium. |
| Mobility | Whether the resource is able to move | Resource has the same characteristics in all cases. Plants that the foodstuff grows on are immobile. Only a very limited amount of movement occurs through the growing process. The soil is immobile. |
| Predictability | Year-on-year how much food the resource will produce | For all cases the climate which influences the amount of produce the resource makes each year is the same as they are all located in the UK. E.g. if there is a dry summer this will affect all case studies. |
| Storage | Whether the produce is able to be stored | Resource has the same characteristics in all cases and this is that storage is limited as food is perishable. |

Table 3: Operationalisation of control variables

In the following sections firstly each case study is explained in turn with regard to the independent and dependent variables in this research. These are the results of the research. After the results have been displayed a comparative analysis is conducted to assess both whether the findings are in line with the theoretical propositions and what conditions are needed for successful collective action. At the end of each case study a summarising table is displayed regarding the variables, the results from each table are constituent parts of the comparative analysis in which all of the findings are brought together.

Chapter 5: Case Study 1 - Grow Heathrow

5.1 Background

Grow Heathrow is located in Sipson, London very close to Heathrow Airport. The community project was developed in the aftermath of a highly publicised battle against a proposal to build a third aeroplane runway at Heathrow Airport (Transition Heathrow, 2013). An umbrella group of various environmental campaign groups formed a climate camp on the site of the proposed third runway in 2007 (Weaver, 2007). After the camp some activists decided to stay on in the area and eventually, in 2010, a group of people formed Grow Heathrow on an area of land in Sipson that would be engulfed by the third runway if it were to be built. The site had been neglected and was a 'derelict mess' (Dangerfield, 2012). The Grow Heathrow group is part of a wider Transition Heathrow group that is part of the global Transition Town movement. The site was cleared of rubbish and was transformed into 'a beacon of community strength and is an example of how to live sustainably.' (Transition Heathrow, 2013). The aim of the project was to return the site back to its original use which in a former life had been a market garden; they wanted to turn the place into a thriving growing space which would provide the community with locally produced, organic fruit and vegetables. The project is a centre for local residents and environmental activists where they are able to share knowledge and practical skills (Transition Heathrow, 2013). The project has received extensive publicity and is internationally recognised as a successful demonstration of community resilience.

The group has been running for three years and the produce grown is consumed by the people who live there and is also donated to the local community. All produce is grown through a collective system of input and shared communally. The site is under an acre and has around twelve people living on site with additional people coming to help during set weekly growing sessions. All of the people involved are volunteers and, within the larger organisational structure of Grow Heathrow, there is a growing committee dedicated to the food growing aspect of the project. The growing group consists of two coordinators and approximately seven other regular participants. Collectivism is at the heart of the group's values.

5.2 Independent Variables

5.2.1 Design Principles

Clearly Defined Boundaries

In relation to Grow Heathrow the boundary of the resource is clear in the sense that there is a fence around the area of the resource and the area is secure, although this has more to do with the community garden being an illegal squat than as a protective measure for the resource itself. There are

trees and hedges which clearly mark the end of the resource area. The raised beds where the cultivation itself takes place are well defined as they are all raised above ground level. In summary the resource is clearly defined and therefore the findings are in line with Ostrom's notion of clearly defined boundaries to the resource.

Regarding whether the membership of the group is clearly defined, in the case of Grow Heathrow this is not clear. Anyone can join and they have lots of volunteers that come and help with the community garden who do not live there and thus are not part of the Grow Heathrow community. Moreover, any individual who is interested is able to join the growing group. Grow Heathrow has set days where volunteers are able to help with the garden, making the group fluid and not clearly defined. However the majority of the members of the growing group live there and are part of the well-established wider Grow Heathrow community providing a level of consistency and continuity. The Grow Heathrow group in terms of the individuals that are living on site and most directly affected by the food resource, invokes a procedure for becoming part of the group. There is a trial period and then the group communally decides whether that individual should be entitled to stay on on a more permanent basis. This process has the effect of creating a solid and close group of individuals in terms of the entire Grow Heathrow Project but the fact that volunteers are able to help out means that the group remains not clearly defined.

Appropriation Rules

In this instance the most salient appropriation rule is the restriction on harvesting the resource unit. In the case of Grow Heathrow the produce is consumed by the individuals who live on site in the form of communal meals. Any additional produce is left outside the post office for the local community to take. The produce is only given to the wider community if they have surplus but who decides if they have surplus remains unclear. Finally volunteers are able to take some produce home with them.

There appears to be no strict process or clear instruction for how this works in practice. As far as it could be gathered this is undertaken in an ad-hoc manner. In one interview it was explained 'some of it we eat here, some of it we give to the local post office and some of it volunteers that come here might come and take some' (Appendix 2, transcript 1). The use of the word 'might' conveys that volunteers taking produce is not standard practice. When further probed about how it is decided when the resource unit is harvested the individual stated that 'to me it just seems like common sense, harvest it' (Appendix 2, transcript 1). This means that there appears to be no set rule about who and when people can extract the resource unit but that it is much more 'as and when' alluding to no clear appropriation rule in terms of harvesting. On the other hand, another interviewee stated that 'whoever is cooking can go and pick what they want' (Appendix 2, transcript 2).

This implies a normative rule that if an individual has been given the responsibility of cooking the communal meals then they are entitled to harvest the produce. The interviewee also expressed that in practice the food is picked by people with the most knowledge meaning that the harvesting process is the preserve of a few individuals. This point demonstrates the importance of knowledge in the appropriation of the resource and this dominates as there are no clear or set harvesting rules. When asked if people do go and pick produce the interviewee stated that the main problem is that people do not pick produce because they do not have sufficient knowledge. A volunteer who did not live on site was also interviewed and when asked about harvesting she stated that she would not harvest anything because she didn't know much about harvesting and gardening. Emphasis is yet again placed on knowledge and she takes instructions from others with more knowledge. She also expressed that she would not have any issue taking produce and therefore knowledge, instead of any kind of appropriation rule or norm, is the barrier.

When one interviewee was asked if there are any additional appropriation rules they responded that 'rules aren't the best way of doing things' and 'that every situation is different' (Appendix 2, transcript 2). The collective prefer to have guidelines but with a degree of flexibility remaining so that they can adapt to different situations. They believe clear appropriation rules are not required based on the philosophical standpoint of the group. This is in direct contrast to Ostrom's design principle of appropriation rules. Having said all that, there does appear to be a norm of only the people with the knowledge or individuals who are cooking harvesting the resource.

There is a clear appropriation rule in terms of the entire project and that is if you are a resident you are meant to spend a minimum of 2 days and 2 nights on site per week. This rule is significant as it will impact the amount of resource required in terms of the number of individuals that need feeding and also the amount of input in terms of labour that is available to appropriate the resource. However it is not a guarantee of labour as there are no rules that you have to help with the growing or minimum amount of hours you have to help out with the community garden; indeed many of the members are not involved in the growing side of the project at all.

Collective-Choice Rules

Grow Heathrow is a process of non-hierarchical living and they therefore endeavour to include everyone in the decision-making process with everyone being able to have a say. Decisions for the collective as a whole are made at a weekly meeting in which consensus decision-making is used to ensure everybody's voice is heard and the facilitators are rotated so no one person has undue influence. This same process of decision-making is used for the growing group and although there are two coordinators they do not necessarily make the decisions due to this system of consensus. As

explained by one of the interviewees, consensus decision-making is about understanding that there will always be leaders and people with more power but this is checked through changing roles, having open groups and regular meetings. Collective decision-making is ensured as everyone is able to come to the meetings and volunteers are also included in that. The interviewees felt able to influence and to take some autonomy in terms of undertaking actions.

When the visiting volunteer was asked about collective decision-making she stated that outsiders can take part. However she did point out how time consuming that process was and that there is so much going on and no centralisation that it can make you feel like you do not know what is going on creating a hectic atmosphere. This is the trade-off for having a non-hierarchical and completely inclusive decision-making system.

The group as a whole has a safer spaces policy that is a set of guidelines which everyone must adhere to. Within these guidelines collective and cooperative functioning is highlighted and the fact that there is consensus allows everyone an equal voice. However to what extent people take note of the policy is questionable as for example the visiting volunteer stated that she had never read it.

In summary the evidence from Grow Heathrow clearly shows that there are collective-choice rules in place and that individuals are able to modify the operational rules through a process of discussion in the form of consensus decision-making.

Monitoring

The first point to note is that as the appropriation rules are quite open and flexible, monitoring becomes less of a priority. There are no active measures taken to assess how much produce is grown and the interviewees when asked could not think of an example of monitoring relating to the resource in question. The visiting volunteer did mention the fact that there may not be a formal monitoring process but that she thinks it is 'just peer policed' (Appendix 2, transcript 3). In summary, contrary to the centrality placed by many scholars on the importance of monitoring, (Ostrom et al., 1992; Ostrom, 1990; Ostrom, 1999^a; Rydin & Pennington, 2000) Grow Heathrow has no formal monitoring process and only limited informal peer policing of the resource.

Graduated Sanctions

When the question of sanctions was posed to one interviewee the response was that there are 'procedures in place to deal with situations that might arise where that policy isn't adhered to but it is dependent on the situation' (Appendix 2, transcript 2). Further detail was not given as the interviewee stressed that every situation is different. This statement implies that action is taken when rule breaking occurs. However the safer spaces policy proclaims to not be a set of rules to be enforced by punishment or exclusion. This is a

direct expression of an aversion to the idea of sanctions. On the basis of the evidence presented and again contrary to Ostrom's design principle, graduated sanctions do not appear to be present in this case study.

Access to Low Cost Conflict Resolution Mechanisms

This principle is highly salient as a number of individuals are living in very close proximity for an extended period of time and therefore the likelihood for disagreement is increased, as it is a highly pressured environment. This principle means that rapid access to local and low cost arenas to resolve conflicts must be present. One interviewee explained the conflict resolution process; firstly they try and get the people involved to talk to each other without anything formal, if that fails the issue is taken to the weekly meeting and after that mediation can take place. This has happened in the past demonstrating that this mechanism is used in practice. The safer spaces policy also detailed a guideline for dealing with disagreements. The evidence indicates that conflict resolution mechanisms are in place.

Minimal Recognition of Rights to Organise

This is a highly contentious issue for Grow Heathrow as the land they are on is illegally squatted. They do not have the right to be on the land as they are not the landowners. There has very recently been a court ruling to evict the community from the land (Transition Heathrow, 2013; BBC, 2013). The implication of this is that the external government not only dismissed the right of Grow Heathrow to organise but also they have dismissed the right of the community to exist in that space. However the issue is more complex than a simple court ruling and there are numerous examples of external support. The interviewees stated that the local MP is very supportive with him publically stating that 'Grow Heathrow is about a living, sustainable, community based future. We should be enabling projects like this not closing them down' (Transition Heathrow, 2013; Dangerfield, 2012). Some of the local councillors have outwardly expressed support. The local community are also in favour of Grow Heathrow according to the interviewees and press (Dangerfield, 2012). Although there are many signs of support the court ruling overshadows all of this and puts into jeopardy the sustainability of the project. It cannot be stated that the group has any minimal recognition of rights to organise.

5.2.2 Attributes of the Community

Trust

Trust although a notoriously difficult concept to demonstrate appears to be in ample supply in the case of Grow Heathrow. As people live together on the site of the resource trust is likely to be higher as individuals feel trusting enough to live with one another and leave their possessions on site. Also as they live together they are likely to know each other better which in turn can foster trust. There is a strong sense of community and this is a demonstration of trust. An interviewee stated that he 'has trust in everyone' (Appendix 2,

transcript 1) but that you would probably receive a different answer depending on whom you asked. This alludes to the fact that there may be issues surrounding trust within the group. Another interviewee, when asked about trust she had in others answered 'yeah mostly' (Appendix 2, transcript 2) but that sometime people say they are going to do something and then do not so she does not always trust everyone. The visiting volunteer trusts people within the community and brings with her a general 'moral compass' (Appendix 2, transcript 3) which is trusting of others. The safer spaces policy encourages people to respect each other and this will aid trust. One of the major indications of trust within the group is the fact that the 'as and when' relaxed appropriation rule shows that there is sufficient trust for clear harvesting rules not to be necessary. There is a belief that people will do the right thing.

Reciprocity

Reciprocity in this research means mutual help and examples of this are evident in the case of Grow Heathrow. The safer spaces policy states that people should support each other demonstrating that the group wishes to encourage reciprocity and there is a clear culture of learning from one another and sharing skills.

In terms of equal input into the management and running of the resource, this is not always balanced and due to the intense living environment there are tensions surrounding 'I have done more than you'. However one interviewee expressed how this is an unhealthy dynamic and therefore she tries to step back as 'it doesn't really matter' (Appendix 2, transcript 2). Reciprocity may be an issue in terms of an imbalance of input but with people taking a positive attitude towards this issue it does not become a problem. To conclude the principle of reciprocity is definitely there in theory in this case study but maybe not always in practice.

Common Understanding

There is continuity surrounding the aim of Grow Heathrow between interviewees and the documentation analysed. Commonalities were: opposition to the third runway, building community resilience and creating alternatives to the current system. There are shared norms in terms of the political beliefs of the members within the community. They all share the values and commitment to non-hierarchical living and consensus decision-making. The vision and values of the members of the community appeared to be similar.

Leadership

The group's commitment to non-hierarchical living is a clear indication of their opposition to any form of leadership and this is mitigated through rotating facilitators in meetings and by using consensus. The only concession is that one interviewee expressed that there is only leadership in the sense of some individuals possessing more knowledge. There was also evidence of certain

individuals standing up to others demonstrating a form of situational leadership. In summary the group endeavours to omit leadership and this appears to be the case in practice.

Heterogeneity

Although only based on observations from the community garden the socio-cultural dynamics of the group appears to be similar with white British individuals dominating and with several individuals being highly educated. In summary from the researcher's analysis the group appears homogenous.

Size

On the whole Grow Heathrow is composed of 15-20 people with 12 people living there at the time of writing. In the gardening group there are 9 regular people which includes residents and volunteers.

Knowledge

This variable has already been expressed in relation to leadership and appropriation rules.

5.3 Dependent Variables

Meetings

Grow Heathrow has weekly meetings for the collective as a whole. Growing committee meetings are also weekly and held on the workdays so that volunteers are able to attend.

Informed

All of the respondents felt informed regarding what is going on with the management of the resource. This is done by minutes of the meetings being sent round the whole group mailing list. The visiting volunteer does not receive minutes however she was not bothered about this matter and stated how there is lots of information on the website which she could access if necessary. She also believes there is a good level of transparency.

Level of Connection

Grow Heathrow is connected to a great number of local, national and international networks and groups. Many of them are activism networks and the group has attracted international attention as an example of community resilience. The local network is also very extensive with the group being committed to forging local connections and being an active part of the community. In sum Grow Heathrow has a very high level of connection.

Financial and Material Resources

In relation to whether Grow Heathrow is financially sustainable this is a difficult point to assess, as one of their aims is to move away from a monetary system. The group functions by spending very little money but it does require

some finances for equipment, maintenance and events. Therefore they do apply for funding grants when necessary but try to keep this to a minimum by people volunteering their time and not money. However one of the interviewees did remark that it is questionable how financially sustainable you can be when you rely so heavily on donations and grants. They also stated that relying on grants enabled them to be more independent of the monetary system as people can then volunteer their time for free and that if they stop relying on grants they would have to return to a more conventional monetary system. In short, they are not financially sustainable in that they rely on grants but they are in the sense that they require very little money to exist.

Number of Participants

Over time the number of participants has stayed the same according to the interviewees but overall support has increased. At present and based on previous years they are sustainable in terms of the number of participants.

Amount of Produce

Year-on-year the interviewees claim that the amount of produce has increased as the number of beds has increased so there is more growing space.

5.4 Conclusions

Grow Heathrow is successful according to one interviewee, in the sense that it is an international demonstration of what can be done on derelict land and it inspires people from all over the world. A vast amount of resources have been donated to Grow Heathrow and this is an indication of the level of support it has achieved. It is an established example of collective action that has been able to continue for several years. The resource is continuing to flourish and the community garden appears viable in terms of numbers of participants and finances. However this project is not sustainable by virtue of the court order which provides a high level of uncertainty as the community itself could be evicted at any moment. The variable minimum recognition of the right to organise is therefore a highly significant variable. Omitting this factor for an instant, collective action was achieved in spite of the fact that several of the variables proposed in the literature were not present like appropriation rules, leadership, graduated sanctions and monitoring. However variables such as trust and common understanding appear to be highly influential, with there being a strong sense of community. Salience is also high because they are living on site therefore dependence on the resource is increased. A summary can be found in table 4.

| | | Score | Evidence |
|--------------------------------|---|-------|--|
| Design Principles | Clearly Def. -Resource | ✓ | Fence, hedges, not fences all way round |
| | Boundaries -Group | X | Anyone can join growing group, whole group has joining process |
| | Appropriation Rules | X | Few normative rules but unclear, against rules, no min. input |
| | Collective-Choice Rules | ✓✓ | Consensus decision-making |
| | Monitoring | X | Nothing formal just peer policed |
| | Graduated Sanctions | X X | Disagree with the idea of sanctions |
| | Access to Conflict Res. Mechanisms | ✓ | Formal process for resolving disagreements |
| | Minimal Recognition of Rights to Organise | X | Not recognised as court ruling but local council supportive |
| Attributes of Community | Trust | ✓ | Trust is present but trust issues were alluded to |
| | Reciprocity | X | Imbalance in input not an issue |
| | Common Understanding | ✓ | Common understanding is present |
| | Leadership | X | Against the principle but leadership based on knowledge |
| | Homogenous | ✓ | Group appears homogenous |
| | Small Size | X | Above 10 |
| | Knowledge | ✓ | Leadership based on knowledge |
| Dependent Variables | Meetings | ✓✓ | Weekly |
| | Informed | ✓ | Participants feel informed |
| | Level of Connection | ✓✓ | Internationally connected |
| | Financial and Material Resources | X | Relies on funding |
| | Number of Participants | ✓ | Same over time |
| | Amount of Produce | ✓ | Increased |
| | Overall sustainability and durability CA | ✓ X | Depending if court ruling is included |

Table 4: Summary of case study 1 (NB: scoring criteria can be found in table 11)

Chapter 6: Case Study 2 - Brockwell Park Community Greenhouses

6.1 Background

Brockwell Park Community Greenhouses is located in Brixton, London. The site was originally a kitchen garden for the large manor house that was sited in the centre of the park. The site was turned into a designated public park in 1892. The kitchen garden was then a growing nursery for the local authority and when that was no longer required it became a loose community garden project in 1998. The aim was to provide a local resource to improve the lives of the local community (Brockwell Park Community Greenhouses, 2013). This group was initially quite informal, recently the group has become more formalised with three paid employees, a board of trustees made up of nine people and a newly formed management committee of six. They run an extensive programme of community and educational events (Brockwell Park Community Greenhouses, 2013). A large number of different produce is grown with many exotic varieties reflecting the diets of the local community which is culturally diverse. They run sessions for local volunteers three times a week. All the produce is grown communally; there are no individual plots. The total area of the plot is around a third of an acre.

6.2 Independent Variables

6.2.1 Design Principles

Clearly Defined Boundaries

The first notion relating to clearly defined boundaries is whether or not the boundaries to the actual resource are clear. Brockwell Park Community Greenhouses have a large fence and wall surrounding the whole area of the resource and there is a lockable gate at the entrance. The growing space itself comprises of two greenhouses and several beds. All of the beds are clearly marked out and separated from paths and other areas therefore the resource is defined in that sense. In all of these case studies as the resource is the same and as it is static the boundary of the resource will be clear. This case study is in line with Ostrom's design principle of the boundary of the resource itself being defined.

The second concept for the clearly defined boundaries principle is that individuals who have a right to withdraw resource unit are defined. In the case of Brockwell Park Community Greenhouses there is no definitive group of people that are able to participate as anyone can join. Anyone is able to volunteer and help in the community garden. There is no membership requirement. There are set days in which any interested member of the public is able to come and help with the running and maintenance of the garden.

There is however a set group of individuals who regularly help out and the employees and trustees remain constant creating a degree of continuity. As anyone is able to join, this has the knock on effect of creating fluidity and some inconsistency within the group. The lack of clearly defined boundaries in terms of who is able to participate means that the evidence for this case study is contrary to Ostrom's proposal of having a clearly defined user group.

Appropriation Rules

Appropriation rules in regard to this research are synonymous with the harvesting process, specifically the rules of who and how the food is harvested. When asked about the harvest process, between interviewees there was a lack of consistency and no clear process. One interviewee responded that it is harvested just when it is ready and then they have a big sale to the public on Sundays. Also volunteers are able to take some produce home but how this is decided and how much they are able to take remains unclear. It is stated that much is sold to the public but how the produce is divided between the public and volunteers is unknown. A member of senior management stated that in the past the process had 'been ad hoc and not underpinned by any rational process' (Appendix 2, transcript 5) and that a new system needs to be developed which is more structured. Another response was that they need to have a better plan about the harvest process implying there are no concrete rules at present. The process is noted as being 'sporadic and down to who wants to decide what on a particular day' (Appendix 2, transcript 4).

One volunteer expressed, as they do not get paid 'obviously [they] have the right to take some of the vegetables' (Appendix 2, transcript 1). From this statement it appears as though it is a right in exchange for the effort put in. When probed again about how much a volunteer is able to take the response was that you can take as much as you need but that people only take a small amount. This is in direct contrast to another interviewee who stated that volunteers are encouraged to take a little home with them. One volunteer stated that 'they will just be giving out extra to anyone that wants it' (Appendix 2, transcript 2) further demonstrating the lack of clarity on this issue.

It does appear however that although it is not quoted as being a rule, in practice, they do not allow people to just go and pick things on their own without consulting other members of the group. It was expressed that the paid garden coordinator tells people when to harvest and what is being sold although this was only expressed by the individual responsible for this. The garden coordinator went on to state that in an ideal world the volunteers would know what needs harvesting and when but due to a lack of knowledge only a couple of people will harvest and the rest will wait to be told. From this information it is unclear whether anyone is able to harvest and a lack of knowledge is the limiting factor or whether the paid employee is responsible for harvesting.

With regard to volunteers taking home produce there is no minimum amount of time required in order for them to be able to receive produce. It was stated by one interviewee that there are no rules about harvesting and how much you take. In summary this is a categorical omission to Ostrom's notion of appropriation rules.

Having stated that there is a clear lack of appropriation rules in this case study it was conveyed that contrary to the expected tragedy of the commons scenario ensuing, instead most people are concerned about taking too much and therefore waste is produced.

There is a clear rule that you have to register at the start of the session and when you leave. All equipment has to be washed and put back in the shed. In relation to the behaviour expected towards the environment the cultivation of the resource is organic and therefore no pesticides are permitted.

Collective-Choice Rules

As the collective choice rule involves individuals affected by the operational rules being able to modify these rules, it is important to put forward the management and decision-making structures of the organisation to assess how inclusive it really is. An AGM is held every year and volunteers are able to attend. There is also a board of trustees.

Decision-making is undertaken through a process of discussion, reaching a consensus and in extreme circumstances a vote. In the past day-to-day decisions have just been made and large decisions have been put to the board of trustees and raised with the volunteers.

A volunteer was asked if she has been involved in the decision-making and the response was 'so far we haven't really done decision-making' (Appendix 2, transcript 1); this shows a lack of inclusion. One volunteer stated that he had never attended a meeting or been involved in any decision-making but that he would be able to influence if he wanted to. Volunteers tend not to attend trustee meetings but they are not excluded. There is a disconnect between the volunteers and some of the paid staff and trustees which embeds the feeling of exclusion on the part of the volunteers.

To further address the decision-making issues a new management meeting has been set up with paid staff, trustees and volunteers all being present thus increasing the collective-choice process. In the past the garden coordinator had acted as the go-between. In the interim period the garden coordinator is still very keen on volunteers coming forward with ideas to ensure collectiveness. However it has been difficult to engage volunteers. As the volunteers are able to attend the new management meeting the question was proposed about which volunteers were able to attend. It became apparent that the selection process was not very inclusive as one volunteer was chosen and

the other invited themselves. However it was stated that if lots of volunteers wanted to attend they would develop a volunteer coordinator to speak on the volunteer's behalf. At present this process does not appropriately foster collective decision-making. In terms of the day-to-day running of the garden, the garden coordinator conveyed a desire to work in a collective way.

In summary in the past levels of collective decision-making were questionable with a large disconnect between decision-makers and volunteers being present. There is willingness for change, some of which has already taken place. However the volunteers also have a responsibility to engage in the process. Collective-choice rules are present but need to be strengthened in practice.

Monitoring

Monitoring involves actively assessing the condition of the resource and the appropriator's behaviour. An example of monitoring appropriator's behaviour is that there is a registration book where volunteers have to sign in and out. However this is not used to assess the amount of hours people put in as there is no requirement for this indicating the registration book per se is not important. Also as there are no clear appropriation rules monitoring becomes less significant. There is no monitoring of the volumes of food produced and no hard data of what is harvested. In the past there has been informal monitoring but it was dependent on a few volunteers and trustees, based on individual agendas. Now as an organisation they are thinking about looking into this and have asked for more monitoring to be conducted. There is however a record of how much is sown, potted and planted outside but not produce which would provide a clearer assessment of the quality of the resource. In conclusion there is a lack of monitoring in this community garden.

Graduated Sanctions

Brockwell Park Community Greenhouses has no sanctions. However there are normative rules surrounding harvesting practice. One interviewee stated that people break the rule about harvesting together. Individual offenders are told off but only if they are caught and this relates to the idea of monitoring. In short no graduated sanctions are present.

Access to Low Cost Conflict Resolution Mechanisms

No evidence of access to low cost conflict resolution mechanisms was found in this case. The community garden may have procedures for resolving conflicts but such information was not shared with the researcher.

Minimal Recognition of Rights to Organise

Regarding Ostrom's principle of the minimal recognition of the rights to organise, the question is whether or not the local council, which is the external authority, grants the community garden permission to organise. The council's level of support is taken as a proxy for this measure. Lambeth council owns

the land of the community garden but has given the project a 10-year lease, instead of the previous 1-year rolling contract, a clear indication of a recognition of the right for them to organise. The lease does impose some restrictions but does not interfere with the decision-making and governance of the community garden. In short the organisation clearly has minimum recognition of the right to organise.

6.2.2 Attributes of the Community

Trust

Although trust is very hard to assess indications of it are when there is a strong sense of community and shared responsibility amongst the participants. Trust is also dependent on how well participants know each other as if you do not know someone trust is very difficult. One volunteer expressed how she knows some people very well and that they all get on very well meaning there is a sense of community but that not everyone has a communal way of thinking alluding to concerns over trust. The volunteer went on to explain that she has been coming for a long time and that there used to be a great communal feel but the recent changes have had a negative impact on the place with some longstanding members choosing to leave. She stated that the formalised atmosphere has changed the dynamics of the place. This case in point demonstrates the connection between trust, a sense of community, the effect of changes and out/in migration on the group. The coordinator proclaimed to know all volunteers pretty well and that there is a high degree of trust although she acknowledges that trust has been an issue in the past. In summary there is some evidence of trust although this variable has clearly been an issue and high levels of trust are yet to be fully established.

Reciprocity

Reciprocity involves mutual help and is measured in this instance by whether people feel reciprocity based on people putting in equal amounts of time and effort. When this question was posed the response was that people put in different amounts of time according to the time they have got but that this is not an issue. Furthermore, it was thought that the work balances out in the end. The aim of the project is not to be strict about the amount of time people put in but to be as inclusive as possible. To conclude, reciprocity even if not evident in practice, is not an issue and on the whole does not concern the participants.

Common Understanding

The researcher investigated the level of common understating amongst participants by questioning the interviewees about the aim of the project. The answers provided some continuity as the answers were broadly similar for example: connecting with nature, education, bringing the community together and learning about food growing. However the volunteers and senior

management placed different emphases on the main aim of the project. The volunteers highlighting bringing the community together, connecting with nature and learning about grown food, whilst senior management see it more from an education and development perspective and said 'our proper service users are schools and other groups' (Appendix 2, transcript 5) and that the educational angle comes above the volunteer aspect. Clearly although there may be some commonalities there is a divide in terms of aim between the different groups. Common understanding is not present.

Leadership

Leadership is present in this community garden as there is a clear hierarchal structure with the Chair of the trustees seen as a leader due to levels of responsibility. There is also the position of Director who again can be seen as another leadership figure. Moreover the garden coordinator demonstrates leadership in that this individual tells people what to harvest and what will be sold. There are a clear number of leaders in this organisation.

Heterogeneity

Heterogeneity in the case of Brockwell Park Community Greenhouses is a reflection of the ethnic diversity of the Borough as a whole as only 54 per cent of the population of Lambeth are White British with the Black population accounting for 20 per cent (Data Management and Analysis Group, 2007). The community garden under investigation is very ethnically diverse with participants coming from a variety of backgrounds. Brockwell Park Community Greenhouses is heterogeneous.

Size

Interviewee's responses varied a lot in terms of estimation for the number of participants from no more than 4 regular people volunteering to 15-20 regular volunteers. Therefore questions remain about the accuracy of the figures but the number of volunteers will be taken as 15 as this was the most populous response. The garden coordinator also stated that they are 20 to 30 fairly regular volunteers; this is on top of the 3 paid staff and 7 trustees meaning that it is a sizable community.

Knowledge

This point has already been explored in relation to the appropriation rules and people possessing a lack of knowledge. There is as well a reliance on the knowledge of the trustees.

6.3 Dependent Variables

Meetings

Regular meetings are held as the trustees meet quarterly and the management committee meet monthly.

Informed

Participants feel informed as minutes of the meetings are made available via email and in print. There is also a newsletter that is circulated. A whiteboard informs volunteers of the jobs that need to be completed.

Level of Connection

The group is connected to lots of other local community groups as well as being in London wide community growing networks. They are also connected to national organisations. Examples of the groups are as follows: the Federation of City Farms and Community Gardens, Lambeth Growing Hubs, the City Bridge Trust, LEAF, Capital Growth, Incredible Edible, Groundwork and Chelsea Fringe.

Financial and Material Resources

The project relies on funding grants but this is not long term. They currently do not have a commercial angle but want to develop this so that they are financial sustainable and not reliant on grant funding. They are thinking of introducing a fee paying membership system to raise funds. There are moves within the organisation to provide services so that they become more attractive to other agencies that will pay for these services. At present they are not at all financially sustainable. The plant sales and events by themselves do not make enough money to keep the group financially viable.

Number of Participants

When asked if the number of participants involved in the project has increased or decreased year-on-year, as this is an indication of whether the project is sustainable in terms of numbers, the responses varied. Some expressed a high degree of turnover but there being a core of long standing members whilst others expressed that in the immediate past numbers have decreased. A different response was that numbers have increased. Undoubtedly new people have joined and others have left. Based on the evidence it cannot be concluded whether the number of participants has increased or decreased year-on-year.

Amount of Produce

Due to the lack of monitoring and as many of the staff have been there less than a year, the change in produce cannot be accurately stated.

6.4 Conclusions

In conclusion this case study is successful to an extent as collective action is taking place, people regularly participate and the site is noted as having a friendly and welcoming atmosphere. However, as stated by an interviewee the objectives have yet to be fulfilled. In terms of the dependent variables many remain unknown and thus cannot be assessed and the project is not financially sustainable but regular meetings are in place and people feel informed. Many of Ostrom's principles are not evident and this has impacted

on the durability of the collective action. The decision-making structure is yet to be fully established and is not sufficiently collective, there is no monitoring or graduated sanctions. The appropriation rules remain unclear. A number of the other variables such as trust and common understanding remain problematic and there is a clear divide between the different groups. The digression from the theoretical proposition appears to be to the detriment of the durability and sustainability of collective action. A visual summary can be found in table 5.

| | | Score | Evidence |
|---|--|-------|--|
| Design Principles | Clearly Def. Boundaries | ✓ | Fenced and walled |
| | -Resource | ✗ | Anyone able to join the group |
| | -Group | ✗ | No clear rules, lack of consensus regarding appropriation norms |
| | Appropriation Rules | ✗ | Only a small amount of collective decision-making |
| | Collective-Choice Rules | ✗ | Lack of any meaningful monitoring |
| | Monitoring | ✗ | Told off for inappropriate harvesting but no graduated sanctions |
| | Graduated Sanctions | ✗✗ | No procedures for resolving disagreements found |
| | Access to Conflict Res. Mechanisms | ✓ | Supportive local council |
| Minimal Recognition of Rights to Organise | | | |
| Attributes of Community | Trust | ✓ | Evidence of trust but some small trust issues |
| | Reciprocity | ✗ | Imbalance in input not an issue |
| | Common Understanding | ✗ | Different groups have different aims for the project |
| | Leadership | ✓ | A number of leader figures present |
| | Homogenous | ✗ | Heterogeneous group |
| | Small Size | ✗ | Above 10 |
| | Knowledge | ✓ | Leadership based on knowledge |
| Dependent Variables | Meetings | ✓ | Monthly |
| | Informed | ✓ | Participants feel informed |
| | Level of Connection | ✓ | Connected to local and national networks |
| | Financial and Material Resources | ✗ | Relies on funding and currently not financially sustainable |
| | Number of Participants | — | Information missing |
| | Amount of Produce | — | Information missing |
| | Overall sustainability and durability CA | ✗ | In current form not sustainable |

Table 5: Summary of case study 2 (NB: scoring criteria can be found in table 11)

Chapter 7: Case Study 3 - Abbey Gardens

7.1 Background

Abbey Gardens is a community garden in West Ham, London and is located in the ruins of a 12th century abbey (Abbey Gardens, 2013^a). The site was derelict and prone to vandalism, in 2006 a group of local residents got together to form a group that would transform the site into a community garden that benefited the local community (Abbey Gardens, 2013^a). It is an open-access community garden. Anyone is able to participate and all of the produce is grown communally with no separate plots. The group has three regular growing sessions per week. The produce is shared among the volunteers and is also available to the local community. The plot has thirty long raised beds and fruit trees along the back wall of the site. The group has one paid employee and a large committee made up of volunteers. They hold regular open day events to engage with the local community. The site is half an acre. Abbey Gardens is a successful example of a collective action and the community garden has been used in numerous instances as a showcase.

7.2 Independent Variables

7.2.1 Design Principles

Clearly Defined Boundaries

In respect to whether or not the boundaries of the resource itself are clear, Abbey Gardens although a public space has a fence and is walled the entire way round the plot making the area of the community garden very clearly defined. There is also a lockable gate. In terms of the resource itself this is located in thirty raised beds which are very clearly defined.

The second concept of the principle is that there is a user group membership. In the case of Abbey Garden this is not defined as the gardening sessions are open to anyone who agrees to abide by the rules of the Garden. Membership will only be refused when such membership could be detrimental to the aims of the group as stated in the group's constitution. There are no joining rules. The group not being clearly defined and fluid due to its openness is in opposition to Ostrom's idea of a clear and set user group.

Appropriation Rules

In principle the appropriation rules are regarded as the harvesting rules for the resource. In terms of harvesting individual participants are able to take what they want as the process is quite open minded with some people taking a lot and others taking a little; people take what they need. There is the rule that you cannot harvest anything by yourself and that it all has to be done collectively. You are only able to harvest if you have been told to do so. Also there is the normative rule that the employee decides when and what needs

to be harvested. If an individual thinks that some of the produce needs harvesting they consult the paid employee first and this is based on permission.

Some of the harvesting rules are a little unclear and from the interviews not everyone appears to know all of the harvesting norms. The harvesting rules appear to be normative in nature instead of codified.

No time commitment is imposed, for example you do not have to have done x amount of hours to be entitled to the produce. They are practical rules such as putting tools away, signing in and out and health and safety rules as well as harvesting rules. The garden is only organic and therefore presumably there are rules at least in the normative sense about what substances can be used on the resource.

Similarly to the previous case study although there are no clear appropriation rules in terms of the amount of produce one is able to take, there are issues surrounding participants not taking enough. This is again an example of the opposite of the tragedy of the common occurring.

In summary the appropriation rules are clear in the sense of how harvesting is undertaken however there are no rules surrounding how much people are able to take and it is not based on any conditions.

Collective-Choice Rules

The decision-making process is a constituent part of the collective-choice rule and individuals involved in the community should be able to have a say in the rules themselves. The decision-making process was described as 'relaxed and open' (Appendix 2, transcript 3) with people's ideas being listened to. One of the interviewees had only recently joined the group but felt involved. However in terms of where things are planted this is not a collective process as this is decided by the employee but people are able to input into what is planted on the yearly basis.

The formal structures of the organisation are as follows: a board of trustees, a yearly AGM and monthly committee meetings. One interviewee commented how open the trustees are. At the AGM majority voting takes place for committee positions. A monthly meeting is another forum for collective decision-making and people are able to put forward suggestions for the meeting. The process at the meetings was noted to be 'very democratic' (Appendix 2, transcript 1) and volunteers are able to attend the monthly meetings. Decisions at the monthly meetings are taken by a majority show of hands and this meeting is the main decision-making forum.

The process is collective as the constitution states that the committee is accountable to its members at all times. There is also a formal process for

amendments to the constitution in which the amendment is submitted and a forum is held to discuss the proposal. For it to pass there has to be at least a two-thirds majority.

In summary there are many of formal structures in place that ensure collective decision-making is achieved and there are multiple opportunities for individuals to have input into the process and amend the rules. There is nevertheless a clear hierarchical power structure.

Monitoring

There are only two monitoring systems in place, the first is a membership form and the second is a system for signing in and out. However these are not used to assess the amount of hours people are putting in. There is no record of the amount of produce harvested or how much individuals take.

Graduated Sanctions

There appears to be no graduated sanctions in the case of rule breaking for this community garden. When this question was proposed the response was that nobody from within the group has broken any of the appropriation rules but this could also be explained by there being a lack of a monitoring system to establish whether or not this is really the case. On the other hand in the constitution it is stated that individual participants can have their membership terminated if their conduct is prejudicial to the interests and objectives of the organisation. This principle does not appear to be common knowledge as it was not mentioned by any of the people interviewed.

Access to Low Cost Conflict Resolution Mechanisms

If there are grievances or disputes and membership is terminated the individual is able to appeal the decision and has the right to be heard by the general committee. The next stage is a right of appeal to an independent arbitrator. The formal procedure put forward in the constitution is a clear example of access to low cost conflict resolution mechanisms and is thus in line with Ostrom's principle.

Minimal Recognition of Rights to Organise

This principle involves an external authority recognising the rights of the community garden to organise. The external actor in question is the local authority as the land is leased off the council. Therefore the question that needs to be answered is one of whether the project is supported by the local authority. It was stated how supportive the council are and the only significant obligation the council impose is a public space obligation. The lease for the land runs out in 2014 but talks with the council about how to move forward are taking place. The council clearly acknowledges the groups' right to organise as they were supportive in the development phase, have provided funds and offered a peppercorn rent. Regarding organisational aspects the council do not get involved. This evidence is congruent with Ostrom's proposed principle.

7.2.2 Attributes of the Community

Trust

Trust was assessed in this case study by asking about the sense of community present within the group as this is taken to be a proxy for trust. The responses were all very positive regarding a sense of community, the place was described as a social hub. Another remark was about the high levels of trust itself. Although this is hard to verify in practice at face value there does appear to be a high degree of trust within the community.

Reciprocity

Reciprocity is evidenced by the fact that activities relating to the garden are shared. When the notion of people putting in equal amounts of effort into the project was proposed the response was that people are able to put in different amounts of time but there is no judgment about this meaning that reciprocity is not regarded as essential as people look beyond this. Even if people do not come often they are able to receive food, another indication of people looking beyond reciprocity. There is also recognition of those who put in a lot of work through awards being given. In total, reciprocity may not be evident in practice but the imbalanced input is recognised and is not a major issue.

Common Understanding

There appears to be consistency between the stated aims from the different interviewees. Several members stated the aim or purpose to be mainly a social one, bring people together from different backgrounds. All aims mentioned were also found in the constitution. Common understanding within the group is clearly shared.

Leadership

When the question of leadership was posed the response was two-fold. Firstly, that leadership is present in the trustees due to the power and responsibility invested in them. The second example of leadership was the paid employee due to the level of knowledge he possesses and people see him as a figurehead to turn to.

Heterogeneity

The group is very heterogeneous in terms of socio-cultural diversity with one interviewee proclaiming there to be 'every combination of people from different backgrounds.' (Appendix 2, transcript 3)

Size

The number of regular volunteers is consistently around 20.

Knowledge

Similarly to the previously mentioned examples, knowledge is significant as leadership in the form of the employee is based on knowledge. The paid-employee was recruited as no one had the required level of knowledge.

7.3 Dependent Variables

Meetings

The group holds monthly meetings.

Informed

Individuals involved in Abbey Gardens feel informed as an agenda for the monthly meetings is circulated prior to the meeting and the minutes are emailed out on the mailing list after. The minutes are also put on the website so anyone is able to access them. The constitution dictates that all meetings must be minuted and available to interested parties which indeed seems to be the case.

Level of Connection

The community garden is part both of local London based networks and a number of nationwide associations. The project is a member of Garden Organic, the RHS, the Federation of City Farms and Community Gardens and Let's Get Growing Newham. They also undertake outreach events within the local community. They have recently worked with Jamie's Ministry of Food. They were a part of Chelsea Fringe. They have a good reputation and therefore numerous groups reach out to them who wish to start similar projects.

Financial and Material Resources

The community garden is dependent on funding grants and the question remains whether funding grants can be seen as sustainable due to the level of uncertainty that is associated with them. In the case of Abbey Gardens every year they are looking for sources of funding. They survive on very little funds and have very limited resources. The project is heavily reliant on key 'individuals with the social and financial capital to be in a position to volunteer for free' (Appendix 2, transcript 3). In short the finances of the organisation are not sustainable.

Number of Participants

The number of participants involved in the project has increased year-on-year.

Amount of Produce

When questioned about the amount of produce it was stated to be more than they can eat and one response was that it is a big part of their diet. Asked whether or not it has increased year-on-year the response was that it has remained about the same but that the amount of fruit produce has increased. Even if the amount of produce has remained the same this is still an indication that the quality of the resource is not decreasing over time.

7.4 Conclusions

Abbey garden has clear structures for the governance of the resource and

they allow for collective decision-making to be ensured. The appropriation rules are not in line with Ostrom's proposal as there are no rules regarding how much people are able to take and yet the resource is not being degraded and a tragedy of the commons is not occurring. Monitoring and graduated sanctions are also not sufficiently evident. Other variables appear to be significant such as the collective sense of community and common understanding amongst the group. Regarding the dependent variables, the variables are very much congruent with the positive signs of durability of collective action set out in the literature with the only issue being the reliance on funding grants. Although not all of the theoretical propositions are displayed in this case study the enduring conclusion is that the collective action in this case is durable and sustainable. A summary of the variables can be found in table 6.

| | | Score | Evidence |
|--------------------------------|---|-------|---|
| Design Principles | Clearly Def. -Resource | ✓ | Fenced and walled |
| | Boundaries -Group | ✗ | Anyone able to join the group |
| | Appropriation Rules | ✗ | No clear harvesting process, few norms, no time commitment |
| | Collective-Choice Rules | ✓ | Formal structures for collective decision-making |
| | Monitoring | ✗ | Lack of any meaningful monitoring |
| | Graduated Sanctions | ✗ | Evidence of graduated sanctions in constitution but not in practice |
| | Access to Conflict Res. Mechanisms | ✓ | Formal procedure |
| | Minimal Recognition of Rights to Organise | ✓ | Supportive local council |
| Attributes of Community | Trust | ✓ | High levels of trust were stated |
| | Reciprocity | ✗ | Imbalance in input not an issue |
| | Common Understanding | ✗ | Common understanding about the aims of the project |
| | Leadership | ✓ | A number of clear leader figures present |
| | Homogenous | ✗ | Heterogeneous group |
| | Small Size | ✗ | Above 10 |
| | Knowledge | ✓ | Leadership based on knowledge |
| Dependent Variables | Meetings | ✓ | Monthly |
| | Informed | ✓ | Participants feel informed |
| | Level of Connection | ✓ | Connected to local and national networks, significant reputation |
| | Financial and Material Resources | ✗ | Relies on funding and currently not financially sustainable |
| | Number of Participants | ✓ | Increased |
| | Amount of Produce | ✓ | Increased due to fruit trees |
| | Overall sustainability and durability CA | ✓ | Successful and sustainable |

Table 6: Summary of case study 3 (NB: scoring criteria can be found in table 11)

Chapter 8: Case Study 4 - Culpeper Community Garden

8.1 Background

In 1982 a small area of derelict land was cleared to make way for a community garden in Islington, London (Culpeper Community Garden, 2000). Originally the site was developed as a space for local school children to learn about gardening and the natural environment (Culpeper Community Garden, 2012). Since then the garden has become a community garden and now comprises of a lawn, ponds, rose pergolas, ornamental beds, vegetable plots, seating and a wildlife area (Culpeper Community Garden, 2000). The site is divided into fifty separate plots. These plots are given to community groups, children, and people living nearby who do not have gardens. In order to have one of the small plots you have to be close to the garden (Culpeper Community Garden, 2000). Plot holders pay a fee to have a plot on an annual basis. Non-plot holders can also become a member to support the project contributing a small financial fee. The garden is open access. Tending the garden is a communal effort by garden members and volunteers. There are regular volunteering sessions several times a week. The community garden works with a variety of community groups and has a regular programme of events. There are two part time paid staff and a committee of volunteers. The idea behind the project was that it is cultivated by and for the local community (Culpeper Community Garden, 2000). The site is approximately a third of an acre and any communal produce is sold to the public to put money back into the garden. Culpeper Community Garden is a very long running and well-established community garden in London.

8.2 Independent Variables

8.2.1 Design Principles

Clearly Defined Boundaries

Clearly defined boundaries in the sense of Ostrom's principle is a two-fold concept, the first of which relates to the boundary of the resource itself. In the case of the whole garden, the boundary is clearly defined as it is walled and gated. However, the individual plots are not clearly defined and it is difficult to distinguish where one plot ends and the next starts as the boundary material differs depending on the plot.

In relation to whether the membership group is clearly defined, again a distinction needs to be made between the volunteers and the plot-holders. Anyone is able to volunteer and membership is not required meaning there are no clear boundaries to this activity. As well in terms of the people that have access to the resource, members of the public are welcome to use the

space and they also have the right to enjoy the garden. There is a general membership to support the garden that is open to anyone that agrees with the project's aims. The individual plots do however possess a defined membership characteristic as entitlement to a plot is based on the individual living within 1 square mile of the garden and not having their own personal garden. Plot-holder membership is only granted on receipt of the annual membership fee.

To summarise volunteers, membership and general access is open to anyone but plot-holders are selected using a strict criteria. The boundaries to the plots are not well defined. This is contrary to Ostrom's principle in terms of the boundary of the resource but not in terms of boundary of the appropriators.

Appropriation Rules

The appropriation rules in the instance of the case study refer to the harvesting rules of the resource as some of the individual plots are communally run and there are a number of communal areas. The appropriation rules also refer to any restrictions and actions that are prohibited with regard to the resource.

The volunteers stated that they do not take any of the communal produce home. However the employee stated that people are able to take home some of the produce if there is surplus. This fact doesn't appear to be common knowledge amongst the volunteers. The employee decides who is able to take a resource unit based on whether or not they are a long term volunteer who has put a lot into the garden. They also have a large plant sale that raises money to put back into the project which the volunteers help with. The volunteers communally cook some of the edible produce being told when and what to harvest. The staff offer advice as they have the appropriate level of knowledge. There is no minimal requirement imposed on the volunteers but they are expected to do work while they are there. Additional rules for volunteers are that they do not have a key and tools must be put away.

There is a book of rules with set guidelines for the plot-holders. In theory nobody else is able to harvest the plot-holders' produce but this is difficult in practice as it is open access. In the guidelines it states that: no artificial fertilisers are allowed, plot-holders are expected to help out on workdays, help with community events and with communal areas, weeds should be disposed of properly, paths must be kept clear, no tree or shrub more than 3 inches in diameter may be cut down, no earth can be removed and no permanent structure or fence can be eradicated without permission. Plot-holders are free to grow vegetables but at least some flowers must be grown.

Clearly the plot-holders have a large number of appropriation rules to abide by that are set out in the guidelines. However there appears to be less clarity

surrounding communal produce. In general it can be stated that there are clear appropriation rules for this case study.

Collective-Choice Rules

This principle is uncovered by assessing the decision-making process of Culpeper Community Garden. According to the volunteers the coordinator makes all the decisions but if you have an opinion you are able to say and it will be listened to. The volunteers do not generally attend the members' meetings but are invited. This is therefore more an issue of willingness on the part of the volunteers than the collective choice mechanisms available.

Decisions are made at the members meetings by a vote on some issues increasing collective input. In general according to literature on the garden decision-making at committee meetings, is achieved through discussion with all points of view accounted for. As well there is a board of trustees and an AGM is held. The committee holds a certain amount of power as they are making decisions in the interest of the garden. Plot-holders are able to attend committee meetings and put items on the agenda. The employees also have a degree of influence. One member of the garden wrote how Culpeper is democratically run with all of the participants having an equal say (Culpeper Community Garden, 2012).

In summary there are collective choice rules present in this case study through codified mechanisms of inclusion. However power is concentrated within the trustees and committee.

Monitoring

The coordinator informally monitors for evidence of rule breaking. For example if a dog comes into the garden, the owner would be told off but this is not a strict and formalised system. The coordinator also checks the garden for violations of the rules and has a general sense of the different plots. If rules are broken like the kitchen not being tidied, this is again informally monitored by participants raising the issue. However there is no log of produce and because it is open access food has been stolen in some cases. Monitoring takes place by the plot-holders who raise the issue if their plot has been interfered with. In the publication 'Stories from the Gardens' (Culpeper Community Garden, 2012) there were numerous instances of theft and rule breaking. For people to be aware of rule breaking in the first place means at least informal monitoring most have been occurring. There is also a logbook for vandalism. In conclusion although much of it is informal there is evidence of monitoring in this case study.

Graduated Sanctions

The majority of the rule breaking is the responsibility of the public and to quote one volunteer 'there is nothing they can do' (Appendix 2, transcript 3). The coordinator does tell off the public when an individual is caught. However if

the volunteers violate the rules at first they are told off, then suspended and then told not to return, thus there is a clear system of graduated sanctions. Regarding the plots, if they are neglected they receive a verbal then written warning and if the committee are not satisfied within 6 weeks the plot is reallocated. This is again a clear example of graduated sanctions.

Access to Low Cost Conflict Resolution Mechanisms

The only information gained on this issue is that grievances should be addressed to the committee. This shows there is a mechanism in place but it is a weak one.

Minimal Recognition of Rights to Organise

In the research this principle is uncovered through the relationship the community garden has with the local council. The council supported the start of the project and they provided capital. The council also offered a lease at a peppercorn rent, provided a grant for a number of years and has increased their land, all signs of their level of supportiveness. In summary the council appear to be very supportive of the project and Culpeper has a clear right to organise. The organisation is currently applying for Field in Trust status which would ensure the project's continuation as it would override any council change in land use.

8.2.2 Attributes of the Community

Trust

In general trust levels are high with only a limited number of people stating that they did not trust certain individuals. The strong sense of community was also mentioned which can be taken as a proxy for trust. In the 'Stories from the Garden' there are quotes such as it being a place for 'people to belong' and a 'realcommunity' further demonstrating this point (Culpeper Community Garden, 2012).

Reciprocity

There are examples of reciprocity within the community garden as two interviewees stated that people help each other out on jobs and this was evidenced in practice. People also described a culture of helping each other out in the garden. Reciprocity is also not seen as an important variable as people putting in different amount of time and effort is not an issue. There is evidence of reciprocity in one sense and in another sense these is evidence of reciprocity not being important.

Common Understanding

The predominant answer when interviewees were questioned about the aims of the project was its social role and this was mentioned by everyone interviewed. Building a sense of community seems to be very important. The conclusion that can be drawn is that within the community there is a clearly

shared aim which is a demonstration of common understanding amongst participants.

Leadership

The response from the interviewees about whether there are any leaders in the community was unanimously that the gardener coordinators could be seen as leaders as they tell others what to do.

Heterogeneity

There is a high level of heterogeneity in terms of the socio-culture backgrounds of the participants. This is likely to be a reflection of the surrounding vicinity from which the plot-holders are drawn. Participants come from a large number of ethnic backgrounds.

Size

There are 40 plot-holders, 10 trustees, 250 members and 30 volunteers of which about 8 are regular volunteers according to the other volunteers.

Knowledge

The garden coordinators are employed for their knowledge and expertise. This can then directly be related to the leadership status they are perceived as having.

8.3 Dependent Variables

Meetings

Committee meetings are held every six weeks.

Informed

The volunteers all stated that they felt informed about the running of the garden. There is also a newsletter four times a year which is very comprehensive, information posters on a notice board and minutes of the meetings are taken. However one volunteer did state she would feel more informed if she went to the meetings.

Level of Connection

The group is mainly connected to other local growing or community groups which have a plot on site such as Frieghtliners farm, Gillespie park, Islington Ecology Centre, Claremont Mission, Islington Gardens society, Elfrida Society, Southwood Smith Centre, Peabody trust, Islington Giving. They are also part of the Federation of City Farms and Community Gardens.

Financial and Material Resources

When the question was posed about the financial security of the organisation one employee's reply was that they are fairly financially secure but are always applying for more funding. It is again a question of how sustainable a heavy

reliance on grant funding is. The council no longer funds the project and so therefore they rely on other funding grants. The organisation also receives funds from membership fees, plant sells and hiring out their room however this does not cover running costs. Due to the irregularity of funding it means that the working process is very much project based depending on if they manage to secure specific funding. The project cannot be said to be completely financially secure as there is a heavy reliance on grant funding.

Number of Participants

Many of the members have been involved for a very long time which provides a level of stability to group dynamics. When asked if the numbers of people have increased or decreased over the years the response varied dramatically from it has stayed about the same, to there are less people to the number has increased. It is therefore not possible to draw solid conclusions from this evidence. However the number of plots will have remained the same and it was described how there is a waiting list for plots so it is probable that the number of plot-holders has remained pretty constant over time.

Amount of Produce

It was stated that they are producing more than ever although this is a tentative conclusive as it is only based on one response.

8.4 Conclusions

Culpeper Community Garden was established over thirty years ago and is still active today and to have endured that length of time the community garden surely demonstrates some level of sustainability. Evidence from this research shows that the garden is likely to continue into the future and the conditions for durability and sustainability are present. The only real concern remaining is one of finances. Regarding the independent variables every one of the design principles are present to varying degrees apart from the boundary to the resource being clearly defined. This goes some way to explaining how the project has been sustained over a long period of time. There is also evidence of trust, reciprocity and common understanding. This case appears to be predominantly in line with the theoretical proposals. A summary of the results is displayed in table 7.

| | | Score | Evidence |
|--------------------------------|---|-------|---|
| Design Principles | Clearly Def. -Resource | ✓ X | Whole: fenced and walled, individual plot boundaries: unclear |
| | Boundaries -Group | ✓ X | Anyone able to join the group, plot-holders clearly defined |
| | Appropriation Rules | ✓ | Some inconsistency in harvesting process, clear plot-holder rules |
| | Collective-Choice Rules | ✓ | Formal structures for collective decision-making |
| | Monitoring | ✓ | Informal but comprehensive monitoring |
| | Graduated Sanctions | ✓ | Plot-holders and volunteers can receive graduated sanctions |
| | Access to Conflict Res. Mechanisms | X | Only very weak system in place |
| | Minimal Recognition of Rights to Organise | ✓ | Supportive local council |
| Attributes of Community | Trust | ✓ | Generally high levels of trust but some concerns about trust |
| | Reciprocity | X | Imbalance in input not an issue |
| | Common Understanding | ✓ | Common understanding about the aims of the project |
| | Leadership | ✓ | A number of clear leader figures present e.g. Garden Coordinator |
| | Homogenous | X | Heterogeneous group |
| | Small Size | X | Above 10 |
| | Knowledge | ✓ | Leadership based on knowledge |
| Dependent Variables | Meetings | ✓ | Every 6 weeks |
| | Informed | ✓ | Participants feel informed |
| | Level of Connection | ✓ | Connected to local and national networks |
| | Financial and Material Resources | X | Relies on funding and currently not financially sustainable |
| | Number of Participants | ✓ | Stable |
| | Amount of Produce | ✓ | Increased |
| | Overall sustainability and durability CA | ✓ | Long running, successful and sustainable |

Table 7: Summary of case study 4 (NB: scoring criteria can be found in table 11)

Chapter 9: Case Study 5 - King Henry's Walk Garden

9.1 Background

King Henry's Walk Garden is in Islington, London and the site was open in 2007 after a former park had to be closed due to antisocial behaviour. The local council consulted the community and asked what should be done with the space and the idea was mooted for it to become a community garden. The garden contains separate growing plots for cultivation by local residents who have to live close to the site to qualify for a plot. There are also a number of communal elements like the fruit trees, beehives, a greenhouse, a function room and several flower beds. Volunteers appropriate the communal areas. They have a full programme of educational and community events in order to engage with the whole community. The garden is open on Saturdays and Sundays. There are fourteen people on the committee, seventy-six individual plots and around fifty other volunteers. The space is about a third of an acre. The participants are all voluntary.

9.2 Independent Variables

9.2.1 Design Principles

Clearly Defined Boundaries

The first of Ostrom's concepts in relation to the clearly defined boundaries principle is that the boundary of the resource itself is clear. The boundaries to the whole resource are clear as there are fences, a high wall and a lockable gate surrounding the whole resource. The boundaries between the individual plots are also clear as they all have the same wooden boundary which is easily distinguishable.

In terms of the second of Ostrom's concepts this involves who is able to use the resource being defined. This concept in the case of King Henry's Walk Garden is well defined for the plot-holders but not in terms of their general membership as anyone is able to become a key holder as long as the annual subscription fee is paid. The garden is open to the public at certain hours during the weekend as well. In order to be entitled to a plot the requirements are that you live in the Mildmay ward of Islington, paid your annual membership fee and priority is given to those without a garden. The boundaries for those who can use the resource in terms of plot-holders is therefore clearly in line with Ostrom's principle.

Appropriation Rules

The communal areas of the whole resource have certain rules regarding their appropriation. The produce from the fruit trees is made into cakes or

preserves which are usually sold at events. According to one interviewee the fruit trees are harvested on set workdays altogether and then if people are interested they can come along and take some of the produce. Another respondent, when asked about how the communal produce is harvested, said that they were unsure however the individual was aware there were certain rules about this as she admitted to once eating an apple by mistake. Someone else responded that she believed you are able to go and pick an apple if you wanted although she wasn't sure. Yet another response was that it is preferred if people ask before they pick the fruit. Clearly more clarity on this issue is required, and if there is an appropriation rule on this matter it is not clear.

There is a commitment made that when you become a member you will undertake a certain amount of communal work per year for example being a duty volunteer at the weekend. Plot-holders have to do three weekend sessions per year and one event amounting to sixteen hours.

There are also general garden rules such as only organic, no permanent structures, no hosepipes and no bonfires. The garden rules clearly set out how the resource should be appropriated. Regarding the plots they must be kept to a certain standard and must be used to cultivate produce.

In summary this community garden has a clear set of appropriation rules although a fixed procedure for the communal fruit produce is required.

Collective-Choice Rules

Collective-choice rules in this research are analysed through assessing the decision-making structures and processes of the organisation. King Henry's Walk Garden has a board of trustees and an extensive committee. There is an AGM where the committee is elected and the fees are set. All members are able to attend with key-holders and plot-holders having equal status. Amendments to the constitution are passed by a majority vote at a general meeting indicating a level of collective-choice for its members. A quorum at general meetings is required.

Decisions are made predominately at the committee meetings through discussion and mutual consensus, occasionally there is a vote if a clear decision cannot be reached. The committee meetings are well attended and most people speak demonstrating engagement in the process on the part of the committee. Big decisions are the responsibility of the trustees.

However an indication that collective choice decision-making is not present is that members are able to observe committee meetings but do not have voting rights; instead committee members have to put forward input and views on their behalf. One of the respondents who is on the committee when asked about wider participation stated 'cannot think of an instance where we have

asked people what they thought' (Appendix 2, transcript 2) but went on to say they have had EGMs for example when they changed the constitution. Members are also able to influence by speaking to the Saturday volunteer or via email. Apparently members rarely engage in the process which could be an indication of them feeling a lack of ownership about the process.

This evidence shows that full collective choice is not present and in general people are only able to have input indirectly however at the general meetings members are able to influence through the form of a vote but the balance of power for the everyday decisions rests with the committee.

Monitoring

There is a monitoring system in terms of who owns a plot. There is a clear monitoring system for the plots regarding their appropriation. Twice a year the committee assess the plots and act if the plots are not acceptable. There is an informal monitoring system about the garden being organic and this is policed through peer review. There is a monitoring system for whether or not people have done their allotted sixteen hours. Prime responsibility for monitoring lies with the committee.

Graduated Sanctions

Regarding the neglect of plots, it is clearly stated in the Garden Rules that first a written warning will be sent out and then if the committee is still not satisfied within six weeks the plot will be reallocated. Members in breach of any of the garden rules will receive a written warning followed by exclusion. Plot-holders who do not undertake their allotted hours will be spoken to although graduated sanctions were not mentioned.

Access to Low Cost Conflict Resolution Mechanisms

The group has a systemic complaints procedure. The first stage is talking to a member of the committee, the next is writing to the Chair and if the response is not sufficient a third party will take up the matter. Therefore this community garden has a clear conflict resolution mechanism.

Minimal Recognition of Rights to Organise

The local council are the authority that is responsible for giving the group the right to organise. The local council have been very supportive and helped with the setting up of the project. Trust in the community garden on the part of the council is demonstrated by the fact that the garden has been given a 50-year lease and contract from the council. The council thus recognise the community's right to organise.

9.2.2 Attributes of the Community

Trust

When the question of trust was put to the interviewees the response was that

there is a great deal of trust within the community, much of good will and a strong sense of community. Trust is clearly prevalent in this case study.

Reciprocity

When the question of reciprocity was posed in the sense of whether or not people put in the same amount of time and effort and if this was not the case whether or not this was an issue, the common response was that 'you give what you can' (Appendix 2, transcript 3). One respondent stated that it was 'certainly something she had noticed that certain individuals put a lot of pressure on others' (Appendix 2, transcript 2) and she went on to state that a few individuals put a great deal of effort in. In this sense in respect to reciprocity, there is an imbalance as not everyone is able to put in the massive amount of time that some individuals do. In conclusion reciprocity in terms of equal amounts of time and effort is an issue to some people as there appears to be evidence of normative pressure.

Common Understanding

From questioning members of the community it appears that there is common understanding regarding the aims of the project. A point mentioned by all was that the aim of the project is to provide a space for the community to come together. Community seems to be a key aspect. Common understanding is evident.

Leadership

A couple involved in the management of the resource were clearly put forward as leaders. Part of their perceived leadership appears to come from the fact that they have put in so much time and effort. There also appears to be a number of important individuals on the committee that are pivotal to the functioning of the organisation and these are noted as leader figures. When one member was pushed to give a single name the response was the Chair of the committee however it was mentioned that he 'wouldn't dare say one person' (Appendix 2, transcript 5). This indicates that as an organisation they are against the idea of having leaders.

Heterogeneity

From observations of the participants present when the researcher visited and from information on the committee, the organisation appears to be rather homogenous in terms of socio-cultural diversity.

Size

There are approximately 100 plot-holders and 40 key holders.

Knowledge

This variable cannot be assessed as no information was gathered on this matter.

9.3 Dependent Variables

Meetings

Committee meetings are once a month.

Informed

In order to keep members informed the group has an email bulletin, a newsletter, an up-to-date website and notice boards. Minutes are also sent round via email to the committee and any other interested party but not the whole group. Keeping minutes of the meetings is enshrined in the constitution of the garden. There is an active email list in which members are connected to what is going on. Annual reports are available to all on the website. In summary there is a multitude of communication outlets and it can therefore be concluded that participants are kept informed.

Level of Connection

King Henry's Walk Garden is part of four nationwide associations and a large number of local citywide initiatives such as Islington Giving and London in Bloom.

Financial and Material Resources

The group does apply for funding each year and therefore the question of financial sustainability is present however they are trying to be self-sustaining in term of running costs. The group believes this is achievable. Income aside from grants comes in the form of membership fees, room bookings, and events. They have a considerable sum of money in their bank account and believe they will be able to run without relying on funding as big infrastructural costs have already taken place and they are all volunteers. Although this project does rely on grant funding, due to the number of income streams and as they have no employed staff self-sufficiency is likely.

Number of Participants

When the question was posed whether the number of people involved in the project has increased year-on-year, the unanimous response was that it has increased. However on closer examination although the number of people supporting the project may have increased, the plots year-on-year remain at constant capacity with a healthy waiting list but critically the key-holders have dropped from 120 last year to 40 this year. Therefore, in terms of overall membership there has been a decrease.

Amount of Produce

The information on this variable is missing.

9.4 Conclusions

In conclusion King Henry's Walk Garden is seen as successful by its members due to the high number of awards it has received but it is also

successful as it is a thriving example of collective action. On a voluntary basis a large number of people are working collectively to achieve a common goal of providing a space for the community to enjoy. All of Ostrom's design principles are evident to varying extents, some principles of which are strong such as clearly defined boundaries, monitoring and graduated sanctions, although clarity on the appropriation rule of the fruit trees is required. Trust and common understanding are present within the community. All of the assessed dependent variables were positive in terms of the durability of collective action and even though the number of participants may have decreased they are still running at capacity for plot-holders and therefore this cannot be taken as detrimental to the organisation. Table 8 displays the key findings.

| | | Score | Evidence |
|--------------------------------|---|-------|--|
| Design Principles | Clearly Def. -Resource | ✓ ✓ | Whole: fenced and walled, individual plot boundaries: clear |
| | Boundaries -Group | ✓ X | Anyone able to join the group, plot-holders clearly defined |
| | Appropriation Rules | ✓ | Clear set of appropriation rules, fruit harvesting remains unclear |
| | Collective-Choice Rules | ✓ | Formal collective decision-making but committee has much power |
| | Monitoring | ✓✓ | Clear and active monitoring of plots |
| | Graduated Sanctions | ✓✓ | Clear graduated sanctions for neglect of plot |
| | Access to Conflict Res. Mechanisms | ✓ | Formal procedure |
| | Minimal Recognition of Rights to Organise | ✓ | Supportive local council |
| Attributes of Community | Trust | ✓ | High levels of trust |
| | Reciprocity | X | Imbalance in input not an issue but some normative pressure |
| | Common Understanding | ✓ | Common understanding about the aims of the project |
| | Leadership | ✓ | A number of clear leader figures present |
| | Homogenous | ✓ | Homogeneous group |
| | Small Size | X X | Above 10, very large group |
| | Knowledge | — | Information missing |
| Dependent Variables | Meetings | ✓ | Monthly |
| | Informed | ✓ | Participants feel informed |
| | Level of Connection | ✓ | Connected to local and national networks |
| | Financial and Material Resources | ✓ | Very health finances and will be able to not rely funding |
| | Number of Participants | X | Key-code members decreased, still very large, plots at capacity |
| | Amount of Produce | — | |
| | Overall sustainability and durability CA | ✓ | Successful and sustainable |

Table 8: Summary of case study 5 (NB: scoring criteria can be found in table 11)

Chapter 10: Case Study 6 - Easton Community Allotment

10.1 Background

Easton Community Allotment in Bristol was designed in 2001 on Permaculture principles. Originally the site was a holding pen for livestock before they were slaughtered. The site was then derelict and full of rubbish which the group cleared before the land could be put to productive use. The group has held a number of events. Volunteer gardeners run the project and there are no paid employees (Easton Community Allotment, 2013). They grow a variety of vegetables, fruit and the area is cultivated as a group and the harvest is shared out amongst the volunteers. The average number of people that volunteer is between five and ten people. The site is open for volunteers all day every Thursday. The size of the plot is around a quarter of an acre. The running of the garden is highly informal and collective.

10.2 Independent Variables

10.2.1 Design Principles

Clearly Defined Boundaries

For the two concepts that make up the design principle, clearly defined boundaries for the first concept of the resource itself is clearly defined with a large fence and lockable gate surrounding the whole resource. On the other hand for the second concept the user group is not clearly defined as anyone can participate and no membership is required.

Appropriation Rules

With regard to the harvesting of the resource whoever turns up is able to take home produce. Collectively they decide what to harvest however in practice one individual predominantly decides what is going to be harvested and if others want to take home produce they ask this individual. This norm has been established based on the level of knowledge of individuals in the group. For certain produce people are just able to help themselves. All produce is equally shared and no amount of time is required in order to be in receipt of the produce, everyone present is entitled to an equal share.

An action that is prohibited is the use of artificial pesticides. Another rule is that roots have to be disposed of correctly. The rules are not written down and there is no definitive set of rules. They are all informal or norms that have been established over time. In summary there are no clear appropriation rules only norms that they share produce equally and the coordinator decides what is to be harvested.

Collective-Choice Rules

The decision-making structure at Easton Community Allotment is conducted on a very informal and highly inclusive basis. There are no meetings, no committee positions just two coordinators. The decision-making process is conducted through consensus and the majority of decisions are made as a group over lunch. If someone would like to grow a certain thing they just say so. Coordinators are not elected but this is more an 'organic' process. Decisions about money are not offered to the group. When a volunteer was asked about whether or not she has made decisions, the response was that she did not feel confident enough to make decisions due to a lack of knowledge. Although a consensus decision-making process clearly fosters collective choice unelected coordinators is not democratic. The question of whether collective choice rules are available is therefore difficult to assess and is highly dependent on context.

Monitoring

In this case study only minimal informal monitoring takes place. There is no record of produce or how much individuals take. The only records kept are: what is planted, what jobs have been done and need doing and the volunteers present.

Graduated Sanctions

There are no graduated sanctions and this can be related to the fact that there are no real appropriation rules or monitoring in place. The only evidence of a sanction was an instance in which an individual came and picked all the fruit and they received a telling off.

Access to Low Cost Conflict Resolution Mechanisms

There was no evidence found of conflict resolution mechanisms.

Minimal Recognition of Rights to Organise

This principle is assessed through the council's support for the community allotment as they are the landowners and the next level of authority above the group itself. It is essential that the council supports the project as it is an indication that they recognise the group's right to organise. The council are cited as supportive in the sense that if they were not able to pay the rent the council would do everything to ensure they could stay on the land. The community allotment was also the first site in Bristol to be granted permission to have a compost toilet demonstrating the council's willingness to accommodate the group's wishes.

10.2.2 Attributes of the Community

Trust

The appropriation of the resource relies on trust because there are few rules, no monitoring and for things like herbs people are able to pick them

whenever. The coordinator trusts everyone unreservedly and has never been proven otherwise demonstrating that collective action and the sustainability of a resource can be achieved without a strict set of rules. The only issue surrounding trust is that there is a high turnover of different participants which has implications for levels of trust.

Reciprocity

Participants putting in different amounts of time and effort was not a concern of the interviewees and this demonstrates that reciprocity is not an important variable within the group.

Common Understanding

The individuals questioned possessed shared aims in terms of the project. Observations from the researcher during the communal lunch uncovered the fact that the participants have shared values in terms of their attitude to their surroundings and a communal feel was present.

Leadership

Although the organisation is strongly against having formal leaders when probed about whether or not anyone within the organisation can be seen as a leader figure the answer was that one individual takes on much of the responsibility and possesses a lot of the knowledge thus they can be seen as an informal leader. From the norms of appropriation it is also clear that there is a leader present as one individual decides what is harvested and they also control all financial decisions.

Heterogeneity

The group is homogenous in terms of socio-cultural diversity.

Size

The number of regular volunteers is small and averages 6 individuals.

Knowledge

Knowledge appears to be very important in this case study as it is used as a rationale for both leadership and the harvesting process. The divide in the group which is responsible for establishing power is based on knowledge.

10.3 Dependent Variables

Meetings

There are no regular meetings.

Informed

They informally share emails and telephone numbers with emails being sent between each other. There is also a facebook page and a website. The participants questioned feel sufficiently informed.

Level of Connection

In terms of the level of connection of the group they are part of the nationwide Federation of City Farmers and Community Gardens. Also they are connected to similar local projects and citywide events in Bristol.

Financial and Material Resources

The organisation has a very small amount of capital but it is not reliant on grant funding. Income is secured through plant sales and charging for permaculture course visits. Their only substantial out-going is the rent. Occasionally they will apply for grants for specific projects or equipment. When asked if they were financially sustainable the response given was 'yes' (Appendix 2, transcript 3) as they have been able to maintain operations based on the above described income streams for ten years.

Number of Participants

The participants claim that year-on-year the number of individuals involved in the project has remained fairly constant. However it was noted that there is a high turnover of people and this has negative implications on levels of trust and knowledge within the group. As the turnover is high this has led to a reliance on one individual as none of the others have sufficient levels of knowledge.

Amount of Produce

Year-on-year produce levels have remained about the same.

10.4 Conclusions

This case study is an interesting example that appears to show a divergence from conventional wisdom in terms of a match between the theoretical propositions and the evidence in practice. From the dependent variables Easton Community Allotment can be categorised as durable and sustainable and the only variable which completely deviates from the criteria is the fact that they have no formal meetings. The project has been running for thirteen years and it has been able to successfully sustain itself beyond its initial funding period. It has always been able to remain relatively rule free and informal but still thrive as a community garden. The place does have rules in the sense that the coordinator has an overview and a strong degree of control over the whole project however many of the independent variables are only evident to a small degree or not evident at all. The appropriation rules are very minimal, the only significant one being who harvests. The boundary to the user group is not well defined and although the project aims for complete collectiveness this is not fully achieved. There are no monitoring systems or graduated sanctions. Even though the design principles are not present, collective action is still occurring and the quality of the resource has been maintained. There are a few key variables which appear to be central to an explanation of the project's success and these are leadership and trust. This

case study is not congruent with the theoretical propositions however it is an example of successful collective action. In table 9 a summary is evident.

| | | Score | Evidence |
|--------------------------------|---|--------------|---|
| Design Principles | Clearly Def. -Resource | ✓ | Fenced and walled |
| | Boundaries -Group | X | Anyone able to join the group |
| | Appropriation Rules | X | No clear appropriation rules, a few norms |
| | Collective-Choice Rules | ✓ | Consensus decision-making but unelected coordinators |
| | Monitoring | X | Minimal informal monitoring |
| | Graduated Sanctions | X | No graduated sanctions only told off for inappropriate harvesting |
| | Access to Conflict Res. Mechanisms | X X | No evidence |
| | Minimal Recognition of Rights to Organise | ✓ | Supportive local council |
| Attributes of Community | Trust | ✓ | Trust evidenced by lack of formal rules but high turnover of people |
| | Reciprocity | X | Imbalance in input not an issue |
| | Common Understanding | ✓ | Common understanding about aims and shared norms |
| | Leadership | ✓ | Against idea of leadership but is present in reality |
| | Homogenous | ✓ | Homogeneous group |
| | Small Size | ✓ | Below 10 |
| | Knowledge | ✓ | Leadership based on knowledge |
| Dependent Variables | Meetings | X X | No regular meetings and against idea of meetings |
| | Informed | ✓ | Participants feel informed |
| | Level of Connection | ✓ | Connected to local and national networks |
| | Financial and Material Resources | ✓✓ | Has been able to sustain itself for 10 years without funding |
| | Number of Participants | ✓ | Stable |
| | Amount of Produce | ✓ | Same year-on-year |
| | Overall sustainability and durability CA | ✓ | Successful and sustainable over a long period of time |

Table 9: Summary of case study 6 (NB: scoring criteria can be found in table 11)

Chapter 11: Case Study 7 - Hillside Harvest

11.1 Background

Hillside Harvest is located on Hagg Hill in Sheffield and it is the size of six allotment plots totalling around a third of an acre. Before Hillside Harvest the site was used by a loose community growing group. That group was disbanded and Hillside Harvest was set up in 2009 and eventually took over the land used by the previous group. All of the area is cultivated as a group and they are all volunteers. Hillside Harvest grows a variety of fruit and vegetables with the food being shared amongst its members. The project has core members and associated members who pay different annual fees as well as volunteers. They also run a number of community engagement events and work with different youth groups. There is also a management committee and a growing committee. It has a formalised management structure.

11.2 Independent Variables

11.2.1 Design Principles

Clearly Defined Boundaries

As the resource has a fence and wall surrounding the perimeter of the allotment the resource itself has a clearly defined boundary. Users of the resource are clearly defined based on a membership system. Although membership is open to any household in Sheffield or the surrounding area, the membership is defined as an annual fee must be paid, they must be willing to abide by the rules of the group and have an interest in the aims of the project.

Appropriation Rules

Appropriation rules in this regard refer to rules surrounding harvesting, rules expected of the appropriators and anything that is prohibited. The harvesting process is conducted by whoever is on the plot on that specific day and it is collectively undertaken at the end of the session. Deciding when and what to harvest is noted as being informal and unstructured. Some members will ask individuals on the growing committee if they are able to pick certain produce but it is unclear whether this is an official rule or not. Regarding the division of the produce in theory any produce is divided into shares and core members receive two shares and associated members one share. However one interviewee noted this is not really enforced in practice. It was also mentioned, as has been the case in a number of other examples, that people are so concerned about taking too much that they do not take enough. Volunteers who are not members do not have the right to produce but as this can be difficult in practice they tend to receive a small amount. There is also the rule that core members are meant to put in a minimum of twelve hours per month and be on a committee. Knowledge of the actual amount of time required

does not appear to be widespread. Associated members have no time requirements. The group decided to have formal rules based on the experience of a past project in which there was no expectation and it failed.

It was expressed by one interviewee that participants are only allowed to access the resource on workdays and this is when harvesting is conducted. However some members come on other days and are able to take produce so this rule is not clear. One individual stated that core members, are able to come and pick produce at any time as they have the knowledge for this. In terms of garden rules, weeds are to be disposed of properly, tools put away, don't step on the bed, all produce is weighed and only organic.

In conclusion this case study has clear and formalised appropriation rules although some questions remain surrounding participants knowledge of these rules and some clarification is needed.

Collective-Choice Rules

In terms of the formal set up there is a management committee and a growing committee. The growing committee have responsibility for all aspects of growing and produce. Non-committee members are able to attend committee growing meetings. An AGM is always held where membership fees are set and a quorum is required. Amendments to the constitution can take place but a two-thirds majority is required. In terms of actual decision-making this is usually done by consensus but if necessary, for big decisions, a vote will take place. Core members have two votes and associated members one. The most predominant form of day-to-day decision-making is informal conversations. This is an indication of collective choice being present. In summary there are examples of collective decision-making within this organisation but there are also clear concentrations of power within the committee positions.

Monitoring

There are some monitoring mechanisms as all produce is weighed and recorded and they also record everyone present. Recording who attends is used so that if there are disputes, for example over produce, it can be traced back to who was involved. However this is only in theory as whether or not the core members are undertaking their allotted hours is not formally monitored. There is no monitoring of the 2-shares-1-share rule. To conclude there is no formal monitoring system of any of the appropriation rules.

Graduated Sanctions

There is a direct connection between monitoring and sanctions as this makes up the enforcement process. Hillside Harvest has no graduated sanctions in place. The time commitments made by the core members are not monitored and not enforced and so there are no sanctions for not completing the set amount of hours required. There are also no sanctions surrounding how much

produce one takes. An explanation put forward for the lack of sanctions by a member of the group was that as they are such a small group they do not wish to exclude anyone through sanctions. However if there are no consequences for breaking the rules there is little incentive to abide by them. One concession and an example of a graduated sanction in theory, is that the management committee are able to warn and then terminate anyone's membership for improper conduct.

Access to Low Cost Conflict Resolution Mechanisms

From the information gathered there was no evidence of conflict resolution mechanisms.

Minimal Recognition of Rights to Organise

The right of Hillside Harvest to organise lies with Sheffield City Council as they own the land. Indications that Sheffield City Council recognise this right can be found in the level of support which the council has given to the project. The council gave the project an initial start-up grant and there is a good relationship between the two groups with an accommodating allotment manager on the side of the City Council. The only rules the Council imposes are about how the land is used but not how the group organises. However unlike in other case studies no discounted rent is provided which is a major difficulty for the group.

11.2.2 Attributes of the Community

Trust

All participants questioned stated that there is a strong sense of community and they trust everyone in the group. As the group is so small trust is more likely to be easily established as they know each other well and this theory was indeed used by one respondent as an explanation for high levels of trust. Further evidence of trust is that some members of the group are trusted to come on occasions other than workdays.

Reciprocity

On the whole the time and effort imbalance between individuals was not cited to be an issue indicating that reciprocity is not seen as an important variable.

Common Understanding

There was a high degree of communality in terms of the responses regarding the aim of the project and this was also in line with the constitution. The principle aim in short is thought to be 'growing food together'. Another important aim was to increase the sustainability of food. There is clear common understanding between members of the group.

Leadership

By virtue of having a position of Chair, leadership is likely to occur. One individual has much of the responsibility and they are relied upon to a large degree. Although they are very much seen as a leader figure they would like

others to take on more responsibility and they are trying to delegate where possible.

Heterogeneity

The group is predominantly comprised of white professionals and is therefore homogenous.

Size

The size of the group is 8 individuals.

Knowledge

The individuals that possess the most knowledge with regard to the resource are on the growing committee and they have a certain amount of power as they make the decisions about harvesting the resource. The core members are also deemed to hold enough knowledge to be able to come on separate occasions and are trusted to harvest based on their knowledge.

11.3 Dependent Variables

Meetings

The management committee meet roughly quarterly although this is rather sporadic in nature and it is not at any set interval. The growing committee meet roughly every two months however again this is flexible.

Informed

There are minutes which are circulated amongst the group from the management meetings and AGM. They also have an emailing list. Information on the activities of the growing committee is available on the website and is regularly updated. Information between the two committees is informal as one member is on both committees. Interviewees stated that they felt informed.

Level of Connection

The project is a member of the nationwide Federation of City Farms and Community Gardens. It is also connected to other similar local growing projects in Sheffield as well as a number of schools, universities and community groups. It is involved in the local allotment association.

Financial and Material Resources

Finances are a major concern for this organisation as the rent price of the allotments has recently increased and the price of rent to income from the number of people involved is unsustainable. The only way to cover the rent is to double membership fees. In the past the project has received funding but they are now trying to become self-sufficient. Events and projects are undertaken if the outcome (not always in a financial sense) is beneficial to the organisation but that requires no capital investment. In sum, at present the financial aspect of the project does not appear to be sustainable.

Number of Participants

Over the years the number of participants has decreased and the turnover has been quite high as people move on and have found it hard to sustain the level of commitment required.

Amount of produce

The amount of produce year-on-year has increased.

11.4 Conclusions

In conclusion the project appears to be struggling and its durability is questionable due to the small number of people relative to the size of the plot. The participants interviewed believed the project to be successful as they are achieving their objective of growing locally produced food together. However the community garden based on the dependent variable criteria does not score very highly as the number of participants has decreased, the finances are unsustainable and no regular meetings are held. The question that needs addressing is why is this the case and although with regard to the design principles the group has strong and highly formalised appropriation rules this is not backed by any monitoring and graduated sanctions which may be an explanation for such an outcome. The attributes of the community do not appear to be hindering the process as trust and common understanding is present. A summary is presented in table 10.

| | | Score | Evidence |
|--------------------------------|---|--------------|--|
| Design Principles | Clearly Def. -Resource | ✓ | Plot defined by hedges |
| | Boundaries -Group | ✓ | Clear system of membership |
| | Appropriation Rules | ✓ | Formalised appropriation rules, not always evident in practice |
| | Collective-Choice Rules | ✓ | Formalised collective decision-making |
| | Monitoring | X | No active monitoring |
| | Graduated Sanctions | X | No graduated sanctions in practice, minimal in theory |
| | Access to Conflict Res. Mechanisms | XX | No evidence |
| | Minimal Recognition of Rights to Organise | ✓ | Supportive local council |
| Attributes of Community | Trust | ✓ | High level of trust and small group |
| | Reciprocity | X | Imbalance in input not an issue |
| | Common Understanding | ✓ | Common understanding about aims of the project |
| | Leadership | ✓ | One individual has a large amount of responsibility |
| | Homogenous | ✓ | Homogeneous group |
| | Small Size | ✓ | Below 10 |
| | Knowledge | ✓ | Leadership based on knowledge |
| Dependent Variables | Meetings | X | No set regular meetings |
| | Informed | ✓ | Participants feel informed |
| | Level of Connection | ✓ | Connected to local and national networks |
| | Financial and Material Resources | XX | Recent increase in rent and small number contributing to rent |
| | Number of Participants | X | Decreased |
| | Amount of Produce | ✓ | Increased year-on-year |
| | Overall sustainability and durability CA | X | Unsustainable number of people to manage the resource |

Table 10: Summary of case study 7 (NB: scoring criteria can be found in table 11)

Chapter 12: Comparative Analysis

12.1 Overview of Comparison

The previous chapters comprehensively detailed to what extent the theoretical variables required for sustainable and durable collective action were present in the seven examples of community gardens. The variables put forward in the literature are seen as applicable to both the initiating and sustaining of collective action although Barnes & van Laerhoevn (2013) state that some of the variables are more important for initiating collective action than others, a point which has already been taken into account. All the cases outlined in this study have successfully initiated collective action as they are all established community gardens and therefore in line with the theoretical propositions it would be expected that Ostrom's (1990) Design Principles are evident in all of the case studies. However this was far from the case in practice. The picture that can be built up from the evidence is highly complex and a number of different patterns have emerged that will be further expressed in due course. The level of complexity in this analysis can briefly be outlined by taking the example of the design principles. From the prevailing evidence it is clear that there are instances in which the design principles were clearly present and that demonstrate sustainable and durable collective action and are therefore in accordance with the theoretical proposals. On the other hand, there are also examples of a number of the design principles being present but the case not being sustainable and durable in terms of collective action based on the criteria set out. To complicate matters yet further, there was a case in which there were very few of the design principles present but it was actually a clear example of successful collective action. This brief illustration demonstrates the multi-faceted nature of collective action and also shows the importance of context and other variables for achieving sustainable collective action. To return to the idea of the SES in which the research is embedded there are many compounding factors and interconnections that need to be considered when undertaking any research on collective action and CPR management.

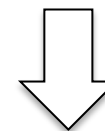
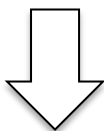
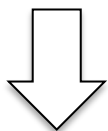
From the results of each case study it becomes apparent that no one case study is the same in terms of the variables that are present and the influence of these variables on the outcome of collective action varies greatly from case to case. The case studies demonstrate differing degrees of sustainable and durable collective action; they also differ greatly in their set up and management characteristics. All the case studies are community gardens and are all involved in managing the same resource however there is a large amount of variation in how the resource is managed and yet they all achieve collective action although not in all cases is this collective action durable and sustainable.

The table (Table 11) displayed overleaf summaries the findings from the seven different case studies in relation to the variables noted in the literature

as being critical for collective action and the evaluation criteria. From this analysis it was then possible to assess whether or not the cases can be seen as a demonstration of sustainable and durable collective action. The conclusions drawn were that five of the cases can be classed as sustainable and durable but that two cases fell short of the required criteria.

In order to achieve a coherent and clear comparative analysis it was necessary to generalise the findings of each case study and to provide categories. Many of the variables themselves are highly complex and therefore table 11 should only be seen as a simplistic overview of the cases.

| | | | Grow Heathrow | Brockwell Park Community Greenhouses | Abbey Gardens | Culpeper Community Garden | King Henry's Walk Garden | Easton Community Allotment | Hillside Harvest |
|-----------------------------|---|----------|---------------|--------------------------------------|---------------|---------------------------|--------------------------|----------------------------|------------------|
| Design Principles | Clearly Def. Boundaries | Resource | ✓ | ✓ | ✓ | W ✓ P X | W ✓ P ✓ | ✓ | ✓ |
| | | Group | X | X | X | V&G X PH ✓ | V&G X PH ✓ | X | ✓ |
| | Appropriation Rules | | X | X | X | ✓ | ✓ | X | ✓ |
| | Collective-Choice Rules | | ✓✓ | X | ✓ | ✓ | ✓ | ✓ | ✓ |
| | Monitoring | | X | X | X | ✓ | ✓✓ | X | X |
| | Graduated Sanctions | | XX | X | X | ✓ | ✓✓ | X | X |
| | Access to Conflict Resolution Mechanisms | | ✓ | XX | ✓ | X | ✓ | XX | XX |
| | Minimal Recognition of Rights to Organise | | X | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Attributes of the Community | Trust | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| | Reciprocity | | X | X | X | X | X | X | X |
| | Common Understanding | | ✓ | X | ✓ | ✓ | ✓ | ✓ | ✓ |
| | Leadership | | X | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| | Homogenous | | ✓ | X | X | X | ✓ | ✓ | ✓ |
| | Small Size | | X | X | X | X | XX | ✓ | ✓ |
| | Knowledge | | ✓ | ✓ | ✓ | ✓ | - | ✓ | ✓ |



| | | Grow Heathrow | Brockwell Park Community Greenhouses | Abbey Gardens | Culpeper Community Garden | King Henry's Walk Garden | Easton Community Allotment | Hillside Harvest |
|----------------------------|--|---------------|--------------------------------------|---------------|---------------------------|--------------------------|----------------------------|------------------|
| Dependent Variables | Meetings | ✓✓ | ✓ | ✓ | ✓ | ✓ | XX | X |
| | Informed | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| | Level of Connection | ✓✓ | ✓ | ✓✓ | ✓ | ✓ | ✓ | ✓ |
| | Financial and Material Resources | X | X | X | X | ✓ | ✓✓ | XX |
| | Number of Participants | ✓ | - | ✓ | ✓ | X | ✓ | X |
| | Amount of Produce | ✓ | - | ✓ | ✓ | - | ✓ | ✓ |
| | Overall sustainability and durability CA | ✓* | X | ✓ | ✓ | ✓ | ✓ | X |

Table 11: Comparative analysis (NB: Small size equates to 10 or below. Weekly meeting receive a double ticks, monthly one tick, sporadic a cross and no meetings a double cross. Financial resources receive a cross if they rely on funding. If the number of participants has remained the same or increased it receives a tick.)

- ✓✓ Very important/clearly evident/highly formalised systems in place
- ✓ Variable is present/formal mechanisms
- X Possible small/informal/normative indications but not concrete
- XX Nothing at all/ very against the principle
- Information missing
- * Excluding court order
- CA Collective action
- W Whole resource
- P Plots
- PH Plotholders
- V&G Volunteers and general public

12.2 Design Principles Analysis

In relation to the design principles there is no single clear pattern that can be drawn. However there does appear to be some level of correlation between cases in which the design principles are present and high sustainable and durable collective action being evident. Conversely two case studies are clearly contrary to Ostrom's (1990) Design Principle proposition as in these case studies although the majority of the design principles were not in place, they were nevertheless found to have sustainable and durable collective action in the group. Having said that it is interesting to note that none of the case studies were examples in which all the design principles were very clearly evident and formalised but that had a negative outcome in terms of collective action. Hillside Harvest and Abbey Gardens are two contrasting cases as both had mixed results regarding the number of design principles that were present - the results of one were negative in terms of collective action and the results of the other were positive therefore clearly other variables must be influential. King Henry's Walk Garden is a very successful case and in line with the theory it also held the strongest example of the design principles. Another case congruent with the theory is the case of Brockwell Park Community Greenhouses as there was only minimal evidence of any of the design principles and the example was not concluded to be a success in terms of collective action. Table 12 summarises the relationship between success and the presence of the design principles. The next section investigates each of the seven principles in turn.

| | Design Principles | Success level of Collective Action | Congruent with theory |
|---|--------------------------|---|------------------------------|
| Brockwell Park Community Greenhouses | Minimal | Low | Yes |
| Hillside Harvest | Mixed | Low | - |
| Grow Heathrow | Minimal | High | No |
| Easton Community Allotment | Minimal | High | No |
| Abbey Gardens | Mixed | High | - |
| Culpeper Community Garden | High | High | Yes |
| King Henry's Walk Garden | Very High | Very High | Yes |

Table 12: Design principle comparison

12.2.1 Clearly Defined Boundaries

Ostrom (1990) proposes that the boundary of the CPR needs to be clear for collective action to be successful. There needs to be well-defined bounds on the resource itself (Agrawal, 2001). In all of the case studies the boundary of the resource as a whole was clear. This can be explained by the properties of the resource. As the resource in the case studies is constant throughout the

boundaries of that resource are likely to be clear as the resource lends itself to being easily defined as it is a static and clearly visible resource in terms of the plants. The community gardens all have definite areas that they cover as they are allotted pieces of land and therefore are likely to be marked out clearly. The only instance in which the resource was not clearly defined was when the resource was divided into separate plots. Both Culpeper Community Garden and King Henry's Walk Garden had individual plots within the whole resource and one had clearly defined individual resource plots and the other did not. The case with the defined individual plots achieved a more sustainable level of collective action than in the case where the boundaries were unclear. In terms of the boundary of the resource the findings of the research are very much in line with the proposed principle.

The evidence for whether or not the membership of the group is clearly defined is a contrasting example to the boundaries of the resource based on this research. Ostrom (1990) states that some form of user group membership is required for the group to be clearly bounded. The individuals that have the right to withdraw resource units need to be defined. The cases present a large degree of variation regarding this notion. A number of the cases have no requirements at all to define who is able to use the resource. Most case studies state that they are open to everyone. For many of the cases you are able to use the resource without a requirement of membership and many of the cases state this is so that they are as inclusive as possible. For some cases there is a division between those who are volunteers who can be anyone and actual individuals who hold some form of membership. Some of the gardens are also open to the public and therefore the group is clearly completely open. Some cases have strict membership fees and agreements meaning that the boundary to the group is clear. In the case of King Henry's Walk Garden and Culpeper Community Garden which have individual plots there is a very strict criteria for becoming a plot-holder and so clearly these groups are bounded but in the case of Culpeper volunteers for example, do not have to be a member and anyone is able to participate. King Henry's Walk Garden had the most clear and strict membership and is the most successful example. This alludes to group membership being an important factor.

A closed group provided continuity to the dynamics of the group and can also foster trust as individuals are more likely to know each other and so trust is therefore more likely to be established. Although the evidence from this research shows greater trust to be present when the group was closed than when it was open. An open group can become fluid and the absence of consistency can have implications on the amount of knowledge possessed by the group and levels of trust generated, however from this research an open group does not appear to have had a detrimental effect on the outcome of collective action.

There is much debate in the literature surrounding the relative importance of

having a bounded group (Agrawal, 2001). The lack of consensus about this is reflected in this research. In the literature it is stated that groups need to be bounded as this increased knowledge of individual contributions (Meinzen-Dick et al., 2004) which is a form of informal monitoring. However Meinzen-Dick et al., (2004) also state that there are examples of collective action occurring in which the group is not clearly defined. The findings are in line with the inconsistency found from other studies.

12.2.2 Appropriation Rules, Monitoring and Graduated Sanctions

These three principles will be assessed as one due to the level of interconnection between the three variables. From the case studies in all but one case there was continuity in terms of if one of the variables was sufficiently present, the other two variables were present as well and visa-versa. The only exception to this rule was the case of Hillside Harvest which had a number of formalised and codified appropriation rules but does not have sufficient levels of formal monitoring. It did have graduated sanctions stated in its constitution but actively chose not to undertake them in practice as the group was so small that it could not afford to lose any members as a consequence of sanctions.

The relationship between appropriation rules, monitoring and graduated sanctions is that they are mutually interdependent. If a community garden has a strict and codified number of appropriation rules but does not monitor if they are complied with or impose graduated sanctions then the rules are devalued. Furthermore, if the rules are thought to have been broken based on the evidence obtained from the monitoring process then graduated sanctions can logically follow. Agrawal (2001) states Baland and Platteau's (1996) notion of enforcement mechanisms to be synonymous with Ostrom's (1990) idea of graduated sanctions. In this research therefore appropriation rules, monitoring and graduated sanctions when taken in tandem can be seen as the rules of the resource and their entire enforcement process. When cases have appropriation rules, be they informal or formal in nature, but also have a lack of a coherent monitoring system and or any graduated sanctions, then the purpose of having the rules becomes somewhat redundant. In these instances the appropriation rules are at best guidelines which participants can choose to abide by or ignore at their personal discretion.

In all of the cases apart from Hillside Harvest, Culpeper Community Garden and King Henry's Walk Garden the appropriation rules were found to be more in the form of guidelines and norms of behavior that have been established over time or informal rules that participants tended to respect but that were not codified. On multiple occasions it was stated by one or a few individuals that there was a certain rule, for example regarding harvesting, but then this rule was contradicted by another individual or there was evidence contrary to the stated rule. It was therefore difficult to assess to what extent it was a rule. Information and knowledge about the rules appears to be important but

overlooked by many of the community gardens assessed. A common pattern found was that many of the studies had some level of rule around how the harvesting process worked in terms of picking the produce but not how much of the produce individuals may take. In cases that are categorised by informal and normative rules, monitoring was either not evident at all or not undertaken for specific appropriation rules. Returning to the connection explained above, this then means that the appropriation rule, if it is in place, is weak as the full enforcement process is not there. Having said all of this, three examples had the above stated characteristics in terms of the appropriation rules, monitoring and sanctions but were still classified as successful cases of collective action.

For two of the cases studied there were clear appropriation rules in place stating specific commitments that the appropriators must adhere to on becoming a member. They also have monitoring systems in place to police the rules set out and if the rules were not followed graduated sanctions would ensue. These are the only two cases that fully demonstrated a proper enforcement mechanism. These two examples were also successful and very successful in an assessment of the dependent variables. The two case studies are empirical examples which reinforce the theory put forward by Ostrom.

In short, a clear connection between the three variables can be drawn but to what extent these variables affect the collective action outcome is ambiguous due to the mixed results found.

12.2.3 Collective-Choice Rules

Whether or not collective-choice rules are present appears to be an important variable for the durability and sustainability of collective action. All cases displayed mechanisms that foster collective choice. The case in which collective-choice rules were the least apparent was categorised as unsuccessful however another unsuccessful case did have sufficient levels of collective decision-making making the point unclear. All the successful cases had collective-choice mechanisms even if they were lacking appropriation rules and enforcement mechanisms as in the case of Grow Heathrow and Easton Community Allotment indicating that this variable is highly significant. The collective-choice mechanisms usually took one of two forms: that there were formal committees and general meetings in which members were able to propose changes and this was then passed through a majority vote, there still being a clear hierarchal structure or that all decision-making was done completely collectively through consensus and no hierarchical principles were in place in practice. For the instances where the latter was in place these were the successful cases of collective action but many of the other design principles were lacking. This again demonstrates the significance of this variable.

12.2.4 Access to Low Cost Conflict Resolution Mechanisms

For three of the cases, as far as the researcher found, there was no evidence of any conflict resolution mechanisms and this did not seem to be an issue that they were concerned with. In another three of the cases conflict resolution mechanisms took the form of formal complaints procedures which displayed varying level of comprehensiveness. King Henry's Walk Garden, a highly successful example, had a very full and clear complaints procedure that was set out in writing. Interestingly the example with the most comprehensive and all encompassing conflict resolution mechanism was Grow Heathrow that although informal in many other respects and missing other design principles had a very clear process for resolving conflicts.

12.2.5 Minimal Recognition of Rights to Organise

This principle involves the group having the right to devise their own institutions and for these institutions not to be challenged by an external authority. In all but one of the cases the authority in question was the local council as they were the landowners and the organisation with the statutory authority over community gardens in the UK. In all these cases the local council recognised the rights of the community garden and its participants although the community gardens existed under leasehold interests, these leases did not impose any rules about how they had to organise. The local authorities showed support to the community gardens through a number of actions, for example by subsidised rents, facilitating the setting up of the project and through jointly running events. However the case of Grow Heathrow was distinctive as they did not have the right to be on the land although the local council had showed support for their project. In this instance a greater level of authority, the national courts ruled that the community garden did not have the legal right to exist in that location and therefore the group does not have the right to organise on its current site. The variable is therefore highly significant but in the vast majority of cases not an issue. This is because the local council is the landowner thus if the group has willingly been given the land, then they are likely to support the group and it is the norm that organisational aspects are left to the discretion of the group.

12.3 Attributes of the Community

In general attributes of the community were fairly unanimous across the variables aside from the size and heterogeneity of the group. Trust, common understanding, leadership and knowledge were found to be present in the majority of cases and therefore can be seen as a requirement for collective action.

12.3.1 Trust

Trust is a critical variable for collective action as collective action is predominately based on mutual trust (Ostrom, 2000). It is not surprising then that all case studies demonstrated trust to be present. Trust is seen as an important initiating variable for collective action. However it is not only

important for initiating collective action but also for sustaining it due to its level of interconnection to other variables. Trust however, was present in an unsuccessful example of sustainable collective action but this can be explained as the case study did show some signs of trust not being as comprehensive as in the other studies and it had been an issue in the past which could have impacted on the results of the study.

Trust is also connected to a number of other variables and this helps to explain some of the patterns found in the research. Trust was found to be higher in smaller groups (Poteete & Ostrom 2004^b). Indeed trust was noted to be very high in the case of Hillside Harvest which had a very small group as everyone knew each other very well and therefore trusted one another. However another finding for this small group was that the project was unsustainable meaning that trust is only one of a number of important factors.

High turnover in the form of out and in migration can negatively impact on trust as new participants will not possess the level of trust held by others in the group (Ostrom, 2000). In the case of this research, Brockwell Park Community Greenhouses had a notable turnover and was accompanied by some trust issues. Easton Allotment Garden also had a fairly high turnover but this did not appear to impact on the group due to the personal principles of unreserved trust held by a number of individuals.

Trust is also an important factor in explaining the cases in which there was no or small evidence of appropriation rules, monitoring or sanctions. For these cases trust was highly significant and people indicated that such measures were not necessary as they had a high degree of trust in one another. This point goes some way to explain the anomalies in terms of the cases which lack many of the design principles but were still successful examples of collective action.

12.3.2 Reciprocity

Reciprocity was not seen as an important issue in any of the cases. Ostrom (2000) believes reciprocity to be a requirement for collective action. However, the fact that this was not found to be an important issue is intriguing. All of the cases were asked if it was an issue that people put in different amounts of time and effort but were still able to appropriate the resource and the response was overwhelmingly that this did not matter. The individuals questioned understood that difference in time and effort were inevitable but stated it not to be a concern. This is a reflection of the personal values held by the individuals as they are able to look beyond the input others were putting into the resource. This is not in line with Ostrom's proposal however some groups did mention the level of reciprocity expected as being set unacceptably high. Also one group said although in theory they felt an imbalance in effort should not be an issue, tensions were felt when individuals said they were going to do something and then did not actually undertake the

task. In summary reciprocity, based on the measure used in this research, in general does not appear to be an important variable.

12.3.3 Size and Heterogeneity

Size and heterogeneity are inextricably linked as smaller groups are more likely to be homogeneous (Ostrom, 1999^b). Equally for both variables in the literature there is a lack of consensus regarding their relative importance (Poteete & Ostrom, 2004^b; Adhikari & Lovett, 2006). Some scholars argue small and homogenous groups are more likely to act collectively (Foster, 2011). Collective action is believed to be harder in heterogeneous communities as homogeneity lowers the cost of anticipating the behaviour of others (van Laerhoven, 2010) as if you have similar backgrounds you will be aware of each other's cultural norms. However heterogeneity as a variable does not appear to be important in this study as there are heterogeneous successful and unsuccessful examples and homogeneous successful and unsuccessful examples. The research is found to be in line with studies that show this variable not to be important for collective action. Heterogeneity in this research is much more a reflection of the cultural diversity of the community garden's location. Although heterogeneity is thought to be connected to common understanding (Ostrom, 1999^b) this is not found to be the case as some of the examples were very heterogeneous but displayed high levels of common understanding.

A small group size is taken to be 10 or below as the literature contained no definitive definition of what constitutes a small group and 10 people was felt to be a sufficiently small number for individuals to be aware of the effort put in by others and thus have the described levels of high trust (Poteete & Ostrom, 2004^b). Although a small group is meant to be more likely to act collectively there is no statistical evidence for this (van Laerhoven, 2010). Based on the evidence, small group size does not seem to be significant in this research.

12.3.4 Common Understanding

Common understanding in terms of the aims of the project was present in all examples apart from one of the unsuccessful cases and it can therefore be taken as an important variable. This variable also included the notion of shared norms which are accepted norms of behaviour and institutional prescriptions of behaviour without sanctions (Ostrom, 1990). This is a very important point as prescription of behaviour, in terms of the appropriation process, was in many cases, more important than strict rules and sanctions.

12.3.5 Leadership and Knowledge

The variables of knowledge and leadership are taken together as in many of the cases leadership was based on knowledge levels, an issue explained by Rahman et al., (2012) which if left unchecked can lead to overrepresentation as was evident from some of the case studies. Knowledge was seen as a significant variable in all cases. High levels of knowledge can lead to a more

sustainable use of the resource (Rahman et al., 2012). Individuals with high levels of knowledge were seen as leader figures as people turned to them regarding when to harvest the resource which impacted on the collective-choice dynamic of the group. The leaders were often not formally appointed and many groups were against the idea of having leaders but leader figures were clearly pointed out based on their knowledge levels. It can be concluded from this study that knowledge is highly influential to collective action in community gardens. This can be explained by the level of specific knowledge required to sustainably manage the resource.

Groups where successful collective action was achieved were found to contain leaders (van Laerhoven, 2010; Ostrom, 2000) and this indeed appears to be the case in this research although in the case of Grow Heathrow they were very much against the idea of leadership. This was not only in theory but also evident in practice as they had a number of strategies to ensure no one person could dominate and yet it was a successful example of collective action. This point could be explained by the fact that leadership is more important for setting up than maintaining collective action (van Laerhoven, 2010).

12.4 Dependent Variables

The dependent variables were used as a criterion to evaluate the sustainability and durability of collective action in the community gardens assessed. Based on this criterion, five out of the seven case studies were classified as examples of sustainable and durable collective action. Brockwell Park Community Greenhouses was not found to be a successful example of sustainable collective action as although it is definitely an example of collective action and the community garden is very much functioning, it is currently going through a period of change. This has impacted on some of the variables and it is yet to be established whether, in the long term the issues associated with the changes will have a negative or positive effect on the group's collective action. Regarding the variables Brockwell Park Community Greenhouses is not sustainable in terms of its finances, information on the changes to the amount of produce year-on-year was not available and the information on number of participants was very inconclusive. The contextual fact that Brockwell Park Community Greenhouses is experiencing significant changes means the community garden is not classified as an example of durable collective action as the implications of their changes are yet to be realised; in the future it may well be sustainable.

The second unsustainable case in terms of collective action was Hillside Harvest. This is due to the fact that numbers are decreasing and so there are not enough people involved to sustainably manage the plot. The project is not at all financially secure as the rent had recently dramatically increased and due to the low number of members, the income from the membership fee was very small. Another indication that it is struggling was that the meetings were

highly irregular and this was blamed, at least in part, on the difficulty of getting people to be willing to commit to attend meetings. Having said all this, the resource itself appears to have been sustained over time.

Each variable will now be briefly investigated. Poteete and Ostrom (2004^b) state that regular meetings are required for collective action to be evident. This assessment was found in all cases however Easton Community Allotment was strongly against the idea of formal meetings but did still have regular discussions over lunch on site and therefore in practice informal meetings did take place. All participants questioned felt informed about the community garden they were a part of and it was not an issue in any of the cases. Financial sustainability was very difficult to assess because the vast majority of the community gardens rely on grant funding. In this analysis grant funding was classed as unsustainable due to their high level of unpredictability. Community gardens that were able to survive without relying on funding such as Easton Community Allotment can be seen as having overcome a significant barrier to the overall sustainability of the project. Easton Community Allotment has managed to survive over 10 years on no funding and King Henry's Walk Garden was very much moving towards this model. However a community garden in which everyone is a volunteer is more likely to be able to achieve a non-reliance on funding.

All cases were very well connected to external organisations with most being connected on a local and national scale to similar organisations and growing networks. Most of the community gardens carried out a significant amount of local community work and therefore had connections with local groups. Grow Heathrow was also well connected internationally as it was part of a number of global resistant movements.

The number of participants is key to the durability of collective action as below a critical number the garden is not able to function or be managed due to the amount of work involved. The only case apart from Hillside Harvest where there was a decrease in numbers year-on-year was King Henry's Walk Garden, but this does not mean at all that they are not an example of sustainable collective action as the number of plot-holders has remained at constant capacity with a healthy waiting list and only the key-holder membership decreased; and there is still a large number of people involved in the project. The amount of produce, in all cases where the information was available, had increased year on year indicating that the quality of the resource had not decreased over time.

Chapter 13: Discussion

13.1 Conditions for Successful Collective Action

In order to draw a broad conclusion for this research it is necessary to return to the research question. This section endeavours not to go over the comparative analysis chapter in relation to the findings of each variable and the theoretical propositions but it aims to outline succinctly the findings in relation to the research question. The question posed was what are the conditions necessary for collective action in community gardens? There is no simple response to this question, however in order for successful collective action to be achieved the community must possess common understanding, a high level of trust, at least some members of the group need to have a high level of knowledge regarding the resource itself and the research shows in most cases leadership of some form is required. In respect to the design principles, these appear to be necessary for achieving a very high level of durable and sustainable collective action as this was demonstrated by the most successful case study which had a clear number of formal structures that made up Ostrom's (1990) Design Principles. However collective action is able to endure without all of the design principles present. The critical design principles that from the research which seem to be necessary for successful collective action are: clear boundaries to the resource, collective-choice rules and minimal recognition of the rights to organise. Collective-choice rules were present in all successful example of sustainable and durable collective action. The minimal recognition of the rights to organise by an external government authority is crucial and was present in all but one example. However although Ostrom (1990) states that all design principles are required for collective action to be achieved, this does not appear to be the case in this research. A number of cases had a highly informal structure for the management of the resource with at best normative appropriation rules, minimal or no monitoring and no graduated sanctions in place and yet they were still successful examples of collective action. This finding does in no way claim to disprove Ostrom's (1990) Design Principle theory, however it does demonstrate that examples of collective action can be found in instances where the design principles in a rigid and structured form are not present.

13.1.1 Reflections on the Hypothesis

Although each variable has been discussed in detail in the comparative analysis nevertheless it is important to briefly assess the findings of this research in relation to the original hypothesis proposed. This is achieved through taking a broad and general assessment of the hypothesis rather than investigating each variable in turn in order to avoid repetition. The complexity of the issue is demonstrated by table 13 which uses the variables of the attributes of the community to show this point. The picture differs depending on the variable under investigation, some cases confirm a variable and others do not.

| | In line with Hypothesis | Against Hypothesis |
|----------------------|-------------------------|--------------------|
| Small size | 2 | 5 |
| Homogenous | 4 | 3 |
| Common understanding | 6 | 1 |
| Leadership | 4 | 3 |
| Trust | 5 | 2 |
| Reciprocity | 0 | 7 |
| Knowledge | 5 | 1 |

Table 13: Attributes of the community and the research hypothesis, (NB: the numbers correspond to the number of cases)

In totality the hypothesis posed is not confirmed by this research however it is not possible to fully reject the hypothesis, as the picture is highly complex. In theory the research is able to reject the hypothesis as all of the cases do not confirm the hypothesis to varying degrees. However, this research stops short of completely rejecting the hypothesis due to both a mixed picture in relation to the findings and methodological concerns meaning that the foundations for fully rejecting the hypothesis are too weak to totally disregard the hypothesis. The hypothesis also cannot be confirmed when taken on a case-by-case basis as even for example the case study where collective action was very successful although all of the design principles were present, the group was large and not small therefore not all of the conditions are confirmed.

In a number of instances the case study had a required variable such as was the case for trust and knowledge and yet the case was not a successful example of collective action. This would lead to the notion of rejecting the hypothesis however as there are so many variables at play and confidence in drawing casual explanation is limited the hypothesis cannot be rejected even though this goes against the hypothesis.

Explanation at least in part of why the hypothesis has not been confirmed can be found in the following section entitled context and complexity.

13.2 Context and Complexity

It is important to acknowledge the important of context and complexity in this research both in relation to the literature and as some degree of explanation for the findings not being in line with the hypothesis. Ostrom's work, which this research is primarily focused on, was committed to highlighting the centrality of context and complexity in the study of CPRs. This research clearly illustrates the importance of complexity as no clear conclusions can be drawn from the research and the results were varied. The point is that reality is extremely complex and a multitude of variables influence the collective action outcome at any one time for any one case study. All of the cases differ in terms of to what extent certain variables were present and the relative importance of those variables to the case study as a whole; this is just a reflection of the complexity of reality in which the community gardens exists.

Context is pivotal to any research on the commons (Frischmann, 2013). Context to the case studies, as would be expected in an investigation of this scope, was only partially explored and when assessing this research the significance of context should always be taken into consideration. For example the context of Grow Heathrow is highly unique in relation to the other cases studies as it is an illegal squat with a court ruling for their eviction which will and does have clear implications on the variables studied.

The issue of salience, in reference to the broader context, also needs to be mentioned. The salience of the resource was not a variable researched in this analysis however it is important to consider when taking account of this research in reference to other studies on collective action and CPRs. As previously mentioned much of the work undertaken on collective action has been on CPRs in the developing world (Rabinowitz, 2012). Van Laerhoven (2010, p.541) indicates the importance of salience as the level of dependence on the resource of the community increases the stakes of having rules and monitoring systems in place. In the context of the developing world individuals are more reliant on the resource, for example, wood from the forest as fuel. In this research the salience of the resource is not very high, the food produced complements rather than is the sole supply of their food intake. The implication of this is that this factor should be considered when any conclusions are drawn from this research.

13.3 The Tragedy of the Commons

It is now necessary to position the findings in relation to the literature on the tragedy of the commons. Ostrom tirelessly devoted her life's work to demonstrating that in instances of managing CPRs, Hardin's (1968) 'Tragedy of the Commons' does not always materialise (Janssen, 2012; Frischmann, Forthcoming). Indeed many examples can be found in which communities instead regulate themselves in order to avoid a tragedy of the commons. Ostrom's proposal at the time went against conventional wisdom as it was believed that the sharing of natural resources would always lead to environmental disaster. The findings of this research are very much in line with Ostrom's commitment to the community-based management of shared resources. All of the case studies, even if not all the design principles were present, are a clear demonstration of the importance of community based management. All the cases show not a situation in which the tragedy of the commons prevails, but one in which the community successfully manages the resource in a sustainable manner as in all cases the quality of the resource did not decrease over time. In many cases the issue was quite the opposite of a tragedy of the commons as people were not taking enough rather than too much.

13.4 Limitations

The research has several limitations that must be appreciated. Firstly one must note that other variables not explored in this analysis may be at play and

could be causing or affecting the observed outcome therefore any inference of causality is drawn with extreme caution. As this research was conducted in the real world context the influence of the variables cannot be isolated and many variables were effectual, some of which were not assessed therefore again stating causality is an issue. As highlighted in the previous section context is very important in this analysis and it was not explored in a sufficient level of detail due to constraints of the research itself and this fact must be taken into consideration, for example, the wider economic context was not assessed fully.

There were undoubtedly limitations and the struggle between achieving appropriate levels of depth and breath was significant. To cover seven case studies with the required level of detail was extremely challenging. Therefore, in terms of a case study analysis, this research may have compromised breath over depth by choosing to study such a large number of cases. However this number was chosen as it was felt each study contributed something different and unique to the debate. This same point can be said of the number of variables assessed in this study. Although the research was selective as many other variables were noted as being important for achieving collective action in the literature, a large number of variables were still assessed which was at the expense of providing full detail and exploring in depth the impact of each variable which could have been done if a smaller number was selected.

External validity is a major weakness of this research as generalisability is a concern regarding the findings of the research. This can be explained by the fact that the spatial distribution of the data is problematic, a limitation to this research is that it is not able to say anything about collective action in the UK as a whole due to the lack of even spatial distribution of the research and the lack of spatial factors in the selection of the cases. As well, external validity was compromised due to a case study methodology being used for this research and context of each of the case studies inevitably this implications for external validity. However a case study approach has numerous advantages which were outlined in the methodology section. Further research is required for this issue to be successfully addressed.

Another limitation to this research is the quality of the data on which the findings are based. Some of the data was missing which of course puts into question the conclusions that can be drawn. Only a select number of individuals were interviewed from each community garden, these views may not have been representative of the community as a whole and polarised views have the ability to skew the data. However this issue was constrained as only a certain number of interviews could be undertaken due to time pressures and the practical consideration of ensuring the amount of data was manageable. However as far as possible this point was mitigated by only limiting the number of interviews based on the constancy in the responses

which were given. The reliability of the information given by the interviewees is also an issue as variables such as the amount of produce were not independently verified but instead relied on an honest response from the interviewee. This is an issue as the respondents may have provided answers which painted their community garden in a positive light, an issue known as the halo effect (Oppenheim, 1992). There is very little action that could have been undertaken to address this due to time and resource constraints however this is clear justification for further research.

Chapter 14: Conclusion

14.1 Overall Conclusions

The overriding conclusion which can be drawn from this research is that the study of collective action in urban community growing projects is highly complex with no overall simple conclusion. Some cases appeared to confirm the theory on collective action whilst others clearly refuted the theory as they were successful but lack any of the supposedly necessary variables. Many variables are interacting and influence one another in the complex situation that is real life. The context of these case studies and additional variables that may have been at play make drawing solid conclusions challenging. Instead this study has settled for general conclusions based on this research whilst noting that they are tentative in nature and that these conclusions have limited significance outside of their defined context.

All cases are demonstrations against Hardin's (1968) tragedy of the commons. The community gardens studied show that collective community management of a resource is possible and that the outcome does not have to be a tragedy of the commons in which the natural resource is degraded.

Out of the seven case studies, two were assessed as unsuccessful examples of collective action as they were not collective action that could be sustained over time. For one of the unsuccessful cases, an explanation for a lack of success can be found in the fact that a minimal number of design principles and many of the attributes of the community that were found to be critical such as a common understanding amongst the group were missing. The other unsuccessful case is more problematic as the necessary attributes of the community were present, as were many of the design principles, however an explanation for failure can be found in the fact that the group size was too small to be sustainable. Therefore although there is much in the literature about whether the group size is required to be large or small, this research indicates that a consideration of a minimum group size may also be necessary.

Regarding the successful cases, the most successful case clearly had all of the design principles present and this is therefore congruent with the theory. However, as has been mentioned, the picture is far from simple and although one case study may be in line with the theory, two of the cases go against this theory as they were successful examples of collective action but had little in the way of design principles. From this research there appears to be an inherent link between the design principles of appropriation rules, monitoring and sanctions. In total these principles have been expressed as the enforcement process. For all but one of the cases, if one principle was not sufficiently present neither were the others. However these three principles did not appear to be essential for collective action as it was able to be

sustained even without these principles. Based on this research, having collective-choice mechanisms and the right to organise is important for collective action.

Four attributes of the community seem to be necessary for sustainable collective action. These are trust, knowledge, common understanding and leadership. Knowledge and leadership are connected as leadership was generally found to be based on knowledge. The centrality of knowledge can be put down to the type of resource as in order to grow produce a high level of knowledge is required by at least some members of the group. However one case study had no leadership at all but had high levels of knowledge and was successful. The four variables of trust, common understanding, knowledge and leadership are in line with the theoretical propositions. The measure of reciprocity used in this research was not found to be important for collective action. The literature was inconclusive regarding the significance of a small and homogenous group of appropriates. This research reinforces the lack of consensus as these variables were not found to be necessary for sustainable collective action.

14.2 Theoretical Contributions

It is hoped this research will contribute to debates on collective action and commons research. This research reinforces Ostrom's ambition to demonstrate that the tragedy of the commons is not inevitable but rather that communities act collectively in order to actively avoid a tragedy of the commons and so to ensure that the resource can thrive. This research furthers the study of 'New Commons' (Hess, 2008) and 'Urban Green Commons' (Colding & Barthel, 2013). Urban Commons research is still in its infancy and there is much work to be done. In conclusion, Ostrom, through her research was able to change the prevailing thinking of commons management at the time and successfully placed the community at the heart of any management system. This research is an example of how successful community management can create resilience in our cities and address the global issue of sustainability.

14.3 Further Research

The findings of this study contribute to the debate on collective action and CPR research and have produced interesting results with regard to the conditions needed for collective action. It is recognised that the research has many limitations and further research is necessary in order to draw more solid conclusions. To verify the results and to increase confidence in the research's findings further investigation of collective action in community gardens is required. Firstly it would be highly beneficial to undertake a study on community gardens with a much larger sample size, one which is more spatially representative. For this a quantitative approach should be used and the data collection method would lend itself to a questionnaire which not only could be sent to a large number of community gardens but also to far more

participants within that garden community to increase external validity and representativeness within the community garden movement. Once the data has been collected a quantitative analysis taking a similar approach to van Laerhoven (2010) could be conducted. Another approach, taking the research on community gardens to the next level, would be to carry out an in-depth study of a single community garden using methods such as action research and participant observations. These approaches would allow for increased confidence in the responses of the participant's as responses can then be clearly verified. Another method that would further this research would be to undertake a number of physical measurements of the resource to have a greater understanding of sustainability. This could be achieved by, for example, soil quality measurements being taken over a period of time.

Finally it would be interesting to compare the findings of collective action in community gardens in the UK to community gardens in other countries to see if there are any similarities. Conducting research in the US would be advantageous as an established network of community gardens exists there (Colding & Barthel, 2013). Cuba has one of the most extensive urban community agricultural systems in the world (Altieri et al., 1999) and thus could provide meaningful data. It would also be interesting to research similar urban commons in the UK to see if they possess the same qualities as was found in this research. Examples of this type of additional research are other urban commons such as green spaces (Foster, 2011) and self-governed and collective community projects: city harvesting projects such as the abundance movement (Federation of City Farms and Community Gardens, 2013^b), community bee-keeping (Sustainable Bungay, 2013) and community energy projects (Bomberg & McEwen, 2013).

Community Gardens provide a real solution to the issue of food security and are a critical component for achieving sustainable cities. With the ever-increasing advent of urbanisation across the globe and the centrality of cities for realising a sustainable future, research on community gardens and how they can be managed successfully is vital. If the sustainability of resources across the globe can be most effectively accomplished through community based collaborative behaviour then a greater understanding of the process of collective action has the potential to provide an opportunity to create a more sustainable planet.

References

- Abbey Gardens. (2012). *Constitution of Friends of Abbey Gardens*, [pdf] Available at: <http://www.abbeygardens.org/wp-content/uploads/2012/03/Constitution-Abbey-Gardens-signed.pdf> (Accessed 08/07/2013).
- Abbey Gardens. (2013^a). *Home*, [online] Available at: <http://www.abbeygardens.org> (Accessed 08/06/2013).
- Abbey Gardens. (2013^b). *Downloads*, [online] Available at: http://www.abbeygardens.org/?page_id=1849 (Accessed 08/06/2013).
- Adhikari, B., & Lovett, J. C. (2006). Institutions and collective action: Does heterogeneity matter in community-based resource management? *Journal of Development Studies*, 42(3), 426–445.
- Agrawal, A. (2001). Common property institutions and sustainable governance of resources. *World Development*, 29(10), 1649-1672.
- Agrawal, A., & Gibson, C. C. (2001). *Communities and the environment: Ethnicity, gender, and the state in community-based conservation*. New Brunswick: Rutgers University Press.
- Agrawal, A., Brown, D. G., Rao, G., Riolo, R., Robinson, D. T., & Bommarito II, M. (2013). Interactions between organizations and networks in common-pool resource governance. *Environmental Science & Policy*, 25(0), 138-146.
- Alaimo, K., Reischl, T. M., & Allen, J.O. (2010). Community Gardening, Neighborhood meetings, and Social Capital. *Journal of Community Psychology*, 38 (4), 497–514.
- Altieri, M.A., Companioni, N., Cañizares, K., Murphy, C., Rosset, P., Bourque, M., & Nicholls, C.I. (1999). The greening of the "barrios": Urban agriculture for food security Cuba. *Agriculture and Human Values*, 16(2), 131-140.
- Arnouts, R. (2010). Chapter 6: Governance. Some generalizations. In *Regional nature governance in the Netherland: Four decades of governance modes and shifts in the Utrechtse Heuvelrug and Midden-Brabant* (185-240).
- Andersson, E., Barthel, S., & Ahrne, K. (2007). Measuring social–ecological dynamics behind the generation of ecosystem service. *Ecological Applications*, 17(5), 1267–1278.

- Armstrong, D. (2000). A Survey of Community Gardens in Upstate New York: Implications for Health Promotion and Community Development. *Health and Place*, 6(4), 319–327.
- Barnes, C., & van Laerhoven, F. (2013). Helping to self-help? External interventions to stimulate local collective action in Joint Forest Management, Maharashtra, India. *International Forestry Review*, 15(1), 1-17.
- Barthel, S., Folke, C., & Colding, J. (2010). Social–ecological memory in urban gardens—Retaining the capacity for management of ecosystem services. *Global Environmental Change*, 20(2), 255-265.
- Barthel, S., & Isendahl, C. (2013). Urban gardens, agriculture, and water management: Sources of resilience for long-term food security in cities. *Ecological Economics*, 86, 224-234.
- BBC. (2013). *Grow Heathrow: Campaigners rejected by Court of Appeal*, [online] Available: <http://www.bbc.co.uk/news/uk-england-london-23155782> (Accessed 10/06/2013).
- Bendt, P., Barthel, S., & Colding, J. (2012). Civic greening and environmental learning in public-access community gardens in Berlin. *Landscape and Urban Planning*, 109, 18–30.
- Berge, E., & van Laerhoven, F. (2011). Editorial: Governing the Commons for two decades: a complex story. *International Journal of the Commons*, 5(2), 160–187.
- Bergstrom, T. C. (2010). The uncommon insight of Elinor Ostrom. *Scandinavian Journal of Economics*, 112(2), 245–261.
- Bomberg, E., & McEwen, N. (2012). Mobilizing community energy. *Energy Policy*, 51, 435-444.
- Brockwell Park Community Greenhouses. (2013). *Welcome*, [online] Available at: <http://www.brockwellgreenhouses.org.uk/welcome/category/news-and-events/> (Accessed 10/06/2013).
- Bryman, A. (2012). *Social Research Methods* (4th ed). Oxford: Oxford University Press.
- Capital Growth. (2013). *Growing success: the impact of capital growth on community food growing in London* (No. 978-1-903060-52-0). London: Sustain.
- Carney, P. A., Hamada, J. L., Rdesinski, R., Sprager, L., Nichols, K. R., Liu, B. Y., Pelayo, J., Sanchez, M. A., & Shannon, J. (2012). Impact of a Community Gardening Project on Vegetable Intake, Food Security and Family Relationships: A Community-based Participatory Research Study. *Journal of Community Health*, 37, 874–881.

- Colding, J., & Barthel, S. (2013). The potential of 'urban green commons' in the resilience building of cities. *Ecological Economics*, 86, 156-166.
- Culpeper Community Garden. (n.d.) *Guidelines for Plotholders*. London: Culpeper Community Garden.
- Culpeper Community Garden. (2000). *Culpeper Community Garden*. London: Culpeper Community Garden.
- Culpeper Community Garden. (2012). *Stories from the Garden*. London: Culpeper Community Garden.
- Culpeper Community Garden. (2013). *Culpeper Community Garden*. [Newsletter] Spring 2013, London: Culpeper Community Garden.
- Dangerfield, A. (2012). Grow Heathrow: Green-fingered squatters' eviction fight. *BBC News*, [online] 18 June. Available at: <http://www.bbc.co.uk/news/uk-england-london-18460865> (Accessed 10/06/2013).
- Data Management and Analysis Group. (2007) *Demography Update October 2007 for the Greater London Authority*, [online] Available at: <http://legacy.london.gov.uk/gla/publications/factsandfigures/dmag-update-20-2007-ons-ethnic-group-estimates.pdf> (Accessed 10/06/2013).
- DCLG. (2012). *Policy: Giving people more power over what happens in their neighbourhood*, [online] Available at: <https://www.gov.uk/government/policies/giving-people-more-power-over-what-happens-in-their-neighbourhood/supporting-pages/community-right-to-reclaim-land> (Accessed 26/03/2013).
- Easton Community Allotment, (2013). *About us*, [online] Available at: <http://commallot.org.uk/aboutus/> (Accessed 08/02/2013).
- Federation of City Farms and Community Gardens. (2013^a). *About FCFCG*, [online] Available at: <http://www.farmgarden.org.uk/about-us> (Accessed 13/06/2013).
- Federation of City Farms and Community Gardens. (2013^b). *Abundance*, [online] Available at: <http://www.farmgarden.org.uk/home/local-food-project/growing-trends/731-abundance> (Accessed 13/06/2013).
- Foster, S. (2011). Collective action and the urban commons. *The Notre Dame law review*, 87 (1), 57-134.
- Frischmann, B. M. (Forthcoming). Two Enduring Lessons from Elinor Ostrom, *Journal of Institutional Economics*.

- Garnett, T. (1996). *Growing food in cities* (No. 1 900 670 56 9). London: National Food Alliance and SAFE Alliance.
- Gautam, A. P., & Shivakoti, G. P. (2005). Conditions for successful local collective action in forestry: Some evidence from the hills of nepal. *Society and Natural Resources*, 18(2), 153-171.
- Gerring, J. (2004). What is a case study and what is it good for? *American Political Science Review*, 98(2), 341-354.
- Glover, T.D. (2004). Social Capital in the Lived Experiences of Community Gardeners. *Leisure Sciences: An Interdisciplinary Journal*, 26(2), 143-162.
- Groundwork UK. (2013). *Community Spaces*, [online] Available at: <http://www.groundwork.org.uk/what-we-do/major-initiatives/community-spaces.aspx> (Accessed 25/03/2013).
- Guitart., D. Pickering., C. & Byrne, J. (2012). Past results and future directions in urban community gardens research. *Urban Forestry and Urban Greening*, 11(4), 364-373.
- Hammersley, M. & Atkinson, P. (1995). *Ethnography: Principles in Practice* (2nd ed.). London: SAGE.
- Hardy, S. D. & Kootnz, T.M. (2009). Rules for Collaboration: Institutional Analysis of Group Membership and Levels of Action in Watershed Partnerships. *The Policy Studies Journal*, 37 (3), 393-414.
- Hardin, G. (1968). The Tragedy of the Commons. *Science*, 162(3859), 1243–1248.
- Harris, J. (2013). Turf wars escalate in the battle for Britain's allotments. *The Guardian*, 1 Jun.
- Harrison, J. (2013). *Allotment History*, [online] Available at: <http://www.allotment.org.uk/articles/Allotment-History.php> (Accessed 21/05/2013).
- Hess, C. (2008). *Mapping the New Commons*. Paper read at International Association for the Study of the Commons. Cheltenham, UK: University of Gloucestershire.
- Hillside Harvest. (2011). *Constitution of Hillside Harvest*. (Personal Communication, June 2013).
- Hillside Harvest. (2013). *Welcome to Hillside Harvest*, [online] Available at: <http://www.hillsideharvest.org.uk> (Accessed 10/07/2013).
- Ho, D.C.W. & Gao, W. (2013). Collective action in apartment building management in Hong Kong. *Habitat International*, 38, 10-17.

- Imperial, M.T. (1999). Institutional Analysis and Ecosystem-Based Management: The Institutional Analysis and Development Framework. *Environmental Management*, 24 (4), 449–465.
- Janssen, M. A. (2012). Elinor Ostrom (1933-2012). *Nature*, 487(7406), 172.
- King, C. A. (2008). Community resilience and contemporary agri- ecological systems: Reconnecting people and food, and people with people. *Systems Research and Behavioral Science*, 25, 111–124.
- King Henry's Walk Garden. (2008^a). *Membership Policy and Procedures*, [pdf] Available at: http://www.khwgarden.org.uk/documents/Membership_policies.pdf (Accessed 16/07/2013).
- King Henry's Walk Garden. (2008^b). *Complaints Procedure*, [pdf] Available at: <http://www.khwgarden.org.uk/documents/Complaints.pdf> (Accessed 16/07/2013).
- King Henry's Walk Garden. (2010). *Constitution*, [pdf] Available at: <http://www.khwgarden.org.uk/documents/Constitution.pdf> (Accessed 16/07/2013).
- King Henry's Walk Garden. (2012). *Garden Rules*, [pdf] Available at: http://www.khwgarden.org.uk/documents/Garden_rules.pdf (Accessed 16/07/2013).
- King Henry's Walk Garden. (2013). *King Henry's Walk Garden*, [online] Available at: <http://www.khwgarden.org.uk/index.html> (Accessed 16/07/2013).
- Kiser, L. L., & Ostrom. E. (1982). The Three Worlds of Action: A Metatheoretical Synthesis of Institutional Approaches. In *Strategies of Political Inquiry*, (ed. Elinor Ostrom). Beverly Hills, CA: SAGE.
- Kooiman, J. (2003). *Governing as Governance*. London: SAGE.
- Local Food. (2013). *About*, [online] Available at: <http://www.localfoodgrants.org/about> (Accessed 25/03/2013).
- Linn, K. (2008). *Building Commons and Community*. Oakland, CA: New Village Press.
- Markelova, H., & Mwangi, E. (2010). Collective action for smallholder market access: Evidence and implications for Africa. *Review of Policy Research* 27(5): 621–640.
- Matisoff, D., & Noonan, D. (2012). Managing contested greenspace: neighborhood commons and the rise of dog parks. *International Journal of the Commons*, 6(1), 28–51.

- Matta, J. R., & Alavalapati, J. R. R. (2006). Perceptions of collective action and its success in community based natural resource management: An empirical analysis. *Forest Policy and Economics*, 9(3), 274–284.
- Meinzen-Dick, R., DiGregorio, M., & McCarthy, N. (2004). Methods for studying collective action in rural development. *Agricultural Systems*, 82(3), 197-214.
- Miles, M. B. (1979). Qualitative data as an attractive nuisance: The problem of analysis. *Administrative Science Quarterly*, 24, 590-601.
- Mincey, S. K., Hutten, M., Fischer, B. C., Evans, T. P., Stewart, S. I., & Vogt, J. M. (2013). Structuring institutional analysis for urban ecosystems: A key to sustainable urban forest management. *Urban Ecosystems*, 1-19.
- Okvat, H. A., & Zautra, A. J. (2011). Community Gardening: A Parsimonious Path to Individual, Community, and Environmental Resilience. *American Journal of Community Psychology*, 47, 374–387.
- Olson, M. (1965). *The Logic of Collective Action: Public Goods and the Theory of Groups*. Cambridge, MA: Harvard University Press.
- Oppenheim, A.N. (1992). *Questionnaire Design, Interviewing and Attitude Measurements*. London: Continuum.
- Ostrom, E. (1990). *Governing the Commons*. New York: Cambridge University Press.
- Ostrom, E. (1999^a). Coping with tragedies of the commons. *Annual Review of Political Science*, 2(1), 493–535.
- Ostrom, E. (1999^b). Self-Governance and Forest Resources. *CIFOR Occasional Paper No 20*. Bogor, Indonesia: Center for International Forestry Research (CIFOR).
- Ostrom, E. (2000). Collective action and the evolution of social norms. *Journal of Economic Perspectives*, 14(3), 137–158.
- Ostrom, E. (2001). Reformulating the commons. In J. Burger, E. Ostrom, R. B. Norgaard, D. Policansky, & B. D. Goldstein (Eds.), *Protecting the commons: A framework for resource management in the Americas* (pp. 17–41). Washington, DC: Island Press.
- Ostrom, E. (2007^a). A diagnostic approach for going beyond panaceas. *Proceedings of the National Academy of Sciences of the United States of America*, 104(39), 15181-15187.
- Ostrom, E. (2007^b). Institutional Rational Choice: An Assessment of the Institutional Analysis and Development Framework. In P.A. Sabatier. (2007). *Theories of the Policy Process* (2nd ed). Boulder, CO: Westview Press.

- Ostrom, E. (2011). Background on the Institutional Analysis and Development Framework. *The Policy Studies Journal*, 39 (1), 7-27.
- Ostrom, E., Walker, J., & Gardner, R. (1992). Covenants with and without a sword: Self-governance is possible. *The American Political Science Review*, 86(2), 404.
- Poteete, A. R., & Ostrom, E. (2004^a). Heterogeneity, group size and collective action: The role of institutions in forest management. *Development and Change*, 35(3), 435-461.
- Poteete, A. R., & Ostrom, E. (2004^b). In pursuit of comparable concepts and data about collective action. *Agricultural Systems*, 82(3), 215-232.
- Rabinowitz, D. (2012). Residual residential space as commons. *International Journal of the Commons*, 6(2), 302-318.
- Rahman, H. M. T., Hickey, G. M., & Sarker, S. K. (2012). A framework for evaluating collective action and informal institutional dynamics under a resource management policy of decentralization. *Ecological Economics*, 83, 32-41.
- Rousseau, N. (2013). *Hillside Harvest Produce Spreadsheet 2012*. (Personal Communication, June 2013).
- Rydin, Y., & Pennington, M. (2000). Public participation and local environmental planning: The collective action problem and the potential of social capital. *Local Environment*, 5(2), 153–169.
- Silverman, D. (1993). *Interpreting Qualitative Data: Methods for analysing talk, text and interaction*. London: SAGE.
- Stern, P. C. (2011). Design principles for global commons: Natural resources and emerging technologies. *International Journal of the Commons*, 5(2), 213-232.
- Sustainable Bungay. (2013). *Bungay Community Bees*, [online] Available at: <http://www.sustainablebungay.com/bungay-community-bees-2/> (Accessed 13/07/2013).
- The Stationery Office. (2011). *The Natural Choice: securing the value of nature* (No. 978-0-10-180822-4). Norwich: The Stationery Office.
- Transition Heathrow. (2013). *Grow Heathrow*, [online] Available at: <http://www.transitionheathrow.com/grow-heathrow/> (Accessed 08/02/2013).
- UNFPA. (2007). *State of the World Population 2007: Unleashing the Potential of Urban Growth*. New York: United Nations Population Fund.

- van Laerhoven, F. (2010). Governing community forests and the challenge of solving two-level collective action dilemmas—A large-N perspective. *Global Environmental Change*, 20(3), 539–546.
- van Laerhoven., F. & Ostrom, E. (2007). Traditions and Trends in the Study of the Commons. *International Journal of the Commons*, 1(1), 3–28.
- Weaver, M. (2007). Camp for Climate Action: Monday. *Guardian.co.uk* news blog, [blog] 13 August. Available at: <http://www.guardian.co.uk/news/blog/2007/aug/13/campforclimat> (Accessed 08/06/2013).
- Yardley, L. (2000). Dilemmas in qualitative health research. *Psychology and Health*, 15(2), 215-228.
- Yin, R.K. (1981). The case study crisis: some answers. *Administrative science quarterly*, 26(1) 58-65.

APPENDICES

Appendix 1: Example Questions

The questions below were used as a rough guideline for asking the respondents about their involvement in the community garden however as it was a semi-structured interview where appropriate deviation from this prompt sheet did take place.

1. How often do you volunteer here? How long have you volunteered here for?
2. What do you believe the aim of the project to be?
3. Why did you choose to get involved in the project?
4. What type of food is grown and/or harvested? Approximately how much food is produced by the project in a year?
5. What happens to the food once it is harvested? How is it decided who takes home what, when, how much?
6. How many people are involved in the project on a regular basis? Who is able to participate?
7. Year on Year has the number of participants changed? Year on Year has the amount food produced/ harvested changed?
8. Does the project have any committee positions or any leaders?
9. How are decisions made? How often are collective decision making meetings held and who can come? Are minutes made available?
10. Do you feel informed about decisions made? Do you feel able to influence decisions?
11. Does the project have any rules in place (formal or informal)? E.g. no pesticides, regarding harvesting, time expected to put in, everything that is prohibited, how much food people are able to take?
12. Is there monitoring to ensure rules are not broken or any other monitoring systems (e.g. the amount of produce, membership system, what is being grown/harvested, who takes home what etc)? What happens if a rule is broken? Has there ever been any disagreement between people regarding rules?
13. Do you trust other members of the group to do a good job and respect any rules in place?
14. Do people put in the same amount of effort/ time as yourself if not does this bother you?
15. Is the project connected to any other external organisation and/or similar projects? Do they impose any restrictions? (e.g. Must have a committee, only organic etc.)

16. Is the project financially secure (in that it has obtained the necessary funding to sustain itself)?
17. Tell me about how the project development? Has there ever been any disputes with the local authority or any other third party over land ownership or land-use?
18. On balance, do you think the project is successful? If so why or why not?

*Age:

*Email outcome to:

*Size of plot:

*Occupation:

*Divided up/all together?:

Gender:

Name of project:

Volunteer/Paid employee:

Date:

Type of project: (Community garden/community orchard/ community allotment/harvesting project)

Space well defined? By what:

Appendix 2: Data Sources Per Case Study

All transcripts are available upon request

Case Study 1: Grow Heathrow

Interviews:

1. Coordinator of Growing committee, lives at Grow Heathrow (GH, transcript 1, 21st April 2013)
2. Growing Group Member, lives at Grow Heathrow (GH, transcript 2, 21st April 2013)
3. Growing Group Member, visitor (GH, transcript 3, 21st April 2013)

Documentation:

1. Safer spaces policy (via personal photograph)
2. Grow Heathrow website (Transition Heathrow, 2013)
3. New articles about the project (Weaver, 2007; BBC, 2013; Dangerfield, 2012)

Case Study 2: Brockwell Park Community Greenhouses

Interviews:

1. Volunteer (BPCG, transcript 1, 14th April 2013)
2. Volunteer (BPCG, transcript 2, 14th April 2013)
3. Garden coordinator (BPCG, transcript 3, 7th May 2013)
4. Director (BPCG, transcript 4, 14th April 2013)
5. Trustee (BPCG, transcript 5, 14th April 2013)

Documentation:

1. Brockwell Park Community Greenhouses website (Brockwell Park Community Greenhouses, 2013)

Case Study 3: Abbey Gardens

Interviews:

1. Volunteer (AG, transcript 1, 13th April 2013)
2. Volunteer (AG, transcript 2, 13th April 2013)
3. Garden coordinator (AG, transcript 3, 13th April 2013)
4. Committee member (AG, transcript 4, 13th April 2013)

Documentation:

1. Abbey Gardens website (Abbey Gardens, 2013^a)
2. Friends of Abbey Gardens constitution (Abbey Gardens, 2012)
3. Minutes from meetings Oct '09 to June '13 (Abbey Gardens, 2013^b)

Case Study 4: Culpeper Community Garden

Interviews:

1. Volunteer (CCG, transcript 1, 30th April 2013)
2. Volunteer (CCG, transcript 2, 30th April 2013)
3. Volunteer (CCG, transcript 3, 30th April 2013)
4. Volunteer (CCG, transcript 4, 30th April 2013)
5. Garden Coordinator (CCG, transcript 5, 30th April 2013)

Documentation:

1. Stories from the garden publication (Culpeper Community Garden, 2012)
2. Culpeper Community Garden publication (Culpeper Community Garden, 2000)
3. Garden guidelines (Culpeper Community Garden, n.d.)
4. Culpeper Community Garden, Spring 2013 newsletter (Culpeper Community Garden, 2013)

Case Study 5: King Henry's Walk Garden

Interviews:

1. Plot-holder (KHWG, transcript 1, 4th May 2013)
2. Plot-holder and on committee (KHWG, transcript 2, 4th May 2013)
3. Plot-holder and on committee (KHWG, transcript 3, 4th May 2013)
4. Plot-holder and on committee (KHWG, transcript 4, 4th May 2013)
5. Plot-holder and on committee (KHWG, transcript 5, 4th May 2013)

Documentation:

1. King Henry's Walk Garden website (King Henry's Walk Garden, 2013)
2. Garden rules (King Henry's Walk Garden, 2012)
3. King Henry's Walk Garden constitution (King Henry's Walk Garden, 2010)
4. Membership policy (King Henry's Walk Garden, 2008^a)
5. Complaints procedure (King Henry's Walk Garden, 2008^b)

Case Study 6: Easton Community Allotment

Interviews:

1. Volunteer (ECA, transcript 1, 25th April 2013)
2. Volunteer (ECA, transcript 2, 25th April 2013)
3. Coordinator (ECA, transcript 3, 25th April 2013)

Documentation:

1. Easton Community Allotment website (Easton Community Allotment, 2013)

Case Study 7: Hillside Harvest

Interviews:

1. Volunteer (HH, transcript 1, 5th June 2013)
2. Committee member (HH, transcript 2, 5th June 2013)
3. Committee member (HH, transcript 3, 1st June 2013)

Documentation:

1. Hillside Harvest website (Hillside Harvest, 2013)
2. Produce spreadsheet for 2012 (Rousseau, 2013)
3. Hillside Harvest constitution (Hillside Harvest, 2011)

Appendix 3: Data Analysis

The data analysis process:

1. Each interview was transcribed from taped recordings.
2. The coding process involved each variable being assigned a specific colour and then each separate interview being highlighted based on instances when each of the variables were mentioned.
3. Matrix categories were developed by producing a table for each case studies which have a row from each of the variables and columns for each of the interviews and documents. From this, one was able to clearly see the differences in response to one specific variable for each of the case studies.
4. From the matrix tables a picture could be built up of each case study in relation to the separate variables. For example an assessment of whether collective action is sustainable or not could be made based on the responses for the dependent variables and these then being assessed against the criteria put forward in the literature.
5. Each separate independent variable for one case study at a time was then compared to the theoretical proposition e.g. whether there was evidence of monitoring. This process was the pattern matching part of the analysis.