

Planning the Seeds of University Community Gardens:

Leadership and Management Techniques for 'Living Laboratories' of
Sustainable Campus and Community Development

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Abstract

This practicum analyzes the leadership, management practices, and organizational structure of five university gardening organizations, to determine if they have had an impact on the spaces of agricultural production in the cities in which they exist.

The research concludes that if university gardens/farms are to become successful demonstration projects within their cities they must: 1) have strong, collaborative, and flexible leadership structures; 2) effectively communicate with stakeholders; 3) generate consistent funding; 4) demonstrate their success on campus and within their communities; 5) create linkages with academic and community organizations; 6) create goals and objectives that overlap with university and municipal strategic plans. Furthermore, this study illustrates that university gardens/farms are important to planners as ‘living laboratories’ of urban food production; as well as educational tools that build the capacity of residents to grow local food, and understand the importance of agricultural urbanism (AU) for city planning and design.

Keywords: University Community Gardens/Farms, Sustainable Campus Design, Community Development, Agricultural Urbanism, Food Systems Planning, Urban Food Security

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“An unintended consequence of our drive to the pristine in city design, where it has been achieved, is a strange creeping level of boredom, numbness, and pathology of disconnectedness. A great quality of life for us as humans, one that triggers a wide array of meaningful feelings and experiences, necessitates direct engagement with what is messy and real in life – including how our food is created” (de la Salle & Holland, 2010, p. 77).

Table of Contents

Acknowledgements

Abstract

Chapter 1: Introduction

| | |
|----------------------------------|----|
| 1.1 Introduction | 1 |
| 1.2 Statement of Purpose | 4 |
| 1.3 Objectives of Research | 6 |
| 1.4 Significance of the Research | 7 |
| 1.5 Limitations and Biases | 12 |
| 1.6 Ethics | 14 |
| 1.7 Chapter Outline | 15 |

Chapter 2: Historical Orientation and Literature 16

| | |
|---|----|
| 2.1 Importance of University Community Gardens to Planners | 17 |
| 2.2 Leadership, Management and Organizational Structure in Community Garden Development | 18 |
| <i>Gaining Community Support for a Garden</i> | 21 |
| 2.3 Community Gardens as Instruments of Community Development | 23 |
| 2.4 Historical Barriers and Opportunities Faced by School Gardens in the Last Century | 27 |
| <i>Historical Ties Between School Gardens and Agricultural Urbanism</i> | 30 |
| <i>University Community Garden's Relation to Agricultural Urbanism</i> | 34 |
| 2.5 Appropriate Design | 36 |
| <i>Site Selection</i> | 36 |
| <i>Secured Land Tenure</i> | 38 |
| <i>Participant Involvement in Community Garden Development</i> | 41 |
| 2.6 University Farms | 43 |
| 2.7 Challenges faced by University Farms | 50 |
| 2.8 Key Findings of Literature Review | 55 |

Chapter 3: Research Methods 57

| | |
|-----------------------------------|----|
| 3.1 Key Informant Interviews | 58 |
| <i>Semi-Structured Interviews</i> | 60 |
| <i>Telephones Interviews</i> | 61 |
| 3.2 Grounded Theory Approach | 62 |
| 3.3 Limitations and Biases | 65 |
| 3.4 Chapter Summary | 66 |

| | |
|--|-----|
| Chapter 4: Selection of Sites | 68 |
| 4.1 University of California Davis (Experimental College Community Garden) | 69 |
| 4.2 University of British Columbia Farm | 73 |
| 4.3 University of Calgary Community Garden | 79 |
| 4.4 University of Victoria Campus Community Garden | 84 |
| 4.5 York University Maloca Community Garden | 86 |
| 4.6 Analysis of University Community Gardens Studied | 89 |
| 4.7 Chapter Summary | 91 |
| Chapter 5: Data Analysis | 92 |
| 5.1 Garden and Student Farm Organizer Interviews | 92 |
| 5.2 Social and Demographic Findings of University Gardens/Farms | 93 |
| 5.3 Influence of University Gardens/Farms on Surrounding Communities | 94 |
| 5.4 Leadership and Organization | 100 |
| 5.4.1 Barriers and Opportunities in the Garden's Development | 100 |
| 5.4.2 Good Leadership within the Context of University Community Gardens | 103 |
| 5.4.3 Creating a Successful University Community Garden | 106 |
| 5.4.4 Creating a Sense of Place | 108 |
| 5.5 Outcomes of Research | 111 |
| 5.6 Reflections on the Interview Process | 112 |
| Chapter 6: Conclusions | 114 |
| 6.1 Revisiting the Research Questions | 115 |
| 6.2 Lessons for Planners | 119 |
| 6.2.1 City Planners Role in Developing University Farms/Gardens | 120 |
| 6.2.2 Campus Planners Role in Developing University Farms/Gardens | 121 |
| 6.3 Defining how a University Farm/Garden becomes a 'Living Laboratory' | 123 |
| 6.4 Future Directions for Research to Advance University Farms/Gardens | 127 |
| Bibliography | 130 |
| Appendices | |
| A: Semi-Structured Telephone Interview Questions | 141 |
| B: Key Informant Informational Interviews | 143 |
| C: Statement of Informed Consent | 147 |
| D: Results of Data Analysis | 150 |

List of Tables

| | |
|---|----|
| Table 1.1 – Threads of Agricultural Urbanism | 2 |
| Table 1.2 – Establishment of University Community Gardens within Canada | 11 |
| Table 4.6 – Analysis of University Gardening Organizations | 87 |

List of Figures

| | |
|--|----|
| Figure 2.1 – The effects greening initiatives have had on neighbourhood development | 21 |
| Figure 2.2 – Community gardens in Spence neighbourhood in Winnipeg, Manitoba | 25 |
| Figure 2.3 – Transect road connecting rural and urban municipalities, outlining how each community can integrate AU planning and design principles | 32 |
| Figure 2.4 – Community garden design guidelines for successful community garden | 42 |
| Figure 4.1 – UC Davis campus community garden map | 70 |
| Figure 4.2 – UC Davis Student Farm Ecological Garden | 70 |
| Figure 4.3 – UC Davis Student Farm Market Garden | 71 |
| Figure 4.4 – Overview of UC Davis Student Farm | 71 |
| Figure 4.5 – UBC Campus Map | 74 |
| Figure 4.6 – UBC farm | 75 |
| Figure 4.7 – U of C Campus Map | 80 |
| Figure 4.8 – U of C campus community garden | 81 |
| Figure 4.9 – New site of UVic campus community garden | 85 |
| Figure 4.10 – Re-location of UVic campus community garden | 85 |
| Figure 4.11 – Campus map of York University | 88 |
| Figure 4.12 – York University’s Maloca Community Garden | 89 |

1) INTRODUCTION

As the era of cheap and abundant non-renewable energy will soon come to an end, so too will the availability of foodstuffs that are not reflective of the environmental costs associated with their production (Hopkins, 2008; Steel, 2009). However, many North Americans are only now beginning to realize what people in developing countries have known for quite some time: “food security is economic security is national security” (Nordahl, 2009, p. 16). Without “massive ‘inputs’ of cheap gasoline and diesel fuel for machines, irrigation, and trucking, or petroleum based herbicides and pesticides, or fertilizers made out of natural gas, [North] Americans will be compelled to radically reorganize the way food is produced, or starve” (Nordahl, 2009, p. 15). For example, the national oil shortage in Cuba (1989-1994), known as the ‘special period,’ necessitated the establishment of 26,000 self-provision gardens in Havana to feed urban residents (Moskow, 1999). During the ‘special period,’ Cuban planners and policymakers were forced to radically redesign urban infrastructure and regional food systems to accommodate food production in the face of mass starvation and nutrition-related health problems suffered by the general public. The Cuban experience clearly illustrates the negative impacts (e.g., mass starvation) of separating agricultural processes from cities, when global food and oil shortages take place.

Similarly, many North American cities keep agricultural processes away from urban centres, which reduces opportunities for urbanites to understand the physical, social, environmental or economic benefits of local food production. Scholars such as Richard Heinberg (as cited in Sayre & Clark, 2011) estimate that the United States will need 40-50 million people engaged in food production within the next half century as cheap energy resources become less abundant (p. 16). When planners are able to remind urban residents of the environmental

pressure they place on their ecosystem, citizens are more likely to reduce consumption of these natural resources, e.g. water, electricity, gas, agriculture (Hough, 2004). Planners have also come to realize the effect highly visible processes of urban food production have on community members within cities. In their design handbook for sustainable food and agricultural systems, *Agricultural Urbanism*, de la Salle and Holland (2010) show how to “establish a planning system that places value on agricultural land and promotes vertically integrated agribusiness. [This will help to] ensure that towns and cities will grow to be resilient in the event that global socio-economic or environmental conditions disrupt the globalized food markets” (de la Salle & Holland, 2010, p. 40).

| Table 1.1: Threads of Agricultural Urbanism | |
|--|---|
| URBAN PLANNING AND DESIGN | SUSTAINABLE FOOD AND AGRICULTURE SYSTEM |
| <ul style="list-style-type: none"> • Agricultural land preservation and farmland security • Sustainable communities • New urbanism • Smart growth – and transit-oriented development • Green and sustainable transportation systems • Green buildings • Community consultation and capacity building • Local economic development • Many others | <ul style="list-style-type: none"> • Urban agriculture • Farmers’ markets and direct marketing for farmers • Organic agriculture and permaculture • SPIN farming • Food security, food sovereignty • Artisan food and the slow food movement • 100-mile diet • Education on all aspects of food • Farmers’ succession planning • Co-operative farming approaches • Local food economies • Community-Supported Agriculture (CSA) • Wildlife and agriculture integration • Wide range of education on food • Gourmet food and celebrity chefs • Composting • Many others |
| Source: (de la Salle & Holland, 2010, p. 13) | |

As Table 1.1 illustrates, Agricultural Urbanism (AU) as a framework that weaves together the many threads of urban planning and design with sustainable food and agriculture systems. The framework increases public awareness of the physical, social, environmental and economic implications of producing and consuming local food.

City planners have also noted increases in quality of life within urban environments that prioritize and celebrate local food production (e.g., farmers markets, community gardens). AU strives to expand these enhancements to urban centres, as de la Salle & Holland (2010) explain,

[T]he experience of food is only complete when we have a greater awareness and connection to all the steps in the food system that gives us sustenance. While there is clearly immense value in promoting the truly celebratory aspects of food, there is a deeper spiritual connection in the awareness of the honest and messy exchange of life celebrating food. In order to celebrate the entire food system in a community, the full range of steps in food production need to be visible (p. 89).

Planners, policy makers, or developers who use an Agricultural Urbanism (AU) framework recognize in planning documents that every dwelling, in some measure, participates in the production of food (Duany Plater-Zyberk & Company, LLC, 2009; de la Salle & Holland, 2010). Conceptually, “AU believes in glass walls that make visible the creation of our food [and] promotes the de-sterilization of the experience of food and, by doing so, helps create places that are complex, real and memorable” (de la Salle & Holland, 2010, p. 77).

As Table 1.1 illustrates, in addition to design specifications, AU encompasses a number of organizational and management strategies which rely on individuals and organizations at the community level. To be successful, AU relies on community buy-in for agricultural initiatives and infrastructure, such as community gardens and demonstration gardens. Therefore, planners must understand how to create convivial spaces that urban residents will value. The practicum of university community gardens is an obvious place to start, as campus communities are often ‘living laboratories’ of innovative design and best practices. University campuses also have the

educational benefit of being used by professors and students who come from a variety of communities, both domestic and international. The practicum research aspires to provide an understanding of the leadership and organizational processes that contribute to ‘successful’ university community gardens, and explores how this knowledge could be translated into different urban environments.

1.2 Statement of Purpose

University community gardens are important demonstration projects for educating citizens, as these gardens represent how a campus—like a city—can strive to create a closed-loop food system and promote more sustainable modes of development. However, sustainability is not simply about the environment. It also includes sustainable, effective leadership and the ability to maintain the interest of participants. An example of strong leadership that reinforces sustainable development can be found within indigenous communities in North America. The ‘seven generations’ concept is based on the premise that decisions involving land must consider the present generation, as well as three generations in the past and three generations in the future. This is the definition of sustainable development used in this practicum. As indigenous planner and professor Ted Jojola (2008) explains, the intent of holding land within indigenous communities is to sustain productivity for future generations. This concept has tempered rapid transformation in indigenous communities because of “the need to assure the community that new ideas [are] mindful of the past, cognizant of the present, and suitable for the future” (Jojola, 2008, p. 43).¹ Without generations of strong leadership from indigenous communities this

¹ The reason this relationship to land is stronger amongst indigenous populations is because residents continue to have a stake in the community even if they leave for urban centres at a very young age. First Nations know that they are collective owners in their community and as collective owners they often return to these communities when they grow older to age in these places (Jojola, 2008).

concept would cease to exist. In effect, strong leadership is essential for sustainable development to be maintained over generations. The ‘seven generations’ model is not specific to indigenous communities, as similar definitions of sustainable development can be found in the United Nation’s 1987 document *Our Common Future*; as well as within concepts of inter/intra-generational equity² within international environmental law (Center for International Environmental Law, 2012). However, the ‘seven generations’ model is an integral component of the indigenous worldview and has made many indigenous communities very open to sustainable modes of development (Cordova, 2007; Jojola, 2000).

In terms of community garden development, relying on the simplistic ‘build it and they will come’ strategy has proven unsuccessful in the majority of social contexts. Therefore, strong leadership is also integral to sustaining participant interest, and thereby the viability of the garden. In their book *Greening Cities, Growing Communities: Learning from Seattle’s Urban Community Gardens*, the authors How, Lawson & Johnson (2009) explain that “most community garden advocates [now] stress development of leadership and participatory processes as much, if not more, than site development techniques” (p. 40). This ‘bottom up’ approach to community gardening development within cities has led to transformative changes. As Von Hassell (2002) explains, “[u]nlike the past, when gardens died along with government interest, many community gardens now continue to thrive because of the active involvement of the participants in all aspects of development and organization” (as cited in Milburn & Vail, 2010, p. 79). At present, Milburn & Vail’s study *Sowing the Seeds of Success: Cultivating a Future for*

² As the Center for International Environmental Law (2012) explains, “[i]ntergenerational equity, as employed in current international instruments, ... calls for fairness in the utilization of resources between human generations past, present and future. This requires that a balance be attained between meeting the consumptive demands of existing societies and ensuring that adequate resources are available for future generations... The second concept is referred to as ‘intra-generational equity,’ that is fairness in utilization of resources among human members of present generations, both domestically and globally” (p. 1).

Community Gardens appears to be the most comprehensive analysis on the indicators of success for community gardens. This research aspires to supplement the work of Milburn & Vail by further identifying processes in which successful university community gardens formulate decisions. The focus of this study is on the leadership and organizational structure of five successful university community gardens in North America: University of British Columbia (UBC), University of Calgary (UC), University of Victoria (UVic), York University (York), University of Davis California (UC Davis). For the purposes of this research, a ‘successful’ community garden, as defined by Milburn & Vail (2010), is one that has been established for ten years or more. This is an admittedly simple definition of a successful garden, but for selection purposes the practicum will rely upon this definition.

1.3 Objectives of the Research

The intended outcome of this research on ‘successful’ university community gardens is to identify effective processes of leadership development, management techniques and organizational structure, regardless of geographic or social advantages. The goal is to provide other gardens or related AU initiatives with lessons that can be used in building greater capacity.

When a community garden has strong leadership, it has the capacity to create social norms which can transcend the garden and maximize its community development potential (Glover, Shinew, & Parry, 2005; Teig et al., 2009). In a study of the social relations of urban community gardens in Denver, Colorado, Teig et al. (2009) found a strong correlation between collective efficacy amongst garden participants and neighbourhood development. The most important finding of their study, for this research, is the emphasis on the leadership, management structure and organizational processes within a garden. As Teig *et al.* (2009) explain,

“[leadership] has the potential to shape and support the overall social environment of the garden, [and is] particularly significant for promoting collective decision-making, social norms, and mutual trust” (p. 1120). Strong leadership brings stability in terms of communications, funding, conflict resolution, and leadership development. It also facilitates community visioning and strategic planning processes, which enhance the long term success of the garden (Twiss et al., 2003).

The five gardening organizations (3 gardens, 2 farms) to be examined have been successful in attracting the participation of both students and community members. By gaining an understanding of the leadership and organizational processes of these gardens, the practicum has the potential to lead newer university community gardens to comparable levels of success.

Key questions that guide this research are:

1. What leadership and organizational skills, knowledge and processes contribute to the success of the gardens in question?
2. How can newer university community gardens build on the successes of existing ones?
3. With respect to these approaches, how can they be, or how are they, translated into different urban environments?
4. How can these gardens inform university, professional, and/or government policy with respect to building more sustainable cities?

1.4 Significance of the Research

Within the context of city planning, one of the more important aspects of a community garden is its ability to create social norms (i.e. gardening, respect for communal property, beautification, intercultural interaction), which transcend beyond the garden into surrounding

communities (Glover, Shinew, & Parry, 2005; Teig et al, 2009). Roubanis and Landis (2007), in their study *Community Garden Project: Meredith College Explores Sustainability, Organics*, identify university community gardens as being highly effective at creating social norms:

Student involvement in an organic garden is one means for expanding and transforming their worldview and encouraging students to think beyond themselves to the impact of their decisions on the environment and other human beings. Moving consumers toward a more sustainable diet based on food raised locally through ecologically friendly methods is a key step in developing a more sustainable lifestyle for individuals, communities, and the world (p. 56).

Therefore, a successful university community garden, like “[s]uccessful urban garden programs[,] activate[s] neighbors to personally commit to making positive community change [which] may lead to community objectives related to issues other than gardening” (Lawson, 2005, p. 296).

Roubanis and Landis (2007) suggest the anecdotal evidence for the success of a university community garden and its creation of social norms lie within campus activism (i.e. environmental awareness day, on-campus market, sustainable architecture) it provokes. The study by Teig et al. (2009) of urban community gardens within Denver, Colorado makes similar suggestions:

[As gardeners’ relationships] blossom into informal agreements to help one another inside and outside of the garden through mutual reciprocity and help to define acceptable behaviors around the garden place ... [t]he social norms and standards...such as the upkeep of the garden’s appearance or the protection of safe public spaces, have the potential to become ingrained in a neighborhood and then spread through wider social ties to members of other communities (p. 1121).

Since university community gardens consist of students from urban, suburban and rural communities from different parts of the world, the gardens can have a significant impact on the creation of social norms, such as food production within cities, both domestically and abroad. These social norms may effect the proliferation of AU within cities in which these gardens are situated. Therefore, well-managed university community gardens may serve to diffuse principles

of AU which will help to create more sustainable cities. Through cohesive design and food systems planning, supported by effective leadership and organizational structures, AU can integrate agriculture into a city's plans at both the municipal and the neighbourhood levels. At the core of AU is the creation of convivial spaces around food production and consumption, as well as demonstrating how food is an integral component of an enhanced quality of life. Key aspects of achieving this are effective organizing and community engagement, managed by effective leaders.

The management of food resources is an integral part of the AU framework and university campuses are a logical first step in demonstrating how local food systems can be successfully initiated. University community gardens provide opportunities for students to participate in agriculture within the city and understand the physical, social and economic benefits of local production and consumption. Scholars have also shown that participants in community gardens learn social norms (i.e. gardening, respect for communal property, beautification) which expand into surrounding communities when participants from other communities are involved in gardening activities (Teig et al., 2009; Glover, Shinew, & Parry, 2005, p. 80). Unlike conventional community gardens, university community gardens have the benefit of participants (i.e. students and professors) from various geographical and cultural backgrounds. Therefore, university campuses are important in demonstrating the quality of life associated with AU to urban residents and visitors from other communities. Effective leadership and organizational structure in university gardens are important components that may help expand AU into larger urban environments.

The incidence of community gardens in North American cities is increasing at a rate unseen since the 'victory gardens' of WWII in the 1940s (The Economist, 2009). There are a

diversity of factors attributing to this trend, such as the economic recession, as well as public concerns around food safety, nutrition, and climate change (The Economist, 2009, p 1). Urban agriculture is also being championed by political figures like Michelle and Barack Obama, and Vancouver Mayor Gregor Robertson, who have converted the lawns of their respective legislative buildings into vegetable gardens (Lee, 2009; CTV News, 2009). University campuses are no exception to this trend. Table 1.2 illustrates the number of community gardens on university campuses in the last ten years has grown exponentially, with 17 university community gardens established since 2007.

Table 1.2: Establishment of University Community Gardens in Canada

1996 - University of Victoria
1999 - York University (Maloca Community Garden)
2000 - University of British Columbia
2000 - University of Calgary
2003 - University of Alberta
2003 - Mount Allison University
2004 - University of Toronto (Ellen Giles Rooftop Garden)
2005 - University of Guelph
2005 – University of Western Ontario
2007 - University of British Columbia (Orchard Garden)*
2007 - Dalhousie University
2007 - McGill (Edible Campus)
2007 – University of Saskatchewan (Seager Wheeler Residence Complex)
2007 – University of Waterloo
2008 - Acadia University
2008 - University of Manitoba
2009 - Lakehead University
2009 - Vancouver Island University
2009 - University of Winnipeg
2010 - McGill (MacDonald Campus Community Garden)
2010 - Memorial University
2010 – Mount Royal University
2010 - University of Ottawa
2010 - Queen’s University
2010 – Trinity Western University

*** Bold illustrates beginning of major trend in community gardens on university campuses.**

Sources (Peters, Johnson, & Ellsworth, 2010; Solutions: A Sustainability Network, 2011; Sayre & Clark, 2011, p. 25; Oakes, 2010; EnviroWestern 2011; UBC, 2012; Memorial University Community Garden, 2011; Town of Sackville, New Brunswick, 2007; Acadia Community Farm, 2011; See More Green Collective Garden, 2010; McGill University, 2007; McGill MacDonald Campus Student-Run Ecological Garden, 2010; U of M Student Community Farm, 2011; Queen's University News Centre, 2010; University of Ottawa, 2010; Food Security Research Network, 2009; University of Alberta Students Union, 2011; University of Toronto, 2008).

The highly visible nature of these efforts can also be seen as a contributing factor to urbanites' increased participation in community gardening activities, as the visibility of these processes has placed emphasis on the impact food has on every community.

For planners and policymakers, university community gardens may have a significant effect on increasing spaces for agricultural production within North American cities. University community gardens allow students to experientially learn and to put environmental knowledge into practice, in addition to developing gardening skills—which can then be applied in their

communities. I will argue, the five ‘successful’ university community gardens to be investigated in this research (UBC, York, U of C, U Vic, UC Davis) have the characteristics to serve as precedents for other universities. The proposed analysis of the management practices, leadership and organizational structure of these gardens and their effects on surrounding communities is original research. While Sayre & Clark (2011) have produced *Fields of Learning* on the student farm movement in the United States, a comparable study of university community gardens and their impact on cities has not yet been undertaken. Therefore, it is unknown whether university community gardens are the same, or different from, others types of student farms or community garden projects within cities.

1.5 Limitations and Biases

A limitation of this research is that the longest-standing and most organized community gardens at the university level in Canada and the United States are included. Therefore, more recent gardens, which may nonetheless have made significant gains in a shorter time period, are not part of this analysis. A further limitation of the practicum is the small number of universities which qualify as sufficiently successful (according to the definition adopted) to be a part of this research.

The practicum also has an inherent bias, with the majority of successful university community gardens being at western universities (i.e. UVic, UBC, UC Davis, U of C). However, it is intended that the research will produce replicable processes, which can be used as a model in other cities. An example of this is Seattle’s *Neighborhood Match Fund* program for the creation of community gardens within Seattle, which has since been implemented in cities across North America, East Asia and South Africa (How, Lawson, & Johnson, 2009, p. 186). While the

Neighborhood Match Fund did benefit from “physical factors such as topography and climate ... many of the features that have contributed to the success of Seattle community gardens are the result of conscious and deliberate efforts carried out over a long period of time” (How, Lawson, & Johnson, 2009., p. 186). The collective efforts of dedicated individuals have been widely attributed as the key explanatory factor for the program’s success (How, Lawson, & Johnson, 2009).

Similarly this research focuses on how the social processes of university gardens contribute to their success. For example, York’s Maloca Garden serves to test if geography is a determining factor for a successful university community garden. York’s inclusion in this practicum should illuminate if there are social, economic or physical reasons why eastern universities have been slower to adopt on-campus gardening activities.

A final limitation of this research pertains to the financial and time constraints of the study, which prevents a more holistic analysis. Therefore, interviews with a diversity of garden participants from the multiple sites is not possible. Under ideal circumstances, this work would encompass interviews with garden participants as well as key informants. This researcher determined that limiting interviews to key informants of the various projects was most relevant to understanding the leadership, management and organizational structure of successful university community gardens.

1.6 Ethics

The ethical issues involved with this research pertain mainly to the undertaking of semi-structured interviews, as proper consent must be received from the key informants before interviews are commenced. The key informants participating in the practicum are given a synopsis of the reasons why their participation is important to this research, and notified of the time constraints. The interview process commences upon receipt of written consent from the key informants. At the beginning of the interview this researcher reassures key informants that the practicum is done in accordance with the University of Manitoba's ethics standards, and they have the ability to withdraw at any time. Key informants are also given information to show that data collection in this questionnaire serves to inform student community gardens on campuses across Canada. Additionally, adequate measures are taken to ensure that all data is securely stored to prevent unauthorized or unlawful use of the information collected (Gray, 2009). All key informants are also offered the results of the practicum in PDF format upon completion of the practicum, distributed via e-mail.

To ensure more contemplative responses from the key informants, the questionnaires are sent electronically to the interviewees a week prior to the scheduled interview. The provision of the questionnaire beforehand serves to enhance the process of telephone interviews and allows for the clarification of any information prior to the interview. This added element of transparency also strives to ensure that key informants are not surprised by any of the questions posed during the data collection process. These precautionary measures are done to assure key informants that the practicum is being done in accordance with ethical standards in order to ensure the highest quality results.

1.7 Chapter Outline

In this research, the literature review follows the introductory chapter, and serves to contextualize and frame the relationship between university community gardens and sustainable urban design within cities. The literature review provides historical background information and analysis of school and community gardens, as well as student farms, and identifies replicable processes to assist in the development of newer gardens. The importance of leadership and organization within school and community gardens emerges as an integral part of creating success within these spaces, which in turn impacts community development within surrounding urban areas. In Chapter 2, the context and framework for the research questions outlined in section 1.4 are also established.

The research methods utilized in this study are described in Chapter 3. These include the use of semi-structured interviews, telephone interviews, and questionnaires for key informants. Chapter 4 provides background information on the sites selected for this research, based on published sources. The chapter ends with an analysis of the similarities and differences of these gardens. The research findings from the interviews are summarized in Chapter 5, followed by the responses to the research questions, summary conclusions, and lessons for planners, as well as future research directions, in Chapter 6.

2) HISTORICAL ORIENTATION AND LITERATURE

The purpose of this review is to explore the current research on community gardens and identify how this analysis of university community gardens fits with the existing academic literature. This review analyzes the academic, social, and health benefits for participants of school and community gardens, and shows how university community gardens have the capacity to be demonstration gardens of Agricultural Urbanism (AU) within cities. Additionally, this research highlights how strong leadership processes, management practices, and organizational structure are paramount to the overall success of a community garden. This review also looks at the historical roots of university community gardens within the school gardening movement, and the important role they play in demonstrating what can be done to increase the quality of life within urban centres. Based on the existing literature, it appears that, in theory, university community gardens are a contributing factor in creating more healthy, vibrant, diverse, and resilient cities. However, there is presently an absence of qualitative research on university community garden programs. Nevertheless, significant evidence exists to suggest that school and community gardens, as well as university farms, have had measurable financial and social impacts in their communities and surrounding neighbourhoods. Regardless of geographic or social conditions, the literature highlights a number of important themes that can be implemented in order to develop a successful garden that attracts and retains participants. The information in this review serves to inform the research questions of this study on university community garden programs, and helps to define what strong leadership, management, and organizational structure means in terms of a successful community garden. In addition, the review explores whether or not university community gardens are indeed effective demonstration projects that play an important role in food systems planning and design frameworks like AU. The results of this

review aspire to understand what makes a successful university gardening program, and analyze if there are any differences in these programs (i.e. management, organization, design) when compared to conventional school and community garden programs.

2.1 Importance of Community Gardens to Planners

There are a variety of reasons why community gardens are important to planners who aspire to create more healthy, vibrant, diverse, and resilient cities. One major reason is to curb urbanites demand for agriculture within cities which, in turn, serves to increase quality of life, participant health, local food security and neighbourhood development. As Baker explains,

Community-gardening activities in North America and Europe are part of international urban agricultural activity that is being recognized globally by health professionals, urban planners, environmental activists, community organizers, and policymakers as an important contributor to economic development, food security, and environmental management (Baker, 2004, p. 4).

It appears that as gardening becomes more visible within urban environments, the more urbanites are becoming involved in such processes. Planners such as de la Salle and Holland (2010) have observed these changes, and they are championing the integration of food production within cities, through the promotion of the food systems planning and urban design framework AU. As they explain “the experience of food is only complete when we have a greater awareness and connection to all the steps in the food system that gives us sustenance” (p. 89). Today, community gardens are understood to be a way in which urbanites can maximize the use of urban space, build community food security, and eat more locally (Milburn & Vail, 2010, p. 79). According to Milburn and Vail (2010), “these interests lend a different focus to the community garden as part of a movement to rebuild ‘a spirit of local community tied to a place and restoring nature and food growing in the inner city’” (p. 79). These social changes are serving to enhance the need for community gardens within urban centres, as increasing numbers of citizens are

requesting spaces for agricultural production. To integrate agricultural processes within urban environments, planners must maximize the use of these spaces to sustain participant interest and enhance processes of local food production, healthy eating, multicultural integration and neighbourhood development. This review analyzes the indicators within the literature that have made community gardens successful in the past, and identifies applicable lessons for university community garden programs.

2.2 Leadership, Management and Organizational Structure in Community Garden Development

There is presently an extensive amount of research showing the importance of leadership and organizational processes as integral to a garden's success. As Sheldon's (2010) study of 22 garden coordinators across the United States has shown, leadership was the second highest response (11) after community involvement (12) as being the most important factor in the creation of a longstanding community garden (p. 38). The reason for this is that when a garden has strong leadership, it can easily transfer knowledge and facilitate dialogue between participants, which serves to create social norms which can transcend the garden. As mentioned in the introduction, Teig et al. (2009) indicated that effective leadership can influence how a garden is shaped, and plays a significant role in promoting social norms of collective decision-making and mutual trust (p. 1120). Specifically, Teig et al. (2009) identify that "multiple social processes (e.g., mutual trust, reciprocity) fostered during participation translated into situations outside of the community garden setting" (as cited in Draper & Freedman, 2010, p. 480). Studies such as Hanna & Oh (2000), Macias (2008), and Roubanis & Landis (2007) have also found that social relationships created within community gardens build a stronger sense of place within a community, which in turn aids neighbourhood development. Teig and colleagues' (2009) study suggests that the use of collective decision-making within the organizational structure of a

community garden also helps to obtain buy-in from its participants. When a garden has buy-in from its participants, it is more able to sustain the interest of its participants, thereby increasing the viability of the community garden (Teig et al., 2009). Twiss et al. (2003) highlight the benefits of strong leadership, including stability in terms of communications, funding, conflict resolution, and leadership development. The authors also show how it facilitates community visioning and strategic planning processes, enhancing the long term success of the garden. Yet, in order to build a sense of belonging, it is important to have a passionate person whom people respect. When a garden has someone who can coordinate human and financial well, it is more likely that participants will feel as though they are contributing in a more meaningful way. However, Lawson & Johnson (2009) further note that leadership and effective community engagement are more critical to a garden's success than the ways in which the site is developed. Similarly, the Milburn and Vail (2010) study concludes that, "a successful community garden is less about a grand design than about facilitating a dialogue whereby the community identifies, prioritizes, and visualizes its garden" (p. 86).

Having an assigned leader brings cohesion to a garden and allows for heightened levels of capacity building and knowledge transfer. Yet the style of leadership of the garden coordinator also has a significant effect on the success of the garden. As Sheldon's (2001) study shows, a commonly cited factor for building pride amongst participants of a community garden project is fostering a garden culture focused on a 'we'—instead of 'me'—mentality. Garden coordinators are able to create this type of atmosphere by sharing leadership roles amongst garden participants. As Parry, Glover, & Shinew (2005) explain, gardens led by female coordinators are more likely to exhibit this style of leadership, which emphasizes socialability in gardening activities and focuses on cooperation, flexibility, and being respectful of the time

constraints of others. In their study of 23 garden coordinators, 19 women and four men, Parry, Glover, & Shinenw (2005) found that male-led gardens were described as being ‘more work oriented,’ as male coordinators often focused on creating a schedule and distributing lists of tasks for others to follow. In contrast, gardens led by females were more focused on collective decision-making and focused task completion around “women enjoy[ing] a mix of work and leisure within the community garden” (Parry, Glover, & Shinenw, 2005, p. 187). Since gardens must be cultivated by participants, it is important that a *flexible* style of leadership is adopted to increase participant interest. As Lawson (2005) points out, “garden projects must stay in touch with the gardeners and the community at large to evaluate whether the garden satisfies their personal reasons for involvement. Garden programs need to be flexible so participants can change them to better fit their evolving needs” (p. 298). The transient nature of community garden participants means the objectives of a garden may deviate quickly from the ideals of the mobilized group of gardeners. Therefore, a garden’s decision-making and governance structure must be inclusive of all its participants.

Since many urban gardens and university community gardens receive funding, or are done in partnership with their institutions, the topic of how much influence these institutions have in the decision making process arises. As Lawson explains,

[G]iving too much emphasis and control to outside groups can undermine the community leadership necessary to sustain the garden... In past cases, urban garden projects drew on external leadership during crisis but found that the leadership dissipated after each crisis was resolved. Even if local interest continued, the neighborhood was often left without the authority or networking capacity to secure the site and program permanently (Lawson, 2005, p. 298).

In the 1970s enthusiasm for community gardens led some US city agencies to develop gardens without assuring local interest in the communities in which they were placed. As How, Lawson, & Johnson (2009) explain, this resulted in underutilized and neglected spaces as leadership and

participatory processes were not included in the garden's development (p. 40). At present, the inclusion of representatives from supporting institutions (i.e. student union representatives, university administration) is viewed as necessary in the decision-making processes of a community garden's development. Lawson (2005) advocates for the use of collaborative planning processes to ensure both the interest-based garden organization (i.e. Garden Club) and supporting organizations in the community (i.e. student unions, university administration) exchange knowledge around social conditions, resource management and visions for the future (p. 298-9). These processes help to prevent knowledge from being lost when there are changes in garden leadership.

Milburn and Vail (2010) also suggest that leadership opportunities are kept to a term of two years to prevent participants from losing interest as a result of being stuck in one position for an extended period of time (p. 78). Gardens that uses processes of participatory decision-making have an advantage in this regard, as the coordinator creates opportunities for new leaders to develop by familiarizing the group with what needs to be done to achieve participant-led objectives. In the literature, group decision-making is highlighted as one of the key indicators of success for a community garden. One objective of this research is to explore if there are challenges faced by garden coordinators who have used, or are using, a flexible and participatory style of leadership, and identify if they feel this is the most effective way to manage a garden.

Gaining Community Support for a Garden

To firmly establish a community garden and have it sustain its roots within a community, both the mobilizing group of gardeners and the surrounding neighbourhood must be involved in the entire process. Involvement of a diversity of community stakeholders is very important

during the initial stages of a garden project, as it helps participants see the social and community benefits which serve to attract future members. As *The Ecologist* explains (as cited in Williamson, 2002) “by involving all the stakeholders, and using all of their good commonsense, one then accepts responsibility and ownership for the decision that is made. The only way you can accept that ownership is if you are a part of it...” (p. 42). The preliminary planning process helps to gauge broad interest for a community garden and can expand the pool of potential gardeners. The more people agree to commit from the beginning, the greater the impact the project will have when the garden is successfully implemented (How, Lawson, & Johnson, 2009; Milburn & Vail, 2010; Newman & Jennings, 2008). Once the garden is ready to begin its production, the garden’s organizers must keep the community engaged throughout the project’s development through newsletters, websites, potlucks, inclusive festivals or parties, as well as capacity building workshops for gardening, cooking or canning (Teig et al, 2009). The more garden activities that take place, the more opportunities for participants, community members, and partnering organizations to become involved. As Parry, Glover, & Shinew (2005) explain,

Self-worth and empowerment arise from participants’ involvement in the shared act of gardening and other activities related to the establishment and operation of gardening projects and other activities related to the activity of gardening. In this sense, community gardens may be more about community than they are about gardening. They offer places where people can gather, network, and identify together as residents of a neighborhood (p. 180).

The more vibrant a garden becomes, the more likely community members become interested in participating in its activities. When a garden is well-used by a large base of participants, the garden is less likely to lose support from its community or funding from its partnering organizations. A question this research seeks to address, not specifically addressed in the current literature, is the new ways in which community outreach is being conducted. Since university

community gardens often have a diversity of young educated participants, this study aspires to find new ways of conducting community outreach and communicating with garden participants.

2.3 Community Gardens as Instruments of Community Development

Food, like no other commodity, allows for a political awakening...draws on and helps nurture authentic relationships...has the potential to generate active citizenship... [and] suggests both belonging and participating, at all levels of relationship (Campbell, 2004, p. 347).

From Draper & Freedman's (2010) *Review and Analysis of the Benefits, Purposes, and Motivations of Community Garden within the United States*, there appears to be no shortage of literature on how community gardens have had a positive impact on crime reduction, neighbourhood beautification, cultural preservation and expression, social interactions/cultivation of relationships, and community organizing, empowerment and mobilization within the communities in which they are situated (p.483-485). When done effectively, "community development results in mutual benefit and shared responsibility among community members and recognizes: the connection between social, cultural, environmental and economic matters; the diversity of interests within a community; and its relationship to building capacity" (Frank & Smith, 1999, p. 6). As Payne and Fryman (as cited in Milburn & Vail, 2010, p. 79) explain, community gardens have eight characteristics which make them uniquely effective for community development:

- Gardens are places where people of all ages, races and income levels can interact in a non-threatening way
- Community gardens are continuous projects that can be sustained by community members rather than outside agencies
- A wide range of skills is necessary to maintain a garden
- The evolution of a garden offers unique challenges to participants
- The residents control garden space
- Gardens have the potential for dramatic, short-term visual effects
- The process of gardening allows people to feel pride about doing something for their community

- The process of developing a garden empowers people to realize that they can contribute in a positive way to their community.

The Boston Urban Gardeners (1982) cite several similar benefits of gardens, describing them as places where education, environmentalism, therapeutic recreation and beautification overlap. In addition to these beneficial characteristics, they also point out the economic returns (\$950 per thirty-by-forty-foot garden plot) and low-cost nutritional benefits brought to urban community residents through agricultural skills (Naimark, 1982, p. 36-7). In his book, *Radical Gardening: Politics, Idealism and Rebellion in the Garden*, MacKay (2011) also highlights the economic impacts of communal gardening on neighbourhood development. As MacKay (2011) illustrates,

[C]ommunity gardens have, on average, significant positive effects on surrounding property values, and that those effects are driven by the poorest of host neighbourhoods... a garden raises neighbouring property values by as much as 9.4 percentage points within five years of the garden's opening (p.173).

Similarly, community activism is also cited as a potential outcome as “[s]uccessful urban garden programs activate neighbors to personally commit to making positive community change

IMPORTANT FACTS

Greening contributes to rising property values, which in turn contribute to the city's economic growth, according to research provided by The Wharton School's study, *Public Investment Strategies: How They Matter for Neighborhoods in Philadelphia*.

Property Values Increase by:

- 9% with new tree plantings
- 28% with improvements to streetscapes
- 30% if they are located adjacent to cleaned and greened lots

Additional studies (conducted by the University of Washington) show that,

- Landscaping adds to the dollar value and sales appeal of commercial real estate and boosts office occupancy rates

Greening strategies can help reduce violence in our neighborhoods.

Criminologists James Q. Wilson and George Kelling warn of the “broken window” theory. Left unmanaged, one vacant lot can lead to the perception of neighborhood abandonment, increasing crime and housing neglect.

Studies by the University of Illinois conclude,

- Exposure to trees and nature can help reduce school violence and improve classroom concentration

USDA researchers in Davis, California found,

- Greening can change people's perceptions of their neighborhoods, reduce violence and crime, and increase neighborhood stability

Figure 2.1 -The Effects Greening Initiatives have had on Neighbourhood Development. Image source: (Pennsylvania Horticultural Society, 2008, p. 1).

[that] may lead to community objectives related to issues other than gardening, such as housing, job training, or safety” (Lawson, 2005, p. 296). In the article *Community Gardens of the 21st Century*, the Pennsylvania Horticultural Society (2008) illustrates the effects greening initiatives have on crime reduction and increased property values within the City of Philadelphia (Figure 2.1). Studies, such as Glover et al. (2005), also describe the mobilizing effects of community gardening which have proliferated social norms of respect for communal property and beautification. Yet Glover et al. (2005) also discovered “the effects of community gardens [are] not necessarily bound within the context in which they were originally generated” (p. 80). One example of this is the North Philadelphia neighbourhood of Norris Square, which at one time was an area notorious for drug trafficking. However, the neighbourhood is now home to six award-winning gardens that have created a place within a former derelict area that is reflective of the heritage of its predominately Puerto Rican residents (Pennsylvania Horticultural Society, 2008). Similar



Figure 2.2 – Community Gardens in Spence Neighbourhood in Winnipeg, Manitoba. Green plan’s modeled after Spence Neighbourhood have been implemented in 4 other communities with Winnipeg’s inner-city (MacKenzie, 2010; Short, 2012; Spence Neighbourhood Association, 2009). Image source: (Google Maps, 2012).

examples have taken place within low-income inner city neighbourhoods of Winnipeg with the development of community-led green plans (Figure 2.2) (MacKenzie, 2010; Short, 2012; Spence

Neighbourhood Association, 2009); as well as on a larger scale within the City of Detroit (Suzuki, 2012).³

As mentioned in Section 1.4, Teig et al. (2009) claim the reason for this positive exchange of social norms and standards comes from informal discussions which take place within the garden, between neighbours who may not otherwise engage with one another (p. 1121).

For a garden to maximize its community development potential, it must include participants from local and surrounding neighbourhoods. To create strong relationships between gardeners in the interest of promoting neighbourhood rejuvenation, there should be a number of formal and informal opportunities for participants to work together and interact with one another. Formal relationships consist of working collectively on matters of planning and implementation of garden projects, while informal relations take place during garden workshops, fundraisers, and potlucks (Glover, Shinew, & Parry, 2005). As Draper & Freedman (2010) explain, a healthy mix of both forms of interaction helps to create cohesion amongst participants, which is further augmented when the garden is tied into a larger community garden network. Becoming involved in a community garden coalition, as Milburn & Vail (2010) describe, brings cohesion to “gardeners, garden organizers, and partner organizations [...] by linking them through shared stories, resources and information” (p. 80). Draper & Freedman (2010) also confirm community gardens obtain numerous benefits from umbrella organizations (i.e. technical resources,

³ The City of Detroit presently has a number of community gardens and urban agricultural initiatives on vacant lots within its city, but has not removed them because of the positive influence they have had on the development of surrounding neighbourhoods (Suzuki, 2012). Due the visible developments made within Detroit’s communities, City Officials and Administrators have implemented citywide policies to “[e]ncourage and support urban agriculture” (City of Detroit, 2009, p. 15). Other citywide objectives within Detroit have been to “1. Establish an inter-connected open space system throughout the City; 2. Work with local communities to convert vacant properties into neighborhood parks and natural habitat areas” (City of Detroit, 2009, p. 15).

educational opportunities, building materials, staff and financial assistance) with minimal financial barriers to entry (p. 484). Therefore, the garden is able to represent the interests and ideas of participants, but can draw upon the financial, technical and human resources of the umbrella organizations when additional support is necessary. In turn, this provides a safety net for the garden and assists with capacity building to create positive developments within the existing community.

2.4 Historical Barriers and Opportunities Faced by School Gardens in the Last Century

For more than a century school gardens have been used as tools for educating youth and for assisting in processes of urban rejuvenation. As Lawson (2005) explains, near the end of the 19th century, school and vacant lot gardens began to emerge in Europe as well as Canada and the United States, as a result of the social, environmental, and economic climates of the time. At this time, gardens served as an “approach to addressing the urban congestion, immigration, economic instability, and environmental degradation” (Lawson, 2005, p. 21). The social impetus for many garden programs came as a by-product of the Protestant social gospel movement, which later evolved into the City Beautiful movement (1910). The ‘social gospel’ movement, based on the Protestant church’s new emphasis on personal salvation, only attainable if intertwined with social salvation, led to a wide range of social reforms (Martin, 1998). This led to a new emphasis on nature and the importance of improving the landscape in and around cities: around homes; around institutions such as the railways; and in the schools, to instill these ideas in children. Gardens became a central component of the agricultural curriculum and they were used to teach children to live harmoniously with nature. Agricultural competitions were used by schools all across Canada to encourage students to enjoy learning about agriculture (von Baeyer, 1984). School gardens flourished in rural areas of Canada from 1872 until 1903, when the effort

received renewed support from the commissioner of agriculture, and financial support from philanthropist Sir John A. MacDonald. As Lawson (2005) explains,

The program was mainly focused on rural populations as a means to teach them scientific agriculture as well as gardening as a domestic science. The effort led to the establishment of Macdonald schools throughout the eastern provinces of Canada. The schools were part of the school consolidation effort, in which five or six small rural schools were replaced with one central, graded school that could support school gardens and manual training for other rural-based trades. In addition, traveling instructors taught agriculture and gardening to more remote rural schools. American education reformers and agricultural experts both cited the Canadian program as a good model for American school gardening, particularly in rural areas (p. 54).

While many American schools did adopt the Canadian model in the 1890s, support for school garden programs began to dissipate in the 1920s, after interest in ‘liberty gardens’—created during WW1 as a patriotic effort—lost momentum. The main era of school gardens in Canada is considered to be from 1900-1913, and in the United States from 1900-1920 (von Baeyer, 1984; Lawson, 2005). During this period, school gardens played an important role in the nature study movement, which allowed children to learn about the environment through investigation. These gardens served as laboratories for children to experientially learn about life cycles, and how to live harmoniously with the environment and become good moral citizens (Martin, 1998). In her thesis *A Deeper Ecology: Community Gardens in the Urban Environment*, Williamson (2002) explains that, within Canada and the United States, the main emphasis of school gardens was to teach civic responsibilities such as “how to efficiently use energy, how to take care of both public and private property, and about natural processes concerning aspects such as water, sunlight, and soil” (p. 8). As Lawson (2005) describes, there were three forms of school gardens: landscaped school grounds, plots of land with student gardens, and home gardens. Schools gardens were mainly located on school property or on vacant land in close proximity to the school. If vacant land could not be attained in close proximity to the school, academic or model gardens would be created on school grounds, and children would be expected to replicate lessons

in their home gardens. The home garden was the desired end product of all the different types of gardens, as teachers often visited the child's home to see how the family garden was flourishing (p. 82-3). It was believed that through "gardening with their teachers and schoolmates, the child would gain both an appreciation of gardening as [a] pleasurable activity and also an aesthetic appreciation of how a garden improves the home and neighbourhood" (Lawson, 2005, p. 84).

It was hoped that school gardens would eventually become part of the national public school system but this did not come to fruition. As Lawson (2005) explains, the reason school gardens were unable to attain national success was mainly because they were "rarely considered simply a place for children to grow vegetables but instead [were] tied to economic, moral, ethical, and educational agendas" (p. 91). While school gardens were mainly supported for their civic benefits, "the ultimate goal of the school garden [w]as the creation of 'strong-bodied, efficient, and contented citizens' [with the intention of] the home garden [being to] teach important social values, particularly those associated with property-owning and middle-class lifestyles" (Lawson, 2005, p. 84-5). Despite gaining a significant amount of momentum during World War I, school gardens were unable to become part of a standardized curriculum. Loosely defined gardens could not be developed into a formalized structure that could meet the varied interests of a wide range of supporters (i.e. philanthropic groups, women's clubs, civic groups, agricultural supporters, social reformers). As Lawson explains,

The pressure to legitimize it in the school curricula begged the question of its purpose, something that many supporters did not want to strictly define for fear of losing support. The school garden, while a useful resource for a range of educational objectives, was promoted for accomplishing many other goals, with little evaluation as to its successes (Lawson, 2005, p. 92).

Nevertheless, the push for school gardens has continued throughout the last century. Numerous educational publications have focused on the success of individual school programs, but

standardized guidelines have yet to be created for school gardens. This despite current research on *The Effects of School Gardens on Students and Schools* by Ozer (2007), who illustrates the positive effect school gardens have on students' nutrition, community involvement, attachment to their academic institutions, and academic performance.

Historical Ties Between School Gardens and Agricultural Urbanism

The use of school gardens as tools of community revitalization is an important part of community gardening history in both Europe and North America. As previously noted in Section 1.5, Roubanis & Landis (2007) have found anecdotal evidence to suggest the *Three Sisters* community garden at Meredith College has provoked sustainable community development activities on its campus by enhancing the 'worldview' of its participants. As Sayre & Clark (2011) illustrate in *Fields of Learning: The Student Farm Movement in North America*, "[m]any [university farms] produce large quantities of good food for their local communities. Many have served as loci for innovations that have spread across the entire campus or even beyond" (p. 325). Macias (2008) has also shown that university graduates are active users of community gardens in the neighbourhoods in which they live once they convocate (p. 1094). City planners like De la Salle & Holland (2010) share a similar worldview to university garden participants, as they are also aware of the benefits to the environment, health and quality of life when local food production is celebrated. Agricultural Urbanism (AU) is now the framework being promoted by urban planners like de la Salle & Holland, as it aims to further expand agricultural experiences by celebrating sustainable food systems—that is, locating agricultural production, processing, wholesale, distribution, and retail facilities within central locations of cities (p.77). As mentioned in Section 1.2, the increased visibility of all the steps of food

production within urban environments creates “greater awareness and connection to all the steps in the food system that gives us sustenance” (de la Salle & Holland, 2010, p. 89).

At present, local food production is currently increasing in North American cities, as it addresses food security and health issues, supports the local economy, provides environmental benefits of local farming, and social benefits of a recreational activity which engages all members of a community (Duany Plater-Zyberk & Company, LLC, 2009; de la Salle & Holland, 2010). Planners, policy makers or developers who use an AU framework recognize that every dwelling, in some measure, participates in the production of food (Duany Plater-Zyberk & Company, LLC, 2009; de la Salle & Holland, 2010). As Figure 2.3 illustrates, by concentrating urban development, more land is available for agricultural use and the area of land under cultivation can be managed more effectively. The following figure shows how:

[O]ne third [of the land] will be urbanized while the production of the whole will be tripled. This trade-off is achieved by intensifying the agricultural activity at every level of the transect; from window boxes, balcony and roof gardens in the more urban Transect Zones, to the progressively larger community gardens, yard gardens, small farms, and ultimately farms in the more suburban and rural Transect Zones (Duany Plater-Zyberk & Company, LLC, 2009).

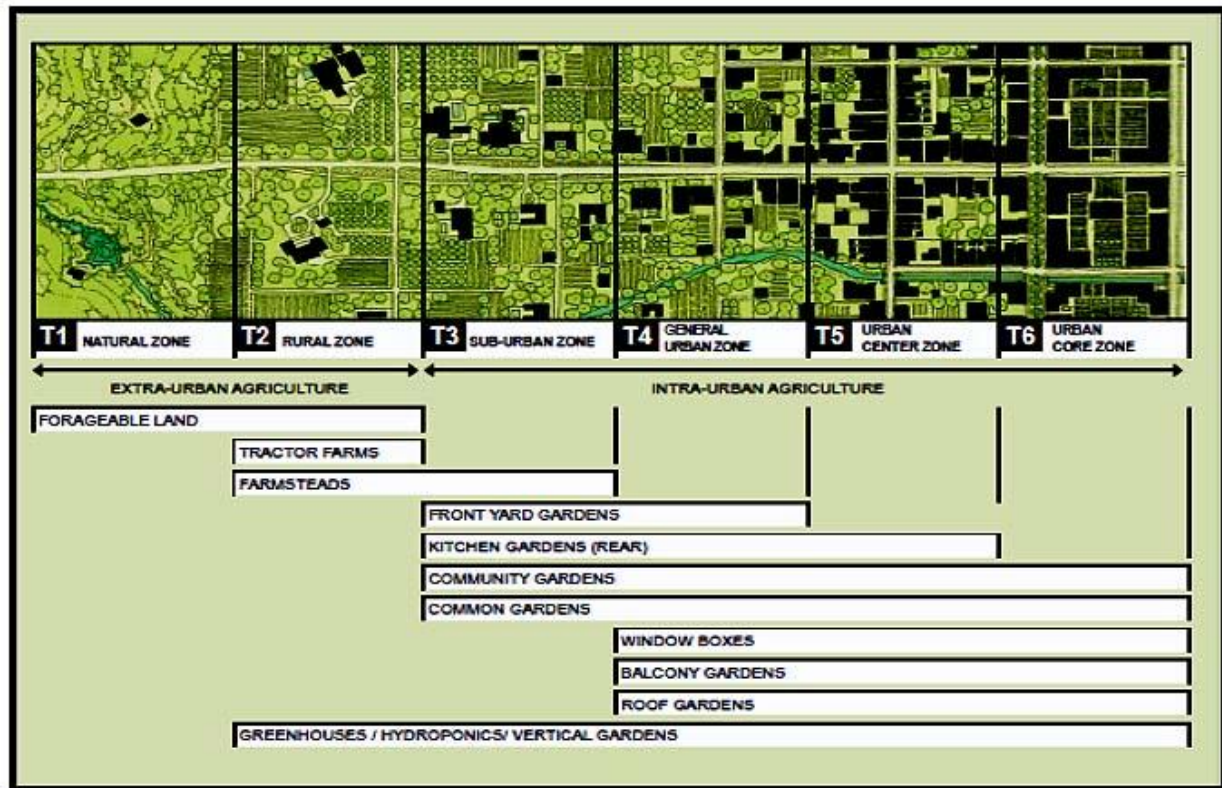


Figure 2.3 – Illustrates a transect road connecting rural and urban municipalities, and outlines how each community can integrate AU planning and design principles (Duany Plater-Zyberk & Company, LLC, 2009, p. 3).

Through cohesive design and food systems planning, AU can integrate agriculture within a city's master plan, as implemented within districts and neighbourhoods in the municipality so as to include the surrounding regions. At the core of AU is the creation of convivial spaces around food production and consumption, and the demonstration of how food is an integral component of increasing the quality of life of cities by making them more vibrant, healthy and resilient.

The argument historically used to keep agricultural processes out of urban settings, along with being unsightly, was the high cost of land, which made farming unviable financially. However, AU addresses this concern by producing artisan agriculture,⁴ and using techniques

⁴ Artisan agriculture is the type of agriculture that is compatible in and around cities (de la Salle & Holland, 2010, p. 240).

such as Small Plot Intensive farming (SPIN) which makes earning a significant income from land bases under an acre possible. As de la Salle & Holland (2010) explain, SPIN farmers have grossed \$26,000 (USD) on 0.2 hectares (1/2 acre) of land in the first year of production within cities. After four years of refining the system, improving the soil and building the farm's reputation for quality produce, revenues were up to \$68,000 USD (p. 169). The key aspects of the SPIN formula are minimal mechanization, maximum fiscal discipline and an emphasis on intensive relay growing. SPIN farming has proven successful in a variety of climates, and has produced as many as three crops a year in a Northern climate such as that of Saskatoon (p. 168-69).

AU is an alternative model of city and food system design. University campuses are living laboratories of innovation design practices, which can be implemented at a district scale, yet influence similar development in other areas of the city. In his dissertation, *Sustainable Community Planning and Design a Demonstration Project as Pathway*, van Vliet (2000) highlights the near absence of local demonstration projects at the neighbourhood scale within Canada. While there are limited examples of sustainable planning and ecological design sites, the majority are isolated from cities and seldom developed on a larger scale. As van Vliet (2000) explains, "[t]his organizational condition impedes the multiple-front deployment of ecological systems thinking, integrated policy, new capacity building, a participatory, social learning process, and design innovations and experimentation" (p. 16). The separation of sustainable demonstration projects from urban areas is problematic, as they help to bridge the gap between 'what we know' and 'what we think we know.' Due to the global reach of universities within Canada, these demonstration gardens have the ability to use these educational spaces of AU to promote recreational and community-building activities in both Canadian and international cities

(de la Salle & Holland, 2010). However, in order to understand if university community gardens as demonstration projects have been ‘good agents of change’ qualitative data must be attained to measure their success. According to van Vliet (2000), there are several qualities a demonstration project has when it is a ‘good agent of change.’ These include (p. 166):

- Develops a need for change on behalf of the clients
- Establishes an information-exchange relationship
- Diagnoses problems with those involved
- Creates intention to change in the clients
- Translates this intent into action
- Stabilizes adoption and prevents discontinuance
- Achieves a terminal relationship with clients.

Using the criteria of Milbrath (1989, as cited in van Vliet, 2000) a ‘good change agent’ also helps people to: i) see the discrepancies between things as they are and things as they could be; ii) overcome unwarranted fear of change; iii) be creative and thorough in searching out innovations that fit their situation and real needs; iv) effectively integrate the chosen innovation into a stable pattern of behavior (p. 168). For the purposes of this study the criteria of van Vliet (2000) and Milbrath (1989) are used to assess if university community gardens are effective demonstration projects of AU. By using these indicators, this researcher is better able to determine if university community gardens have had any impact on the creation of sustainable urban design in surrounding areas.

University Community Garden’s Relation to Agricultural Urbanism

In addition to design specifications, AU encompasses a number of organizational and management strategies which rely on individuals and organizations at the community level (See Table 1.1, Section 1.2). AU is an alternative model of city and food system design, and university campuses are often living laboratories of design practices that can be implemented at a

district or city scale. It is logical that the demonstration gardens AU uses to promote its community-building framework for regional food systems planning are located on university campuses (de la Salle & Holland, 2010, p. 41). Similar to school gardens, university campuses can expose a diversity of residents to AU design by delegating a portion of their budgets from flower gardens into artisan agriculture, edible landscaping, and community gardens that can then sell their produce to local markets (Duany Plater-Zyberk & Company, LLC, 2009). Since the management of food resources is an integral part of the AU framework, university campuses are logical first steps in demonstrating how local food systems can be successfully initiated. University community gardens provide opportunities for students to participate in agriculture within the city and to understand the physical, social and economic benefits of local production and consumption. As Teig et al. (2009) and Glover, Shinew & Parry (2005) illustrate in Section 1.4, participants in community gardens can learn social norms (i.e. gardening, respect for communal property, beautification), which expand into surrounding communities when participants from other communities are involved in gardening activities. Unlike conventional community gardens or school gardens, university community gardens have a diversity of participants from numerous cities both domestically and abroad. Based on the present literature, it appears that university gardens may be important demonstration projects that significantly enhance support for AU within cities. This research aspires to test this assumption and explore if university campuses are important in demonstrating the quality of life associated with AU to urban residents and visitors from other communities.

2.5 Appropriate Design

The design used to develop a garden must be appropriate to the specifics of the site, and be reflective of the community in which the garden is situated. While no single design approach or feature to community garden development can deliver secure land, sustained interest, and support community building, “a combination of these factors may create a space that effectively responds to the needs of the community” (Milburn & Vail, 2010, p. 80). Appropriately designing a garden to fit its community is also an important component of attracting and retaining participants. When properly implemented, a garden serves to create a space in which participants want to invest their time, energy, and resources. Fundamental to the success of a garden is the ability of plants to flourish, which necessitates a large amount of sunlight, access to water, tillable soil, and access to amenities. This section will discuss the selection, design, and development of a garden site, and illustrate the impacts appropriated design can have on sustaining participant interest.

Site Selection

When choosing a space for a garden there are a number of design considerations a group of community gardens must consider, the first of which being the existence of tillable soil (identifiable by the presence of grass or clover on its surface). However, many newly established community gardens are located on vacant lots or underutilized spaces, which often have difficult soil conditions (How, Lawson, & Johnson, 2009). Therefore, the usual first step is to evaluate the soil quality and develop a strategy to improve the soil through mulching, composting, and amendments (p. 35). If possible, Kahn & Scharfenberg (1982) suggest garden organizers avoid contaminated sites, but if they must be used, they should be covered in at least twelve inches of

new topsoil, and gardeners must not disturb the original surface when turning the soil for planting. The garden should also be situated at least 30 meters (100 feet) from heavily traveled streets to avoid airborne lead pollution from motor vehicles and to prevent ongoing contamination (p. 47- 51). Having the proper soil conditions with a gentle slope, access to water, proper location, and a minimum of six or more hours of unobstructed sunlight will create a productive space in which members will be happy to invest their time.

Additionally, Kahn & Scharfenberg (1982) suggest a properly selected site should be visible to the public as additional ‘eyes on the street’ serve to prevent vandalism. The increased visibility of a garden has the supplementary effect of helping to attract participants, and reconnecting residents with natural processes (Hough, 2004; Milburn & Vail, 2010; De la Salle & Holland, 2010). Accessibility and proximity are also important considerations for the selection of a garden site. According to Milburn & Vail (2010), to have a substantial impact on the people involved in a garden project, a space must be within $\frac{1}{4}$ to $\frac{1}{2}$ a mile from its intended gardeners, as participant usage is increased when users are a short walk or bike ride away (p. 81). Furthermore, the neighbourhood in which a community garden is situated also has implications for its potential success. As Herbach (1998) explains, “[c]ommunity gardens are more likely to work in neighborhoods where a critical mass of people [are] looking for a place to garden. Neighborhoods with high percentages of renters and/or condominium owners provide that critical mass ... and high densities provide the same conditions” (Section 7.1.2). Highly concentrated numbers of students living in residence, as well as professors and community members living around the university campus, serves to encourage residents within that community to garden. Yet the highly transient nature of university campuses is a potential challenge, as Mathers (as cited in Milburn & Vail, 2010) points out, “as people [in low income

and rental communities] are often unwilling to invest in a community garden if they do not have a long-term commitment to the neighborhood” (p. 77). Scholars such as Newman and Jennings (2008) and Hough (2004) have noted the importance of using residents with historic roots in the community to initiate changes toward more sustainable community design. As Hough (2004) explains, the “[e]xperience in Britain and North America has shown that the physical decay and social needs prevalent in cities are best tackled by those who have their roots, their families and their futures in the neighbourhood” (p. 184). Furthermore, Newman and Jennings (2008) explain that “[i]f imposed by outside forces sustainability will fail, as one solution cannot be replicated for every situation. Instead they conclude there must be a diversity of solutions within the various communities in a bioregion, suited to the characteristics of place (p. 23). However, the university farms/gardens within the present research seem to contradict the existing literature, as they continue to have long term success within the communities in which they are situated. A further objective of this research is to understand why university community gardens, despite being located in highly transient neighbourhoods, continue to have long term success. The practicum aspires to identify social processes which may be applicable to other university and urban community gardens with similarly high levels of transience among neighbourhood residents.

Secured Land Tenure

According to a national survey by the American Community Gardening Association (AGCA) in 1996, the two largest threats faced by community gardens were a loss of land due to development, and a lack of sustained interest on the part of participants (American Community Gardening Association, 1998). Of the 6,020 gardens surveyed in thirty-eight cities, the AGCA (1998) study found only 318 were owned (131) or a land trust (187), making up only 5.3 percent

of community gardens (p. 5). As Holland (2004) explains, the absence of land tenure is a significant issue for gardening organizations, as it “can often blight a community’s development of a garden [as] growers often plan for seasons ahead and may regard lack of tenure as a barrier to garden development” (p. 291). Studies, such as Wang (2006), have also confirmed that “permanency of land tenure is an important condition for community empowerment because the garden is guaranteed to remain under local control” (p.35). When participants do not feel in control of the garden’s future, they will often choose not to invest their time, energy, or resources. Rather, the majority of community gardens participants often look for a more secure location which does not run the risk of losing their return on investment.

University community gardens are no exception to this rule as the gardens in this study are not owned by the organizations which facilitate their activities. This is a significant disadvantage to the garden’s growth, as Bradley’s (2007) study (as cited in Milburn & Vail, 2010) found that “[e]stablishing a permanent or long-term land arrangement from the onset helps sustain user interest and dedication to the garden” (p. 75). While Lawson (2005) explains there is no guarantee that a garden with land tenure will sustain commitment on behalf of the participants, it does allow the gardeners to develop the site with fewer physical restrictions. Land tenure is especially important for community gardens developed in low income and rental communities due to the transient nature of these communities. As Mathers (2007) explains (as cited in Milburn & Vail 2010), “people are unwilling to invest in a community garden if they do not have a long-term commitment to the neighborhood” (p. 77), and even university campuses serve as a challenge to sustaining a successful community garden.

The visual appeal of a garden created from physical infrastructure also serves to attract and retain members within its community. Enhancements to a garden's site, in terms of infrastructure and amenities, increase the livability of the space and make it more appealing to members of its surrounding neighbourhood. To build a garden's sense of place, community groups do not need to own the occupied land, but some form of land tenure is important for the sustainability of the garden. As Milburn & Vail (2010) found, garden participants are more likely to make physical and financial investments, and help build a sense of place, when they see their contributions are invested in enhancements to the garden (i.e. tools, wells, picnic tables, trellises, chicken coops). In ideal circumstances, a garden would have land tenure from its inception; however, it is often difficult for municipal or university administrative bodies to allot space for a garden before they know it will be used. The unique need for gardeners to take personal responsibility to maximize the use of the space, by coordinating all its activities, has made it difficult for community gardens to be included in university city plans or zoning. Lawson (2005) suggests a better approach to the 'build it and they will come' strategy is "to structure a public decision-making process that responds to community-driven initiatives" (p. 300). Once a community group has petitioned for a garden, and proven the sustained interest of its community members, it can then be allocated resources by public officials to increase its legitimacy (Lawson, 2005, p. 300).

There are a variety of planning tools which can be used within municipal and university jurisdictions to integrate gardens into city plans and bylaws, including: short or long term lease agreements, land trusts, and partnership organizations. In recent years, the preferred strategy for urban gardens has trended toward land trust agreements between public and private partners (How, Lawson, & Johnson, 2009). Yet a land trust agreement can only be reached if a list of

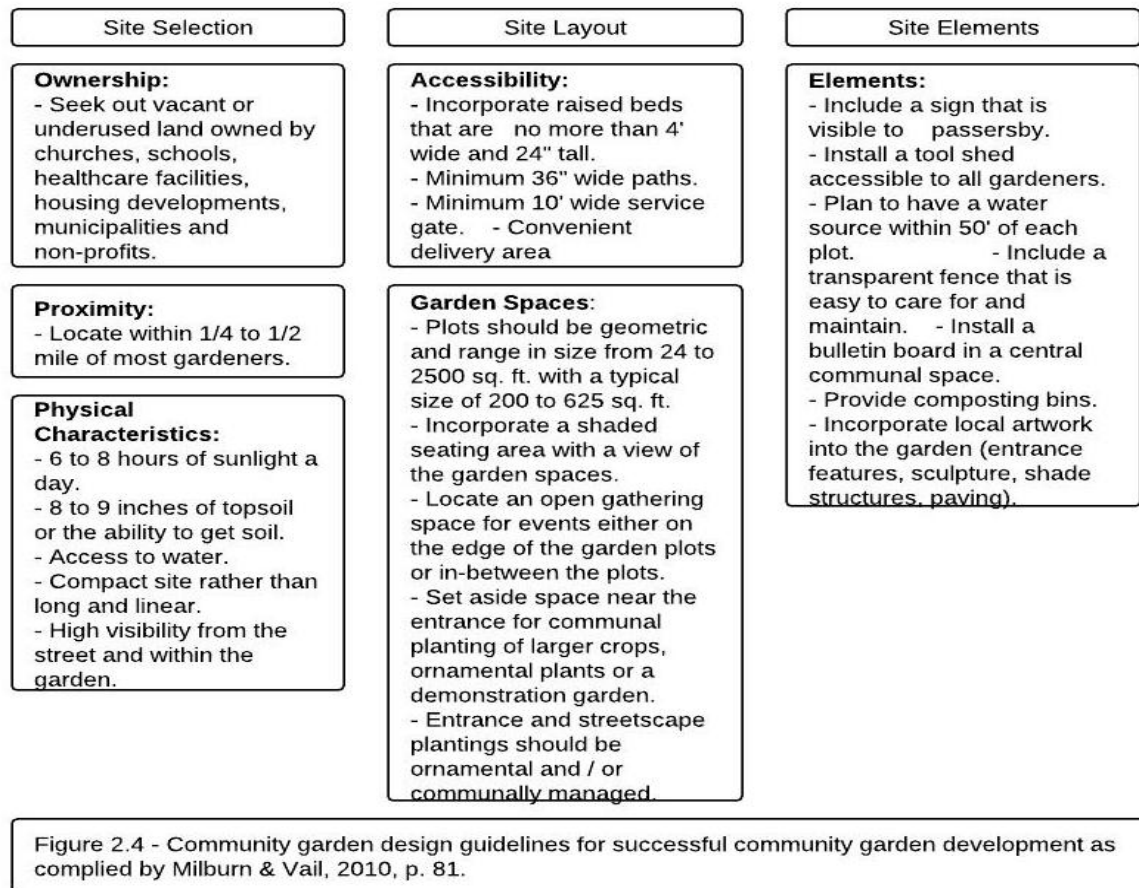
procedures are established to demonstrate the objectives, organizational skills, and managerial capabilities of the community garden group. A typical land trust agreement, as described by How, Lawson, and Johnson (2009), has the private partner holding the deed to the land and providing liability insurance. The partnering institution then ensures property taxes are paid and serves as a communication and reference tool to facilitate operations. In return, the garden group often formalises its governance and management structure and drafts a set of guidelines which address site security, operations and maintenance, means of communication, and access requirements (p. 34).

In the context of university community gardens, this may be done when a student garden submits its constitution to its student administrative body, which then provides funding and helps facilitate discussions of land tenure. The student garden could bargain for land tenure, or at least a short term lease agreement at the beginning of the negotiation process. If the student group is not unsuccessful in attaining a long term land tenure agreement right away, it can use its granted space to its fullest potential, and try to negotiate a land trust agreement once it becomes more firmly established. Through these types of agreements, urban and university gardens are able to flourish despite not owning the occupied land, and turn previously underutilized spaces into public community resources.

Participant Involvement in Community Garden Development

When founding a community garden it is recommended that the mobilizing group of gardeners start with a small set of tangible and necessary objectives. Scholars such as Milburn & Vail (2010) recommend that community garden processes involve “at least eight to ten stakeholders” and be as inclusive and collaborative as possible (p.80). Once these objectives

have been achieved, it is recommended the mobilizing group accommodate the input of a larger, and more diverse group of stakeholders (e.g. community members, partnering organizations, potential funders) on matters of garden design. The inclusion of community members from the beginning should not be overlooked as they serve to assist with outreach and help gain buy-in from the larger community once the garden is established (Milburn & Vail, 2010, p. 80).



As Figure 2.4 clearly illustrates, site selection, accessibility, and site elements are integral to the success of a community garden. An ideal site is clearly visible to a curious public, within a five to ten minute walk of participants, has communal meeting spaces (i.e. benches, picnic tables) and communal services (i.e. compost bins, gardening tools, water supply, message

boards). Elements of garden design should also be representative of the cultures participating in the garden's activities, and showcase the work of resident and local artists.

The importance of having a garden reflective of the cultural diversity of its members is an element that should not be overlooked. Gardens designed in this way have been proven to provoke neighbourhood curiosity and promote intercultural integration (Milburn & Vail, 2010, p. 84; Shinew, Glover, & Parry, 2004; Staeheli, Mitchell, & Gibson, 2002). The cultural network building process often begins in community gardens. As Hancock (1999) describes:

[W]hile each family tends to grow their own foods with which it is familiar, before long they begin to ask about and learn about the vegetables that other cultures grow and use. It may not be long before this progresses to sharing recipes, sharing foods, establishing community dinners, and in various ways building social networks across ethno-racial divides (as cited in Lyn Dow, 2006, p. 17).

The aesthetics of a garden also provoke public curiosity, which helps to procure members and preserve its place in the neighbourhood, as community members begin to appreciate the work being conducted within the space. It is, therefore, in the best interest of a garden to present itself as a symbol of community empowerment that is representative of a vibrant neighbourhood with strong cohesion amongst its members. When a community garden is visibly successful, other community organizations often approach its leaders for advice when they are looking to begin or expand upon another community garden.

2.6 University Farms

During the course of this practicum, new literature that is indirectly tied to this research has emerged on the histories of successful student farms across Canada and the United States. In their book *Fields of Learning: The Student Farm Movement in North America*, Sayre & Clark (2011) compiled data which overlaps with the outcomes of this study. Sayre & Clark suggest that “there are, indeed, about a hundred, if not more, higher education institutions in North America

with on-campus farms or gardens of some sort, with more being established each year” (p. 2). The authors note that, even ten years ago, gardening activities were not part of your typical college education. The reason for the transformation, as Sayre and Clark (2011) explain, is an overwhelming increase in student interest from recent books and documentaries about food supply and its importance. Students have been asking why the standard liberal arts curriculum has so little to say about the modern agrifood system; this has led to the creation of new sustainable food systems majors and concentrations in which many look to campus farms to incorporate experiential learning (p. 2-3). While in other cases, “students are asking for and receiving small parcels of campus land to create gardens and grow food as an extracurricular activity, for instance, under the auspices of a student club” (p. 2).

The guidelines outlined by Sayre & Clark (2011) indirectly highlight themes identified in the literature review of this research. As Sayre & Clark found that many student farms began as a result of the “persistent efforts of a single, dynamic individual with a vision of how a student farm could fit within the campus community” (Sayre & Clark, 2011, p. 323). Yet an individual planning to create a student farm project must incorporate succession planning through the process, as such an initiative often takes several years to become firmly established (p. 323). They identify some conditions and resources which improve the chances of being a successful farm are: “a good piece of land, well placed; faculty and staff with the right expertise; ample funding; supportive administrators; a strong committed group of students; interest among the wider local community” (p. 323). These factors do not happen simultaneously but are incrementally developed throughout the project’s growth. Several farms showcased in the *Fields of Learning* changed their location, but the previous experience provided the agents a better

position to select and develop an improved site the second time around (p. 323). A universal theme presented by Sayre & Clark (2011) is that:

[A] student farm needs to be developed within the context of its specific location, both geographic and institutional [and] serve the needs and interests of the student at that school and, whenever possible, those of the local community as well [as] trying out new ideas and new farming systems that may prove typical in the future (p. 325).

From their research on the successful student farms within the United States and Canada, they identify 12 practices to help guide persons interested in starting a student farm. Sayre & Clark (2011) suggest there is no particular order to these guidelines, and in a few years this list may need to be expanded. A short summary of the 12 replicable practices identified are as follows:

- 1) **Form your core group.** Sayne & Clark (2011) suggest farm/garden organizers identify a core group of three to six people who are willing to not simply work, but help create a student farm (p. 325). Try to be as specific as possible in the vision created by the core group in terms of the goals and vision of the farm. As Sayne & Clark (2011) “[o]ne of the hazards of student farms is that they can become magnets for idealism, expected to serve too many worthy objectives at once”; this is overcome if participants are specific when formulating the goals for their shared vision (p. 325-6). Therefore, university farm/garden participants should established goals and objectives and prioritize them based on an assessment of what needs are trying to be meet and for whom.
- 2) **Identify your allies.** The core group must identify which faculty members, university staff, members of facilities management, or the university administration can assist in creating a student farm. A collaborative brainstorming session will assist this process, organizer should “get acquainted with the organizational chart for [their] school so that [they] can understand who reports to whom” (p. 326). Sayne & Clark (2012) also suggest that it is ‘most important’ for organizers make a conscious effort to be inclusive of a wide

variety of disciplines (p. 326). The interdisciplinary nature of university farms/gardens is a great opportunity for success as “there may be someone in the business school or the engineering department or the American studies program who has a keen interest or deep background in farming and can offer [their] expertise and support” (p. 326).

- 3) **Hunt for land.** Sayne & Clark (2012) also advise organizers to cycle around their campuses and identify a number of open patches of land, and consider physical attributes like: drainage, slope and shade of these spaces; and proximity to amenities like water, storage, or electricity (p. 326). The authors also suggest organizers consider how accessible the space is without the use of a car, as many students and community members will likely be using sustainable transportation (Sayne & Clark, p. 326). If possible, Sayne & Clark (2011) suggest organizers identify historic agricultural spaces to build upon and promote the educational and outreach activities of the farm/garden and how it will improve the university’s profile in exchange for the land desired (p. 326).
- 4) **Do your homework.** Sayne & Clark (2011) suggest this should apply to the entire process of creating a student farm/garden, but start with a feasibility study (i.e. a site plan, business plan, marketing plan, or field plan) (p. 327).⁵
- 5) **Seek funding.** Sayne & Clark (2011) suggest that a student farm may no longer a novel idea to university administration, and it may not impress potential funders as it once did; however, some financial support from the institution is necessary for the stability of the farm (p 327). The authors suggests the core group of organizers recognize that institutional support can come in a variety of forms such as: land, buildings, vehicles,

⁵ Sayre & Clark (2011) suggest using online resources to assist in the production of these documents. These can be found at the Sustainable Agriculture Research and Education program within the US Department of Agriculture (www.sare.org) and ATTRA, the National Sustainable Agriculture Information Services (<http://attra.ncat.org>) (p.327).

utilities, personnel, work-study allocations, compost (Sayne & Clark, 2011, p. 327). Organizers should also “[b]e realistic about how much you can bring in from the sale of farm products alone, especially in your first few seasons. Even well-established, thriving student farms typically cover only operating expenses (seeds, supplies, other inputs) from their sales revenue, not salaries” (Sayne & Clark, 2011, p. 327). Therefore, organizers should be appreciative for the grants they receive and be frugal with the funds they have.

6) Start small. Sayne & Clark (2011) suggest “[i]f key resources—especially farming expertise—are in short supply, don’t hesitate to start your farm as a garden, even a small garden. A small garden well stewarded is worth more to your cause than several acres planted and overgrown” (p. 327). Therefore, organizers should plan for a manageable number of crops that are limited in variety, and expand in the following years if the previous year was successful. “At the end of the term, a simple, manageable initiative brought to completion is infinitely more appealing than a few odd parts of a grandiose vision” (Sayne & Clark, 2011, p. 328). Also once the garden has a strong foundation a farm manager can be more easily integrated to further expand the scope and vision of the project.

7) Keep it weeded. As Sayne & Clark (2011) explain, aesthetics matter “if you’re trying to win over an entire campus community, it will help to keep things tidy”— especially if you have a highly visible location (p. 328). A lack of weeds also increases the yield of the farm and a well maintained compost prevents offensive odours. “A well-kept farm is not only more appealing to outsiders; it’s also usually a safer and more pleasant place to work. Above all, it demonstrates a sense of commitment” (Sayne & Clark, 2011, p. 328).

- 8) Read.** As Sayne & Clark (2011) suggest a “key rationale for student farming is that book learning and hands-on learning are complementary. If you don’t have assigned reading a part of a course ...come up with your own reading list or form a reading group with some friends or colleagues (p. 328). A unique characteristic of “organic and sustainable agriculture farming is that it reconsiders traditional farming practices and finds new ways to mix old wisdom with new technologies” (Sayne & Clark, 2011, p. 328).⁶
- 9) Write.** As Sayne & Clark (2011) surmise, recording what has been done and what needs to be done on a regular basis helps to develop ideas, facilitates communication amongst farm participants, and provides a record of what worked and what did not (p. 329). “Good recordkeeping is essential for organic certification and makes it possible to analyze and assess the value—both budgetary and otherwise—of different farm enterprises or experiments from season to season (Sayne & Clark, 2011, p. 329). Written records also serve to account for the costs of certifications and budget restrictions, and assist in transferring knowledge when there are changes in leadership of the organization.
- 10) Think very carefully before adding livestock.** As Sayne & Clark explain (2011) apart from the resources they consume (i.e. water, food, shelter), animals such as livestock or poultry require a minimum of two to three hours of daily maintenance (p. 329). The manure they produce also needs to be properly composted before it can be applied to the fields, and they should have a larger purpose for the existence of the farm. As Sayne & Clark (2011) suggest “[t]he cute factor supplied by livestock needs to be balanced against all these more tangible realities” (p. 329).

⁶ An existing resource Sayre & Clark (2011) suggest farm coordinators consult is The Alternative Farming Systems Information Center housed at the National Agricultural Library (<http://afsic.usda.gov>) (p.328).

11) Cultivate partners and supporters beyond campus. Student farms are great tools to involve the community in the university's activities and improve 'town-gown relations' (Sayne & Clark, 2011, p. 329). University farms/garden "have as much to gain as to offer in these relationships" as community involvement serves to increase the profile of the farm's activities and promote an appreciation for their efforts (Sayne & Clark, 2011, p. 329). A concerted effort made by farm organizers to work with the local organic and sustainable farming community, and integrate them into the farm's activities whenever possible. Community members add to the diversity of farm participants and provide inputs which result in better outcomes for the garden in the long run. Sayne & Clark (2011) also suggest farm/garden organizers the local and sustainable farming community, as "its members will constitute one of your most valuable resources" (p. 330). Strategies have successfully engaged community members include gardening and farming workshops, field days, and sponsoring community educational events.

12) Don't forget to socialize. As Sayne & Clark (2011) explain, farm/garden organizers should "enjoy the rewards of what [they] are doing, and share them [as] generosity can be an excellent long-term investment" (p. 330). The design of the farm should also include spaces for participants to hang out; in addition to spaces like an outdoor kitchen where events can be hosted when visitors come to the farm (Sayne & Clark, 2011, p. 330). Infrastructure to host public events will help the farm to become part of the institution's identity and those who are associated with it.

2.7 Challenges faced by University Farms

Within the existing literature there was very little written about the challenges faced by student farms. However, Sayre & Clark (2011) note there are three ongoing challenges unique to university farms/gardens, and a balance needs to be found in order for a university farm/garden to attract and retain the interest and support of participants and financial contributors.

A primary issue with the student farms in Sayre & Clark's (2011) research—and all of the gardening organizations examined in this study— was the '*tension between production and instruction*' as many student farms/gardens are initiated with grant funding (p. 12). While student farms/gardens are often used by the administration to attract endowment funding, the grants can be directed to other campus projects as well. As Sayre & Clark (2011) describe,

Managers of long-term student farm programs frequently find themselves having to argue that, as educational endeavors, student farms shouldn't be expected to pay for themselves any more than should basketball teams or history departments... Younger student farms, on the other hand, are more likely to aim for financial self-sufficiency as a rationale for their continued existence. In this regard, the community supported agriculture (CSA) model (in which farm customers pay an annual fee in exchange for a weekly share of the farm's harvest) has been crucial to many student farms' recent success. The CSA setup simplifies marketing in many respects, offers a fixed return relatively early in the season, and (at least in theory) creates a loyal clientele prepared to accept occasional crop failures or less-than-perfect produce (p. 13).

It is not easy to make a living farming given the constant changes in commodity prices in an increasingly globalized economy, and a student farm is like a small business that must compete within the existing globalized economy. Moreover, student farms, like small businesses, can only make capital investments after staff salaries have been paid, and a certain level of profit remains. Even though the primary function of a student farm is to train an inexperienced workforce, as Sayre & Clark (2011) describe, "many student farms are sensitive about being perceived as unfairly competing with other area farmers in bringing their goods to market" (p. 13). It is, therefore, suggested when "accounting for farm costs, there must be a distinction between those

that are required for the business and those that are necessary to support student education” (Sayre & Clark 2011, p. 44). There is a fine balance that needs to be realized in order to ensure the student farm/garden is profitable, while fulfilling its primary responsibility as an educational resource for students and community members.

The second challenge of a student farm is ‘striking a balance between student leadership and staff or faculty direction’ (p.13). Given their title, it is often perceived that the defining quality of a student farm is student management; however, as Sayre & Clark (2011) describe,

Paradoxically, the longer a student farm is in operation, the more firmly established it becomes on campus, it seems, the more likely students themselves are to lobby for the funding of a permanent staff position despite the fact that the early years of the project, when students had to figure out everything for themselves, may be celebrated as having been among the most enriching. In a sense, student farms could be said to go through their own life cycle, with an early, slightly chaotic developmental phase followed by maturation into a more fixed form. The challenge is to maintain flexibility and preserve avenues for student input even as the operation grows larger and more complex (p. 14).

The reason many student farms have this trajectory is because of high rates of transience amongst their participants, as student interests are constantly shifting. As Sayre & Clark (2011) explain student farms must also endure having the exam schedules of its participants overlap with the planting season, as well as the need to negotiate between the varied interests of participants and administrative concerns (e.g. accountability, aesthetics) (p. 14). Since the historical progression has been for student farms to become formal institutions with permanent staffing positions, farm organizers need to be highly cognizant of the ideals and interests of students. Due to the organizational structure of these organizations an ongoing tension remains between the students and staff, as farm organizers must uphold the institutional memory of the organization while representing of the evolving interests of students.

The third major challenge that student farms face is ‘*the profound interdisciplinarity of student farming*’ which is an ongoing struggle that also serves as an opportunity to produce new ideas around agricultural learning for future generations. As Sayre & Clark (2011) explain,

For some observers, a primary distinction is to be drawn between student farms and gardens at schools *with* academic programs in agriculture and those at schools *without* academic programs in agriculture. Schools with academic programs in agriculture obviously have more immediate opportunities to link student farm work to academic coursework. On the other hand, schools without academic programs in agriculture are in many ways freer to develop new linkages between the scholarly study of food, farming systems, and natural resource use ...What unites agricultural and non-agricultural colleges and universities today, however, is that the majority of students at both now come to higher education without extensive previous farm experience, a situation that throws up for renegotiation most established assumptions about the role, structure, and objectives of agricultural education (p. 15-16).

While liberal arts institutions face greater challenges integrating student farms into academic curriculum, university administrations like Hampshire College have successfully upheld student farms by using the student farm as an interdisciplinary resource for a variety of courses within the academic curriculum. The reason Hampshire College was able to enrich its liberal arts institution with a student farm was because its administration viewed the isolation of agriculture in its academic life as tragic (Sayre & Clark, 2011, p. 156). To overcome this issue, the administration “validated [the] use of agriculture in teaching biology, animal behavior, botany, chemistry, geology, and astronomy—all sciences that had arisen because of the needs of agriculture” (Sayre & Clark, 2011, p. 156). Sayre & Clark (2011) noted that “[d]ynamic collaborations among students, staff, and faculty, though visibly disharmonious at times, are critical for assessing ideas and steering the farm toward some common understanding of sustainability” (Sayre & Clark, 2011, p. 47). The interdisciplinary issue is very unique to university gardening organizations, as Sayre & Clark (2011) explain,

The student farm movement ... raises questions about pedagogy, about learning styles and methods, about the role of agriculture in contemporary cultural and economic life, about the organization of intellectual inquiry and academic thought. At its heart, it asks, Who

should be farming? Who will be farming in the future? Where will new farming knowledge come from? How will old farming wisdom be transmitted and preserved? (p. 16-17).

For a student farm to succeed, it needs to find a balance between managing the issues of these major challenges, i.e. profitability, academic freedom, collaborative planning processes, and collective efficacy from the students, faculty, and administrators of the university. While these three challenges are not insurmountable, they are ongoing issues that farm/garden organizers need to learn to manage, as the university's objectives, student interests, sources of funding, and the breath of faculties involved in the organization will constantly evolve. It becomes clear that the organizers of successful student farms/gardens are under continual pressure to enhance the operations and achievements of their organization, and maximize the use of human and financial resources to attract and retain participants and funder support. If student farm/garden organizers are unsuccessful in managing these interests, campus planners/administrators may look for new uses for the space and important processes of campus and community development may never take place.

This research aspires to build on the findings of Sayre & Clark (2011) by focusing specifically on university community gardens that are not attached to institutions with a Faculty of Agriculture. Step 2 of Sayre & Clark's 12 suggested guidelines, 'Identify your allies', assumes that students can draw knowledge and resources from professors or administrators. However, agricultural knowledge or older farming equipment is not necessarily available at universities without a Faculty of Agriculture, and more research is needed to analyze how student farms can be built at liberal arts institutions within Canada. Also the research of Sayre & Clark does not specifically identify how student farms can be used to increase agricultural production within cities. However, the research compiled by Sayre & Clark (2011) effectively illustrates that the current growth in student gardening practices is "far from being merely a fad on college and

university campuses, [as] student farms have deep roots in North American higher education, stretching back not just to the countercultural trends of the 1960s and 1970s but to nineteenth-century ideals of pragmatism, progressivism, and democracy” (p. 330). Despite identifying the democraticizing effects of student farms, Sayre & Clark provide minimal insight into what leadership style and management processes are best suited to creating a student farm or garden. While the findings in the *Fields of Learning* compliment many of the themes identified in the literature review, it provides minimal analysis on how student farms can have an impact beyond their campus communities. Therefore, this study aspires to supplement the work of Sayre and Clark (2011) by uncovering the style of leadership and management processes necessary to create a successful campus garden project.

From the review of the existing literature, it becomes apparent that there are a number of successfully identified social processes and design guidelines for farm and garden organizers to follow. There are also a number of ongoing challenges farm/garden organizers must manage in order to attract and retain participant support for their organization. The present research seeks to analyze if university community gardens are using these specified processes and design guidelines, and probe whether the gardens studied are ‘good agents of change’ within the communities in which they exist.

2.8 Key Findings of Literature Review

It is evident that community and school gardens have numerous social, economic, and educational benefits for their participants. In addition, there is anecdotal evidence for similar benefits amongst university community gardens. The review also shows how quality of life is increased for students (i.e. increased self-esteem, academic performance, nutrition), and that students become more attached to their academic institutions, which in turn enhances their community involvement (Ozer, 2007; Roubanis & Landis, 2007). Within the current literature, leadership and organization are identified as paramount in attracting and retaining garden participants and gaining support from administrators, funders and community members for school and community gardens. Strong leadership serves to effectively manage time and resources; communicate with participants and partner organizations; promote membership; and build social relations. When a garden has strong leadership, it has the capacity to create social norms which can transcend the garden. These social norms are best created using collective-decision making which fosters a sense of mutual trust, and may have an effect on the proliferation of AU within cities in which successful gardens are situated. The literature suggests that a flexible style of leadership works best within community and university gardens, which involves ongoing evaluation on whether the garden satisfies the needs of participants. By using a flexible style of leadership, garden coordinators also reduce disinterest amongst participants, and more effectively complete the stated objectives of garden participants.

The research of Sayre & Clark (2011) identified 12 guidelines for successful student farm projects. However, they do not analyze the leadership style or decision-making processes essential to the creation of a successful university community garden. The practicum research will explore this gap, by providing a variety of insights from university garden organizers. While

the literature identifies the use a flexible and participatory style of leadership, the practicum seeks to understand the challenges associated with this style of leadership, and how it can be maximized. Furthermore, the practicum research also seeks to understand why university community gardens, despite being located in highly transient neighbourhoods, continue to have long term success. If the research is successful, this analysis will provide an understanding of how ‘institutional’ and ‘student’ led gardens can be managed to be ‘good agents of change,’ and enhance garden activities on university campuses and in surrounding neighbourhoods.

3) RESEARCH METHODS

The purpose of this chapter is to explain the methods used to effectively answer the research questions of this practicum. This chapter describes why key informant interviews, and a grounded theory approach, were considered the most appropriate methods for this research.

The literature review in Chapter 2 identified a number of scholars that have shown the importance of leadership processes, management, and organizational structure for the success of university community gardens. As well, historical background information was examined, including an analysis of school and community gardens. In chapter 4, additional background information and analysis on the selected gardens is provided to clarify whether the gardens meet the criteria identified in the literature review. This background research helped identify patterns between the organizations before conducting interviews. This allowed for more pointed questions specific to the practicum to be included in the questionnaire (Appendix A). Due to geographic and time constraints, a qualitative analysis is considered more appropriate than quantitative analysis, as it permits intense contact with subjects in the field. As Gray (2009) points out, this process allows data to be confirmed and reviewed with informants as needed. Therefore, taking an inductive approach of collecting data allows the process to elicit more reliable results (p. 166-67).

3.1 Key Informant Interviews

To obtain the data necessary for this research, a qualitative analysis of university community gardens, using key informant interviews, was conducted with the coordinators and administrative staff of university community gardens. Interviewing these key informants was considered to be more suitable than interviewing university garden participants (see Section 1.6). Since the garden coordinators had a tendency to change more often than administrative positions at the university, the snowball sampling method was used. As Gray (2009) notes, the snowball method permits this researcher to interview other ‘knowledge sources’ within the organization, if key informants identify them as holding vital information for the practicum (p. 153). The snowball method allowed this researcher to interview persons affiliated with the garden who had a longer historical understanding of the garden’s operations.

By conducting interviews with key informants, this researcher obtained knowledge about the leadership processes, management practices, and organizational structure of the university community gardens. As Marshall and Rossman (2011) explain,

Valuable information can be gained from [key] participants because of the positions they hold in social, political, financial, or organizational realms...these individuals can provide an overall view of a company or its relationship to other companies, albeit from their own experiences and standpoints... Elites are also able to discuss an organization’s policies, histories, and plans, again from a particular perspective, or have a broad view on the development of a policy field or social science discipline (p. 155).

The authors also stipulate the challenge of conducting key informant interviews is scheduling a time to meet with busy interviewees (p. 156). To overcome this challenge, Marshall and Rossman (2011) suggest interviewers draw upon others with personal connections to the key informants to attain their support (p. 156). For the purposes of this study, this researcher placed a preliminary call and sent an informational email to discuss the benefits of the proposed research and confirm that the potential key informant was knowledgeable on the subject matter. This

researcher was successful in completing these objectives for this research and the key informants agreed to participate in spite of their busy operating schedules. The preliminary call also provided this researcher with an opportunity to demonstrate the background knowledge of the garden being researched, and the practicum's stated objectives. This preliminary call also allowed for an explanation of the consent form (Appendix C) and informational handout (Appendix B) before the interview took place. These measures helped to establish a relationship of respect and confidence with the key informants, which allowed for timely collection of data.

Another challenge before conducting data collection, as Marshall & Rossman (2011) explain, is adapting the planned structure of the interview, as most key informants are accustomed to dealing with the public and being in control. This was less of a concern due to the qualitative nature of this study, but this researcher had to actively interplay with the key informants to obtain the desired results. Being cognizant of this challenge before the interview made this researcher more attentive to the wording and responses of key informants during the interviews.

The interviews conducted with coordinators of these community gardens and administrative staff helped to access specialized knowledge on the leadership, management and organizational structure of these gardens, which could not have been provided by garden participants. An additional benefit of the key informant interviews, as Boyce & Neale (2006) highlight, is the ability to identify areas of future research to help push projects forward.

Semi-Structured Interviews

Milburn and Vail's (2010) study of successful community gardens in the United States suggests the use of open-ended questions can produce highly valuable research results. Based on the success of this method in previous studies on community gardens (Glover T. D., 2004; Sheldon, 2001), this researcher chose to use semi-structured interviews. As Clifford, French and Valentine (2010) explain, structured interviews limit the flexibility of questions outside of the questionnaire, while unstructured interviews are mainly used for oral history collection (p. 105). Both of these methods were not able to meet the prerequisites of the grounded theory approach. Therefore, a semi-structured format was adopted as it had a degree of predetermined order, but ensured flexibility in the way issues were addressed by the informant. Therefore, the use of semi-structured interviews was chosen by this researcher to interview key informants and meet the requirements of the grounded theory method.

A major consideration for this study was the use of time, as this researcher had to maximize time spent interviewing key informants and processing data. Based on the results of previous research, interviews were expected to vary depending on the time interviewees needed to respond. Therefore, interviews were scheduled for one and a half hour time slots to avoid imposing daunting time commitments on the key informants. According to Dearnley (2005) the transcription of interviews is time-consuming, as a one-hour interview can be expected to produce around five hours of type verbatim (p. 26). Since this researcher wanted to be immersed in all aspects of the practicum, the data was transcribed and coded by this researcher. All data was checked by the key informants for clarifications and additional points, if a question occurred during the process of transcription. To ensure the accuracy of the interviews, and allow information to be gathered and confirmed by key informants, a data recorder was used to assist

in the interview process. The precautions taken by this researcher in this process of data collection were done to create transparent and accountable results in accordance with the ethics standards of the University of Manitoba.

Virtual Face-to-Face Interviews

Due to the high environmental and financial costs associated with traveling to the gardens, interviews were conducted by means of Skype, so that virtual face-to-face interviews could still take place. Ideally, this researcher wanted to conduct virtual face-to-face interviews with all informants, but telephone interviews were also conducted when necessary. Of the seven interviews conducted, four were done using Skype, two via telephone, and one key informant provided written responses to all the questions. One of the disadvantages of telephone interviews, according to Gray (2009), is the high refusal rate of research participants as compared to asking them directly. Miller & Salkind (2002) also note telephone interviews are a challenge, because the “interviewer must build [a] rapport with the participant in an interchange during which neither sees the other” (p. 313). To overcome this challenge, this researcher conducted a preliminary call with the potential key informants to discuss the practicum research, and set a date and time to conduct a virtual face-to-face interview. As Miller & Salkind (2002) explain, the preliminary call demonstrates the legitimacy of this researcher, helps to build the key informant’s trust, and serves to outline the goals of the research (p. 314). When a virtual face-to-face interview was not an available option for an interviewee, a telephone call was used as a secondary method. This researcher had to be clear when providing directions, as facial expressions, or body language from the persons being interviewed could not be relied upon. The

key informants were then given time to think about the interview questions and their responses to prompt articulate quality responses.

The questionnaire (Appendix A) was prepared so that questions were straightforward and logically flowed from one to the next. This assisted in obtaining better qualitative data from the key informants and aided this researcher's future coding. This researcher constructed the questionnaire based on the format suggested by Miller & Salkind (2002) which begins with topical and demographic questions, which are easier to answer, and gradually leads into questions about the specifics of a particular garden. A pretest was conducted with the University of Manitoba community garden coordinator to identify potential problems with the interview questions. During this interview this researcher experienced technical difficulties with Skype; therefore, this researcher had a speaker phone on hand as a secondary option. Therefore, an interview space, along with a computer, speaker telephone, desk, and electronic copy of the interview questions, were used to troubleshoot technical difficulties. These precautionary measures assisted this researcher in overcoming the challenges associated with key informant interviews over the telephone.

3.2 Grounded Theory Approach

The use of qualitative data analysis has been criticized by some scholars as being 'unscientific.' As Gray (2009) explains, this is because many cases are based upon subjective impressions, which are set in a specific context and cannot be generalized" (p. 189). However, the grounded theory approach, used to analyze the interviews in this study, should produce results that are applicable in a variety of contexts. As Gray (2009) describes, the integration of a theoretical sampling by choosing deviant cases (i.e. different geographic locations, number of

years established), helps to strengthen the outcomes of the research (p. 495). Based on Gray's suggestion a diversity of gardens from different geographic locations were chosen for this research.

The grounded theory approach also focuses on the fragmentation of data through a three-stage coding process of open, axial, and selective coding. As Grbich (2007) explains, the approach is best used in research relating to human interactions, and conducted in small scale environments where minimal previous research has taken place (p. 70-1). As Grbich (2007) further explains, the approach aims to “generate an analytic substantive schema (middle range) through processes of theoretical sensitivity which, after comparison with other substantive areas, can become formal theory (grand theory)” (p. 71). Although the research began with a defined process, a deductive approach allowed for alterations to occur during the process of analysis. Through the process of open, axial and selective data analysis, new theoretical positions emerged by pulling new concepts and categories from the primary data extracted. To paraphrase the three-step data process of grounded theory by Gray (2010), the specifics of this approach include:

Open coding is a process of making constant comparisons where every new instance discovered creates another category that must be compared against previous instances. If an instance does not fit the original definition, a new category is created, or a previous definition must be revised. This ensures that every new instance is encompassed in the literature.

Axial coding identifies the relationships between the categories and makes connections to illuminate the causes of the phenomenon of successful community gardens. A category (for example, an indicator of successful leadership) is examined in its context, and illustrates the actions and interactions that stem from its consequences.

Selective coding then analyzes the ‘core categories’ produced during axial coding and replicates this process at a higher level of abstraction. The selective coding of these ‘core categories’ are then able to tell a ‘story’ from the social processes produced from the new data. The data can then relate sub-categories to the core categories identified, validate these relationships against the existing data (grounding the theory), and fill in gaps within categories that needed further refinement (p. 504-506).

A drawback of the grounded theory approach, identified by Grbich (2007) is that it can produce “confusing and overlapping terminology rather than data” (p. 81). In the past, previous researchers have found it difficult to analyze grounded theory data, as the complexities inherent in the method make it easy to lose sight of the larger picture. Grbich (2007) also warns researchers to avoid applying previous knowledge or theories as this could hinder the construction of new theories. Critics of the grounded theory approach also say researchers inevitably bring ‘intellectual baggage’ from their discipline into the practicum research, which is often reflected in the final results (p.81). Researchers must understand this drawback and the consequences of prematurely linking data to existing theoretical frameworks, as “[c]oncept generation rather than substantive or formal theory may be the best outcome” of the practicum (p. 81). To overcome this challenge, this researcher waited until all the data had been processed to conclude the final results of the practicum. This served to protect this researcher from jumping to conclusions too early and reduced the chance of falling back on ‘intellectual baggage’ brought into the practicum. The research found that the three stages of the grounded approach—description, analysis, and interpretation—produced strong results and was the best fit for this study. This researcher was cognizant of the challenges faced by the grounded theory approach, but strived to ensure the method was used properly to produce quality results.

3.3 Limitations and Biases

During the process of data collection there were challenges accessing key informants, as the interview process took place in the spring during the planting season. As well, during this study, the student farms were in the midst of organizing student research projects, apprenticeship programs, courses and community development partnerships offered during the growing season. These time constraints prevented one key informant from having a phone interview and instead a written response was provided. This also prevented some of the questions used to probe key informants for additional information from being answered. Nevertheless, this key informant provided a number of very concise and reflective responses which linked to numerous academic resources, local food initiatives, and sustainable community development programs.

Despite technical problems during some of the interviews, the use of Skype interviews worked well, as it provided a face to face connection between key informants and the interviewer. The use of Skype allowed this researcher to observe the facial expressions and body language of each key informant, and facilitated related discussions once the interview was completed. There were two instances where telephone interviews had to be conducted instead of Skype. Discussions during these interviews were much shorter. This researcher expects the interview felt less personal than video interviews using Skype. In future research projects, this researcher would use video interviews with Skype in place of conventional telephone interviews, given the longer interviews which took place with this technology.

Following the six interviews, the data was transcribed from notes into a formal document with the exception of one key informant who declined a formal interview but provided a written submission. As Gray (2009) suggested, the data was continually reviewed by reading through all the notes, documents and transcripts collected throughout the process. Therefore, the data was

collected and coded after every interview, ensuring the interviews continually built upon this researcher's knowledge throughout the process of data collection. A focused review of the data highlighted keywords, themes and categories as they began to take shape. In the end, similar quotations and concepts were categorized, and the research moved beyond description into analysis and interpretation of the data.

After the interviews were conducted, this researcher realized the key informants were less familiar with the concepts and principles of food systems planning frameworks (e.g. AU, Transition Towns) than originally anticipated. In hindsight, this researcher would also include food systems planning frameworks like Transition Towns within the key informant informational handout (Appendix B). Other limitations within the practicum research pertained to: the length of time key informants were involved in their organization; finding willing participants; and a high turnover rate amongst student organizers within university gardening organizations.

3.4 Chapter Summary

The methods used within this research adhered to the ethical standards of the University of Manitoba, in order to achieve the objectives of this practicum. The use of a literature review and background study, key informant interviews, and a grounded theory approach were determined to be the most practical manner to conduct this research. To account for the transient nature of university community garden coordinators, the snowball method was used to include additional informants (i.e. administrative staff) identified during the practicum, to be involved as the interview process took place. Skype interviews (i.e. telephone interviews) were used to give this researcher the benefit of a face-to-face interview without travel in the most timely, affordable and sustainable manner. In the end, six Skype interviews were conducted, four with

video and two without, as well as one written response in place of a telephone interview. The grounded theory approach was selected as the most effective way to highlight themes from the literature, and create more pointed guidance to founders of university community gardens.

4) SELECTION OF SITES

As previously mentioned in Section 1.3, the definition of a ‘successful’ community garden, adopted for this research, is one that is ten years or older. As Table 1.2 in Section 1.5 illustrates, there are four universities in Canada that have university community gardens that meet this definition. To create a more diverse practicum, one ‘successful’ garden from the United States was also included. Since the primary objective of this study was to illuminate the leadership and organizational processes of community gardens, allotment gardens were excluded from this practicum research. The practicum did encompass a mixed model of community and allotment gardening (i.e. U of C). However, simple allotment gardens like Simon Fraser University’s (SFU), despite being established in 2001, were not included.⁷ The reason allotment gardens were excluded from this study was because they were less likely to offer opportunities for replicable processes of leadership, management, organization, and capacity building, which serve to enhance processes of community development. The research set out with the objective to build on the existing literature of community gardens as community development tools, and illustrate their importance to municipal planners and policymakers. The purpose of this chapter is to provide a better understanding of how successful university community gardens have developed in the past. Therefore, background information on the five gardening organizations in this practicum were examined and analyzed comparatively, to gain an understanding of the development and context of the farms/gardens researched.

⁷ Despite SFU having a community garden for more than ten years, the SFU garden has not grown as the other university community gardens in this practicum research have. As the SFU Demonstration Garden Group (2007) explains, “the benefits of the [SFU Burnaby Campus] community garden are only bestowed upon the 80 people who are able to sign-up for a plot each year. There is no greater community involvement, no research projects possible, and nothing in the way of workshops or learning programs” (p. 5-6).

4.1 University of California Davis Student Farm

In the mid-1970s, a group of UC Davis students created the Student Experimental Farm (SEF) to develop solutions for the environmental and social problems associated with modernized methods of agricultural production. At the time, alternatives to conventional agricultural production did not exist within the education and research programs at UC Davis. In 1977, the SEF came into existence after a group of students organized. They developed an alternative agriculture class, a sustainable agriculture conference, and submitted a proposal to the university administration to establish an experimental farm. As Van Horn (2011) explains,

The SEF was student driven, largely student managed, and dedicated to experiential learning, alternative agriculture principles and practices, and student initiative, creativity, and exploration. The students' goals included the creation of research and education efforts at UC Davis that would contribute to the development of more sustainable agriculture practices and systems in California and throughout the world (p.146).

Yet, after a year, the dedicated group of volunteers realized it could not have the impact they desired without a formal staff to oversee the project. In 1978, a farm coordinator was hired to enhance the stability of the SEF and the efficacy of its operations. The formalized staff greatly assisted the project as they facilitated an increase in the number of students involved in the farm's various projects, and improved the technical quality of the knowledge and skills being acquired by students (Van Horn, 2011, p.134). While some of the sense of ownership and decision-making authority was delegated from the students to the staff, the SEF was able to offer field-based education projects (i.e. The Children's Garden), which served to increase the number of students with diverse interests, backgrounds, and skill levels (Van Horn, 2011, p. 135). By the mid-1980s, the SEF added three staff, which permitted the organization to run experiential learning projects for students and community members. There were also new opportunities for students to engage with the SEF through formal courses (Van Horn, 2011). Student participation in the garden was not a program requirement for any degree at UC Davis until the early 1990s,

when sustainability issues became more pronounced amongst agricultural discussions in California. Changes in the discourse and focus of agricultural production in California provoked a new agricultural systems and environment (ASE) undergraduate major (Van Horn, 2011, p. 142).



Figure 4.1 –Green leaves on UC Davis campus green map highlights the community gardens located across campus. The Student Farm Market Garden and Student Farm Ecological Garden are on the western edge of the central campus of UC Davis (UC Davis, 2011).

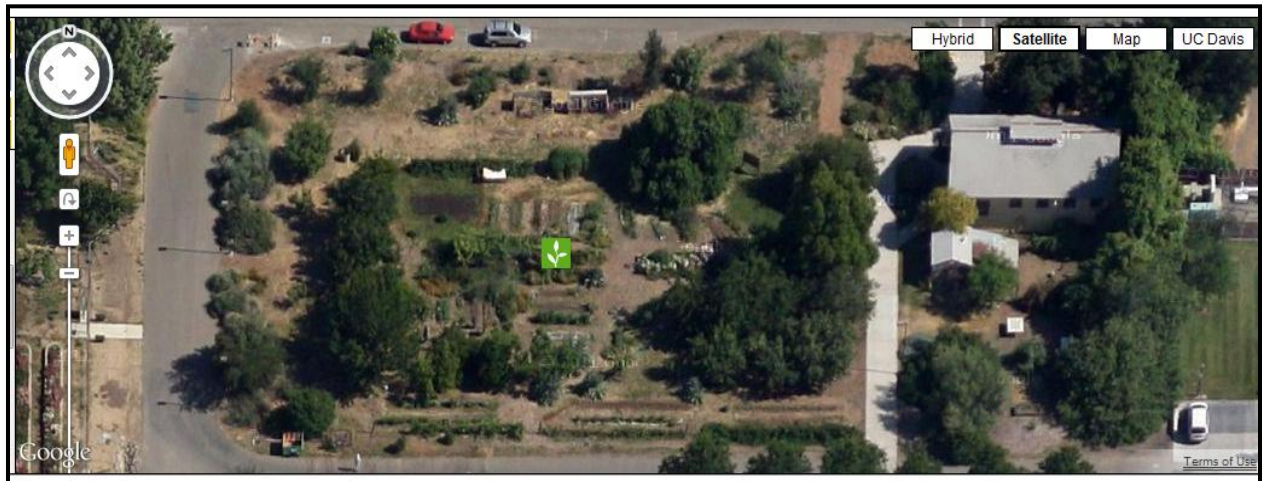


Figure 4.2 – UC Davis campus green map illustrates the Student Farm Ecological Garden which is 46 m² (500 square feet) which is within a five minute walk of the Market Garden (UC Davis , 2011).



Figure 4.3 – Green leaf icon illustrates the Student Farm Market Garden (18,210.85m² - 4.5 acres) (Agricultural Sustainability Institute , 2012).

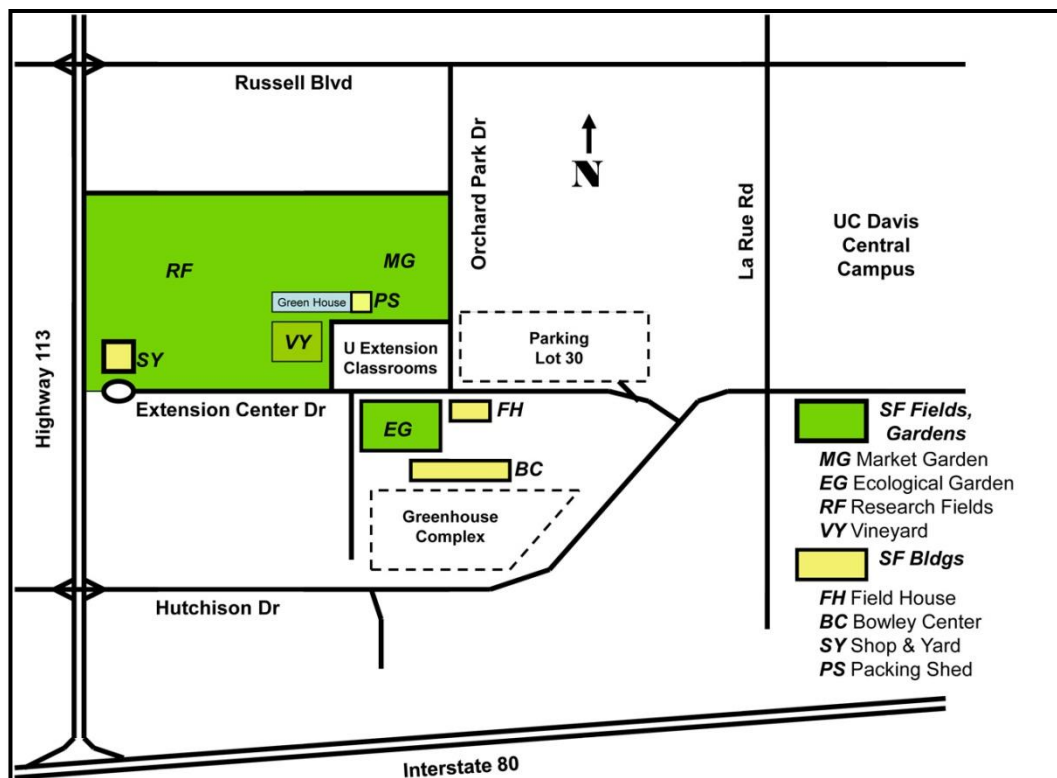


Figure 4.4 – Overview of UC Davis Student Farm (20 acres - 871,200 ft²) – over half of the farm is used for student research (Agricultural Sustainability Institute , 2012).

In 2004, the Director of the SEF was involved in reviewing the existing sustainable agriculture program, and made recommendations for strengthening the existing program and expanding its curriculum. The involvement of SEF staff and students helped shape the curriculum for the ASE major which integrates interdisciplinary concepts of systems thinking, skill development, experiential learning, linking the real world with the classroom, community building, and adaptive curriculum management (p. 144). Since its inception the SEF has developed and matured in many ways, from being a student initiative, to becoming a formalized sustainability project in which sustainability has directed the teaching, research, and outreach efforts of UC Davis. As the SEF expanded so did the breadth of sustainable activities on its campus, as more members became involved in its membership base. The student farm now has an open door policy in which membership is available to anyone with a curiosity in sustainable agriculture.

Apart from helping to create the UC Davis Experimental College, which has its own experimental garden, the Agricultural Sustainability Institute has a children's garden, market garden/CSA, and conducts youth education and assists with school garden projects (Agricultural Sustainability Institute UC Davis, 2010). The UC Davis campus now has numerous community gardens on its university grounds and has set a target by 2020 to grow 18% of the university's food supply on campus. In its sustainability plan, UC Davis also stipulates that 23% of food served on campus to be 'sustainable food', just less than 20% of which should be locally grown/raised within 250 miles of campus by 2020 (Lee & Doyle, 2010). The UC Davis farm model clearly illustrates the impact that a successful university community garden can have on its surrounding community. Similarly, the Experimental College Community Garden (ECCG) is also used by community members to host events such as weddings, art walks and large potlucks

in conjunction with the garden's Activities Coordinator. The SEF and ECCG have both become convivial spaces in which students and community members enjoy spending time.

Unlike urban community gardens or farms, the SEF is not faced with development pressures infringing on its land base. Rather, as Van Horn (2011) describes, the challenges the SEF is facing relate to how it can progress without stifling the process of students organizing and directing their educational endeavors. The development of the SEF has made it more difficult for students to identify their own education objectives outside the university-approved curriculum. Moreover, the growth of the SEF has also made it more difficult for students to develop their leadership skills now that the farm is no longer student run; to ensure "the SEF stays true to its original spirit, principles, and purpose in the future" these types of questions must continue to be asked (Van Horn, 2011, p. 147).

4.2 University of British Columbia Farm

The University of British Columbia (UBC) farm is the longest-standing example of a successful university garden within Canada, and as Director Mark Bomford (2011) describes, "the UBC Farm [...] followed a tangled hundred-year path of fragmentation, displacement, and marginalization and, through a decade of student-led reinvention, ha[s] now gained a hopeful new identity at the forefront of an urban movement" (p. 250). The UBC's farm was designated as a place of research for students and faculty in the 1920s, but it did not become notably productive until the 1970s, when the Department of Plant Science prepared the soil and installed drainage and irrigation systems (Bomford, 2011). The farm was rediscovered by students in 2000 and access to the farm was expanded to community members and students for non-research purposes (UBC Farm, 2010). The UBC Farm presently operates as an academic facility under the

management of the Centre for Sustainable Food Systems, an academic subunit within the larger Faculty of Land and Food Systems (p. 257). The long-term success of the UBC farm has allowed it to produce a variety of educational programs (i.e. internships, summer camps, school programs, university courses) for people with varying incomes. In 2009, the farm had 150 active projects taking place on the twenty-four-hectare site and continues to draw hundreds of people through its gates on a daily basis (p. 257).

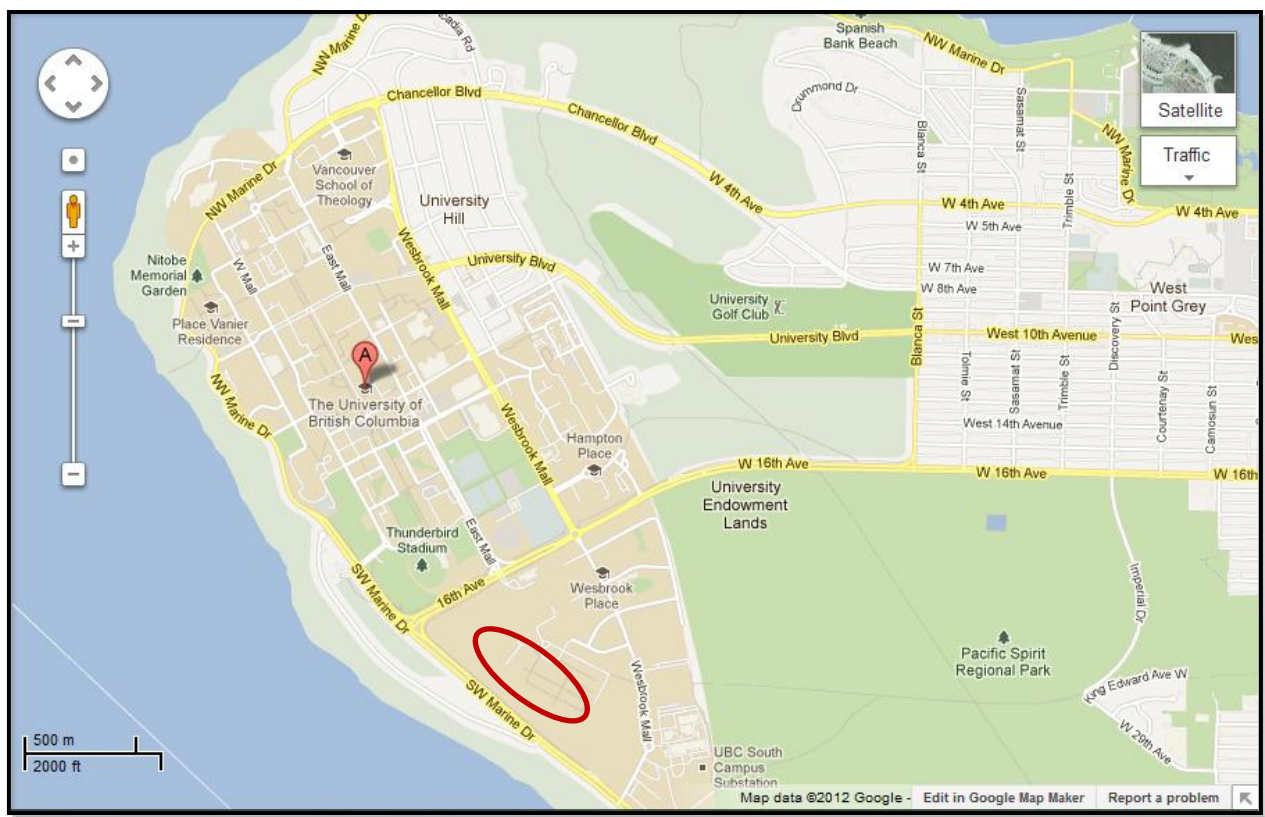


Figure 4.5 – UBC farm is 24 hectares ($2,583,338.5 \text{ ft}^2$) and located in Vancouver's suburban neighborhood of Grey West Point has faced development pressures for the majority of its existence (Source: Google Maps,

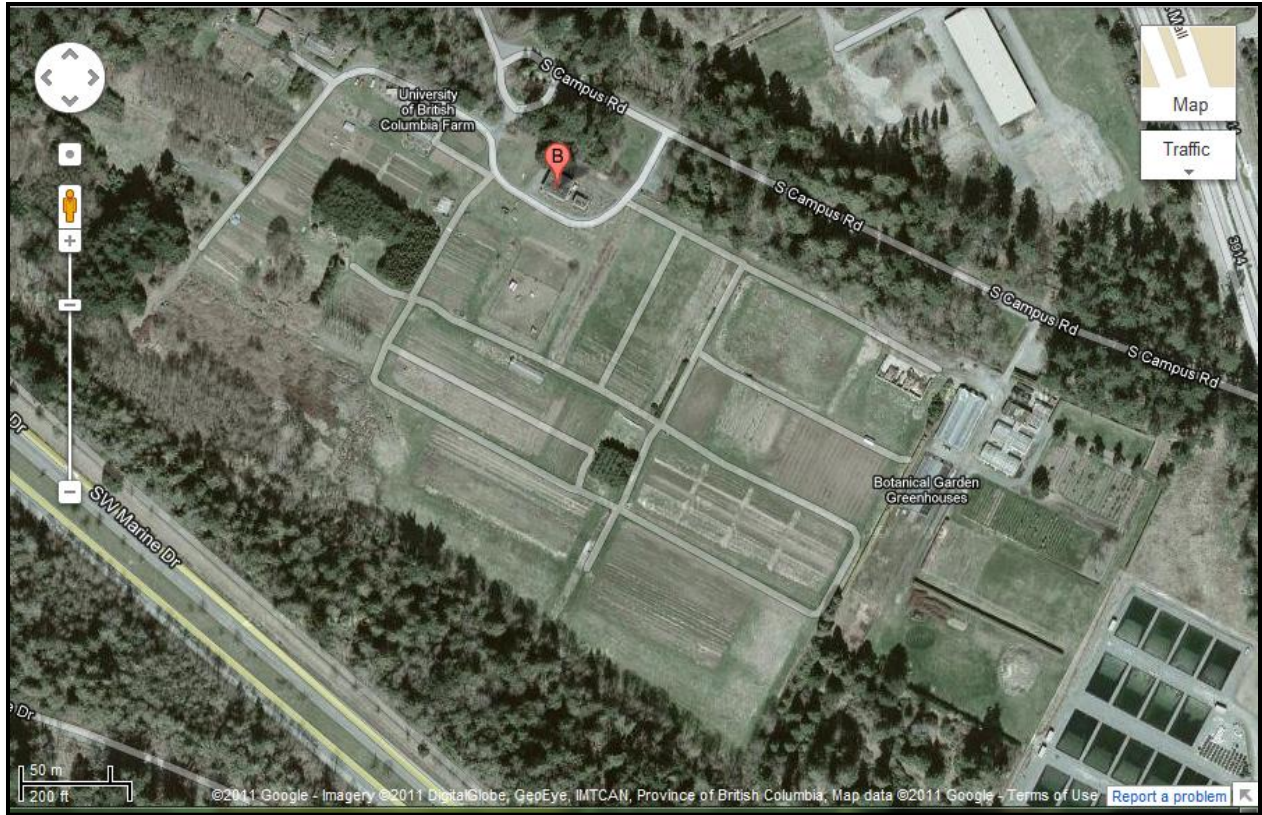


Figure 4.6 – UBC farm is located on the South Campus of the University of British Columbia next to student housing (Source: Google Maps, 2011).

These capacity-building opportunities have emphasized the importance of food production and, quite likely, have had an effect on the burgeoning community garden trend in Metro Vancouver.⁸

As the Director of the UBC Farm, Mark Bomford (2011), explains,

At the basis of the farm's reinvention [in 2000] is a belief that our role is to address not simply agricultural sustainability but rather the wide range of issues that underpin the continued existence of cities. As the UBC Farm engages urban people with a broad spectrum of interests, it aims to build urban-rural relationships that provide strong mutual benefits. If a city is to sustain its global life support systems, it must first understand what these systems are and how they work: not just where food comes from, but also how managed ecosystems capture and transform the energy needed to run cities, how they assimilate and productively recycle urban outputs, and how they can provide places for rich and transformative learning experiences. A working farm system in the midst of a city provides the essential microcosm to accomplish all this (p. 265).

⁸ The City of Vancouver (CoV) increased its number of community gardens from 900 in 2006 to 2,010 in 2010. In its effort to be 'The Greenest City in the World' the City has set targets to increase this to 5000 gardens by 2020 (Metro Vancouver, 2011; City of Vancouver, 2009).

The efforts of the UBC Farm have not gone unnoticed by environmental experts like David Suzuki, who is “convinced that we need living laboratories and classrooms like UBC Farm to help generate and disseminate the knowledge we need as a society to create a more sustainable food system for the future” (UBC Farm, 2010, p. 1). Suzuki further explains that the “UBC Farm is exactly the kind of model we need for sustainable agriculture at this critical moment” (UBC Farm, 2010, p. 1). UBC Farm is primarily a university teaching facility and only engages community members when objectives overlap. Community members do not have input into the farm’s activities, but they can submit proposals for integration into the farm’s activities (i.e. Urban Aboriginal Community Kitchen Garden Project) (UBC Farm, 2011). Currently, the UBC farm is “reviewing the potential for community garden areas at the farm, given the growing interest among the university community, [but it has yet to] find a model that meets the balance between the community’s interests and the university’s interests” (UBC Farm, 2011). The UBC model is unique from other community gardens in this research, as its objectives are directed by the university. Yet there are a variety of opportunities for community members to participate in educational activities at the farm. The UBC model is highly relevant for this research, as it illustrates how students, and community members, can learn from a campus farming faculty without having initial input into the decision-making processes of the organization.

The Farm sells its fruit, vegetables, berries, herbs, flowers, honey, and eggs at Saturday morning farmers’ markets; through a CSA box program; as well as to campus food service outlets, local restaurants and specialty retail outlets within Vancouver (p. 259-60). As Bomford (2011) explains, “[t]he farm’s total revenues have increased tenfold since 2004, with average year-to-year growth rates of 50 percent” (p. 258). The majority of the farm’s revenue, 60 percent, comes from farm-gate sales and workshops while the remaining balance comes from grants and

donations from a diversity of sources. The farm currently consists of a vineyard, heritage orchard, blueberry fields, 150 laying hens, honeybee hives, medical plant gardens, children's gardens, and gardens managed in partnership with the Musqueam First Nation. Partnerships with First Nations communities (i.e. The Urban Aboriginal Community Kitchen Garden Project, Mayan in Exile Project) are helping the farm "to incorporate traditional indigenous knowledge and practice into the farm's landscape" (p. 259). As Bomford (2011) explains, "The farm's community engagement strategy blurs the traditional lines between the academy and the community. Participating in a range of community service learning projects and community-based action research initiatives both on and off the farm, students and faculty act as agents of change" (p.262). For example, the Urban Aboriginal Community Kitchen Garden Project brings seven hundred people from Vancouver's Downtown Eastside, and coastal Aboriginal communities, to participate in a comprehensive community health initiative. Participants grow traditional foods as well as gather foods from the fields and forest; preserve salmon in a smokehouse; and host feasts linked with cultural traditions. As Bomford (2011) explains, "individual and community health effects of the program have been far-reaching and are being explored and replicated in other coastal BC communities" struggling with health challenges, including diabetes (p. 262).

The UBC Farm has also been successful in demonstrating the importance of integrating agricultural processes across the university's main and satellite campuses. For instance, in UBC's 2010-2015 Climate Action Plan, food is specifically identified as a main indicator to reduce the campus' carbon footprint. The plan encompasses fifteen food strategies for the campus, of which the fifth is to "[i]ncrease food production at the UBC Farm [and u]se the farm to represent the types of food that can be grown, seasonally, in our climate" (Parr, et al., 2011, p.

29). Additional objectives of the plan include: advocating for more edible landscaping on campus; engaging campus food providers in building a network with local producers to increase sourcing of local food; providing incentives for consumers to purchase healthy, low carbon food; as well as developing a campus-wide social marketing program to promote sustainable, low carbon food choices (p. 28-9). Since a representative from the UBC farm was involved in the process of producing the university's food objectives, it can be said that the farm has had a significant influence on the sustainable design of its campus. These practices are also being implemented on the UBC's Okanagan campus, which will increase the visibility of sustainable food production and consumption on both UBC campuses.

Despite the numerous benefits the UBC Farm has provided to immediate and surrounding communities it has still generated criticism from persons interested in its land base. As Bomford (2011) explains,

Perceived land value in an urbanizing society represents the UBC Farm's primary challenge... Critics contend that, by distorting the fair market value of land, our province's thirty-seven-year-old agricultural land reserve is to blame for Vancouver's status as Canada's least affordable city. Proponents argue that the land reserve has made Vancouver the most livable city in the world, creating a containment zone that encourages a compact urban form and accessible green space. The UBC Farm brings this dialogue away from the fringes of the city and into its core, engaging the dense concentration of people and policymakers who ultimately wield the greatest power. The farm's position as a change agent is highly leveraged, exposing it to the risks of speculative land valuation—but also to the rewards of changing an entire city's relationship with the land and food (p. 264).

After years of campaigning, a highly organized effort by students, faculty and community members prevented housing from being developed on the land base of the UBC Farm in April 2009. Despite the creation of tangible increases in the quality of life of urban residents, the UBC Farm, like community gardens, still faces the challenge of urban economic systems infringing on it.

4.3 University of Calgary Community Garden

The University of Calgary (U of C) Community Garden was established in 2000 by a group of students who later received the University President's award a year later for creating a project to enhance student life on campus (Venter, 2004). In 2002, the garden was moved to a larger space where it is currently located site near the corner of Collegiate Road and 19th Street, to accommodate the construction of a Children's Hospital. The University of Calgary Community Garden (UCCG) is 800 meters square (2,624 sq ft) with 36 individual rental plots of a diversity of sizes, with the average plot being 15m² (Einsiedel, 2012, p. 13). The garden site has composting facilities, access to water, a snow fence, shed, a greenhouse, and social events, but no paid staff (Calgary Horticultural Society, 2010). The garden has rent-free communal plots, which share harvests for those who participate, but the majority of plots are allotted to individuals who are interested in renting space to garden. The garden is an open student club, which is run by university students, community professionals, children, and retirees (Calgary Horticultural Society, 2010). The garden attained its status as a student club in 2002, but lost this status from 2007 to 2011, as the outgoing group of organizers did not file the requisite annual report required by the Student Union (Einsiedel, 2012, p. 24). In 2008, the organizers opened the garden to community members and decided the garden would no longer have a system of communal plots. Rather, students would be allotted small single plots or in groups. However, communal plots were reintroduced in 2011, when a student became co-president of the garden again (Einsiedel, 2012, p. 27).



Figure 4.8— U of C’s campus community garden is 800 m^2 ($8,611\text{ ft}^2$) and is run entirely by volunteers and surrounded by student housing as well as parking for students and staff (Source: Google Maps, 2011).

When the garden first opened, the founding group of students used a holistic approach to the garden’s design and social processes, which were socially equitable, ecologically integral, and economically productive. The garden had a budget of \$300 in its first year, but applied for numerous grants from gardening associations and environmental organizations, in addition to conducting workshops and hosting an annual compost sale fundraiser with the Campus Green Party. However, when the majority of this first group of students left, the garden was opened to community members and soon the administration of the garden consisted of non-students.

The organizational structure of the garden consists of two committees. The student committee has four elected student officers, who organize garden meetings, manage finances, conduct outreach, and coordinate social events. These students adhere to a Student Union Club constitution and hold the positions of President, Vice-President, Treasurer and Secretary, in

addition to adhering to the constitution created by the members of the garden. There is also an elected advisory committee of non-students who provide ongoing management when student leaders are consumed with schoolwork or need a few weeks of summer vacation (Einsiedel, 2012). The advisory committee has the responsibility of the Registrar of Plots position, which delegates plots to garden participants. Since there is no paid garden coordinator, the student and advisory groups co-manage the garden when time schedules prevent one group from participating. As Einsiedel (2012) explains, there are several documents that are important to the governance of the U of C campus community garden:

- Constitution – as a Student Union Club, and the constitution created by garden participants.
- Orientation handout – used to teach new and current members of the garden during a one-day Orientation Day held each spring.
- Membership Agreement – informs plot renters of the policies and procedures and must be submitted each year along with their rental fees (p. 12).

The student executives (i.e. Secretary, Communication Director, or Registrar of Plots) all share these responsibilities. “The UCCG relies heavily on volunteer participation and decision-making by consensus. Effective communication, therefore, is essential in order to encourage member participation, camaraderie, cooperation, and voluntary adherence to garden policies and guidelines” (Einsiedel, 2012, p. 37). The group currently uses a variety of communication tools to connect with garden participants (i.e. e-bulletins, phone, Facebook, Google Groups) and attempted to use a PBWiki in 2011, but had some pushback from older community members within the garden. Due to the older age demographic that exists within the garden, social media use has been slow to be integrated into garden communications.

Similarly the UCCG continues to face a variety of challenges that include student involvement, climate, and proposed development on the garden site. While the number of student participants has been on the rise since 2010, gardeners are faced with difficult soil (i.e. clay) as

well as geographic conditions (i.e. wind, hail, deer). These challenges can deter people from taking up gardening. The University of Calgary is planning to construct new buildings and streets for its West Campus Development expansion and the garden is scheduled to be relocated, again, to a new site in 2013. The UCCG planning committee has met with the Director of the West Campus Development Project to go over the University's vision, plans, and operating issues relevant to the community garden. As Einsiedel (2012) describes,

The committee felt it was important for the West Campus Development decision-makers to know about the garden's plans, which can be accomplished, in part, by participating actively and constructively in its consultation and detailed planning process. The committee wanted to emphasize the benefits of having an attractive and well-managed community garden that can be perceived by the University planners as an asset rather than as a liability (p. 37).

The social impact the UCCG has had on its campus is currently unknown, as the university presently does not have an on-campus farmers' market, nor does it sell produce to local restaurants. However, garden membership is growing and its activities are receiving attention from the campus community. In addition to climate and insecure land tenure, the garden faces challenges related to care of plots, keeping common areas weed-free, and getting people to help (Calgary Horticultural Society, 2010, p. 1). At the time of this writing, the university was formulating its percentage of total food expenditures that will be local (150 mile /240 kilometer radius), organic, and socially responsible (University of Calgary, 2011). It is unclear if the garden has had any influence on the food policies the university is currently adopting. Unlike at UBC, the garden is not recognized in the campus' sustainability plan as an initiative that should be augmented.

Unlike UC Davis, the U of C does not have a specified target or timeline in which an increasing percentage of food, produced on campus, will be integrated into campus food services. The University of Calgary (2011) has an educational outreach component within its

campus food strategy, as it plans to “[i]mplement an outreach program to raise awareness of sustainable and healthy dining and the impact of food and beverage choices” which may lead to the creation of policies similar to those of UBC or UC Davis in the future (University of Calgary, 2011, p. 26). The University of Calgary (2011) has also acknowledged that “[u]niversities can help build a sustainable food system and reduce their ecological footprint by supporting local food producers and offering Food Alliance-certified, certified organic and Fair Trade-certified products” (University of Calgary, 2011, p. 26). Whether the university asked for the input of a representative from the garden, to assist in the formulation of these policies, is currently unknown.

4.4 University of Victoria Campus Community Garden

In 1996, the University of Victoria established its community garden through its Environmental Studies Students Association, but did not receive official status as a university club until 2006 (The UVic Campus Community Gardens, 2010). There has been wait list for the garden membership each year, which illustrates its popularity amongst students and residents. Membership includes access to one of the 45 individual plots, communal tools, and educational resources for gardeners, workshops, and social events organized by the members and steering committee. The efforts of the UVic garden have been recognized by the administration as a significant enhancement to the sustainability of the University of Victoria campus. As Thom (2006) describes, the Director of Campus Planning stated:

The development of the community garden club provides an opportunity to implement the campus plan policy on sustainable development which states: *the University will strive to ensure the integration of academic priorities, compact development, and the principles of sustainability in the planning and construction of all new facilities...* The community garden provides a good opportunity to engage the campus community in organic farming and to demonstrate community and environmental sustainability on the ground (p.23).

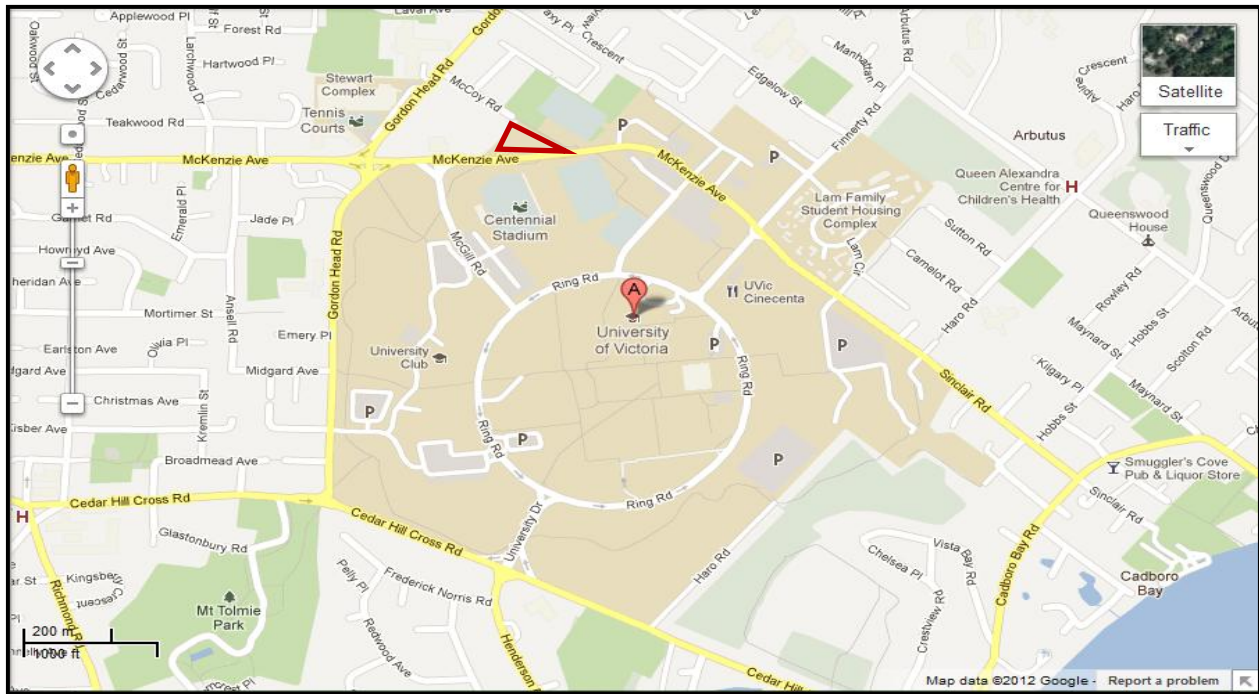


Figure 4.9 – Map of new site for UVic's campus community garden (6394 m^2 - 68,824 ft^2) (UVic Campus Community Gardens, 2011). Source of image: (Google Maps, 2012).

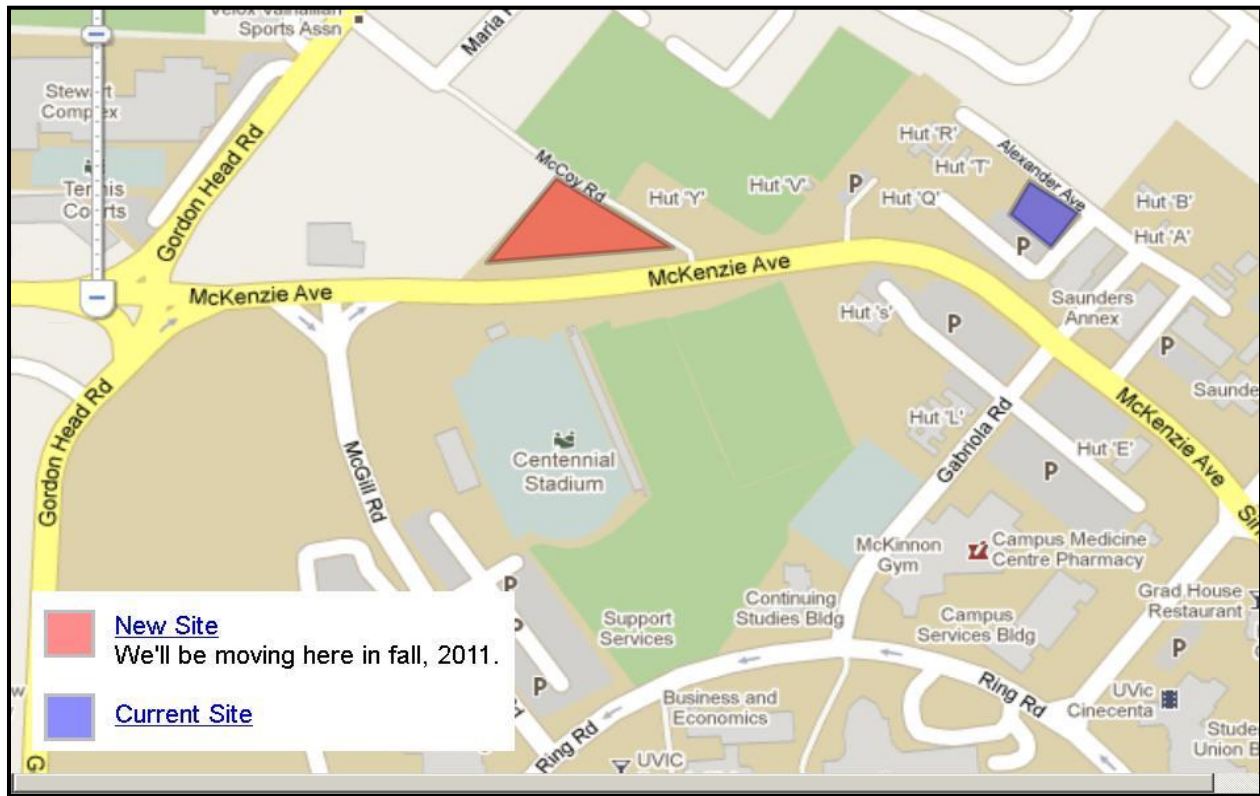


Figure 4.10 – Re-location of U Vic campus community garden to a new site which is twice the size of its previous location (moving from 1619 m^2 (17,424 ft^2) to 6394 m^2 (68,824 ft^2) (UVic Campus Community Gardens, 2011).

The administration's identification of the garden in a sustainable campus plan is a clear indication of the impact it has had on its surrounding community. While the UVic garden did not create the gardening culture in the City of Victoria, it is serving to expand upon it. Students are now advocating for the creation of an Urban Agriculture Learning Center as a further expansion of the garden (Thom, 2006). Figure 4.11 (above) shows the garden is currently in the process of being relocated, as the old garden space (0.4 acres) is being developed. The new site is a larger area (1.58 acres) with increased visibility and southern exposure (Wanda, 2010).

Two major advantages the UVic campus community garden has are its social and physical geography. Victoria is known as the 'City of Gardens,' having a vibrant gardening culture since the 1970s (City of Victoria, 2005, p. 8). It also has one of the longest growing seasons in Canada, which prolongs gardening activities further into the school year. Other successful university gardens (i.e. York and U of C) do not have as long of growing seasons, which reduce the amount of time students have to participate during the school year. Unlike conventional community gardens, university community gardens are negatively affected by the absence of student residents during the summer months. The effect climate has on student's participation in university community gardens will be explored within this research.

4.5 York University Maloca Community Garden

The York University's Maloca Community Garden was founded in 1999 by the Faculty of Environmental Studies and has been run by volunteers within the student community and Faculty of Environmental Studies ever since (Carlyle, 1999). In 2004, the university moved the garden to its current location at 4700 Keele Street, to create more surface parking (Toronto Community Garden Network, 2011). Each year, members of the garden elect a steering

committee to maintain stability of the organization and its finances, and organize processes of group decision-making. The garden has a variety of participants from different disciplines, as well as community members working to enhance the sustainability of York's campus. The mission of the garden is to provide "individuals affiliated with York University, and the surrounding North York community, with a unique opportunity to grow and harvest food in a welcoming, non-judgmental environment" (Maloca Community Garden Blog, 2011, p. 1). The 186 m² (2000 square foot) garden consists of communal and individual plots, and is maintained by its membership (Toronto Community Garden Network, 2011). Despite its small size the garden continues to expand as membership from students and community members increases. Garden expansion has not been a challenge as the garden is located on the Blackcreek conservation area; this land was land gifted to the Faculty of Environmental Studies by the Toronto Region Conservation Authority and York University. The Maloca garden has been integrated into the university's campus sustainability plan as a compost facility for the food provider on campus. As Barbisan (2009) describes, the Maloca garden is being used by food services as a means of diverting food waste (p. 6). Unlike UC Davis, York has yet to integrate a percent of food produced on campus into its sustainability plan, but it has negotiated with its food provider (Aramark) to adopt purchasing practices from local producers, using the Local Food Plus program (Barbisan, 2009, p. 6). The extent to which the university administration has involved garden participants in the formulation of the university's sustainable food strategies is presently unknown.

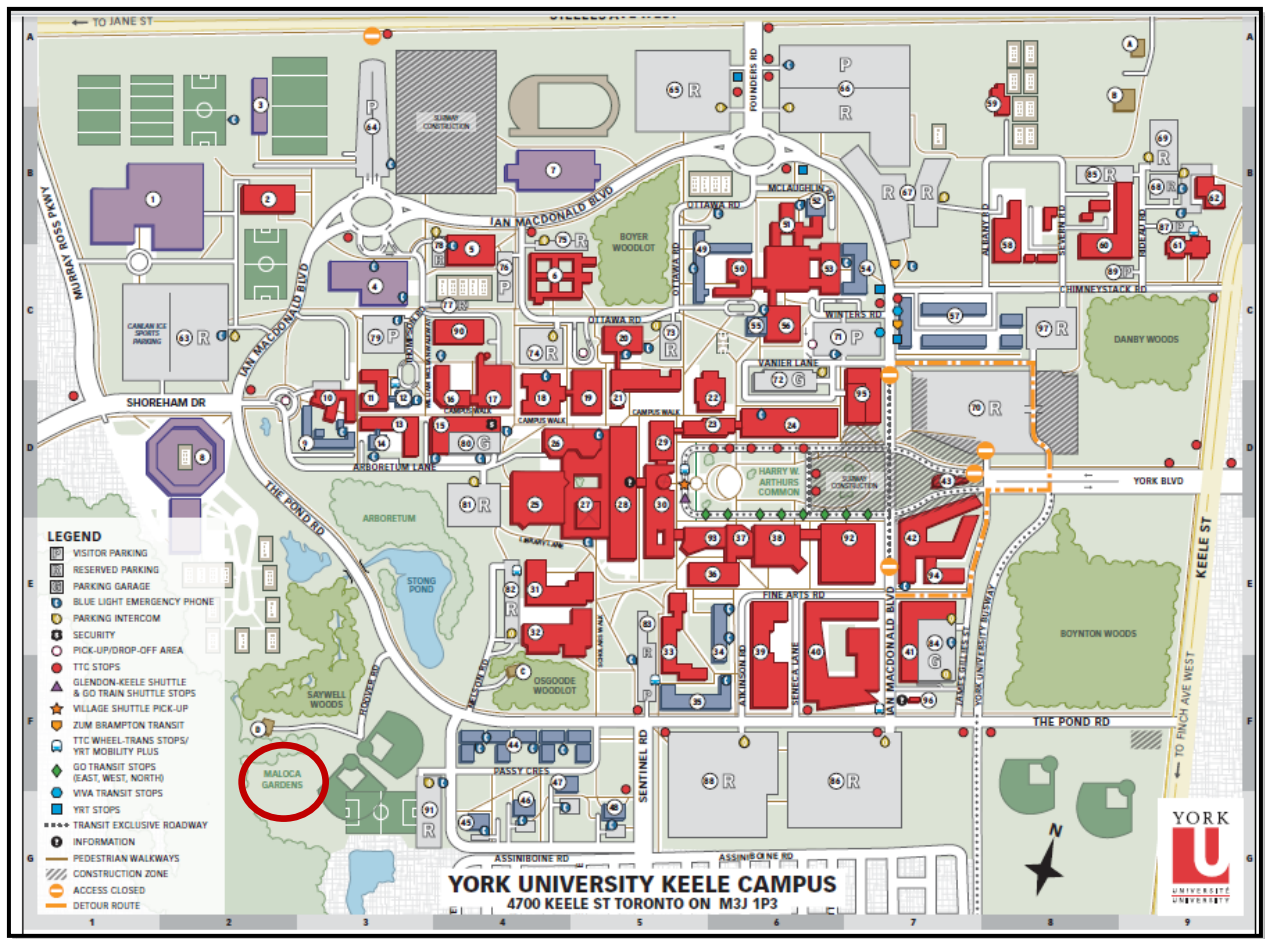


Figure 4.11 – Campus Map of York University. Maloca Community Garden (circled in the left corner) is located on the Keele Campus of York University in Toronto’s suburb of North York. Image source: (York University , 2012).



Figure 4.12 - York University's Maloca Community Garden 186 m^2 (2000 ft^2) is located on conservation land gifted by the Faculty of Environmental Studies and Toronto Region Conservation Authority (Source: Google Maps, 2012).

4.6 Analysis of University Gardening Organizations

As Table 4.6 illustrates there are four historical similarities shared by these university community gardens. The gardens being studied have all received initial funding from their campus administrations. As well, the founding members of these gardens helped to create strong organizational structures and found strong leaders who continued to attract the participation of students and community members. With the exception of UVic, the university campuses are all situated in rural or suburban locations with available land resources. Additionally, the university garden groups have also maintained active websites, blogs and Facebook pages, to communicate with group members. The publicly accessible nature of these forms of communication also allows members of the public to monitor garden activities.

| Table 4.6. Analysis of University Gardening Organizations | UBC | UC Davis | U of C | U Vic | York |
|---|--|---|--|--|---|
| Initial funding from University Administration | Yes | Yes | Yes | Yes | Yes |
| Secured land tenure | Yes | Yes | No | No | Yes |
| Strong Leadership | Yes | Yes | Yes | Yes | Yes |
| Urban Location | No | No | No | Yes | No |
| Active social media | Yes | Yes | Yes | Yes | Yes |
| System of plot fees | No | No | Yes | Yes | Yes |
| Primarily Individual Plots | No | No | Yes | Yes | No |
| Size | 24 hectares (2,583,338.5 <i>ft</i> ²) | 20 acres (871,200 <i>ft</i> ²) | 800 <i>m</i> ² (8,611 <i>ft</i> ²) | 6394 <i>m</i> ² (68,824 <i>ft</i> ²) | 186 <i>m</i> ² (2000 <i>ft</i> ²) |

With the exception of UBC and UC Davis farms, the gardens also share a system of plot fees in which members pay for a plot at the beginning of the year, and receive communal tools, resources and coordinator support. The land use agreements differ greatly between the gardening organizations as two gardens (U Vic, U of C) are primarily based on a system of individual plots. York's Maloca garden is primarily a communal gardening space with only 11 individual plots which are double the membership fee. The majority of productive lands at the UBC and UC Davis farms are used for student research, market gardens, and community development programs.

Major differences amongst the five gardening organizations pertain mainly to their leadership and organizational structures and how they are funded. For instance, the UC Davis and UBC gardens originated as spaces for students to conduct field research. At present, they have dedicated year-round staff and benefit from the presence of academic research institutions

on site. The UC Davis Student Farm is managed by the Agricultural Sustainability Institute and receives funding for its research from the UC Davis administration. The UBC farm is managed through the Centre for Sustainable Food Systems, which also receives funding from the university (Agricultural Sustainability Institute UC Davis, 2010; UBC Farm, 2011). Since these two gardens are used by agricultural students for research and course work, for the purposes of the practicum they are referred to as ‘institution based’ models of organization—even though UC Davis Student Farm was originally started by counter-cultural students.

The three other universities selected for this study (U of C, York, UVic) were founded by students and/or faculty who were given available land and funding from their campus administrations. These ‘student based’ gardens receive administrative funding from student governance institutions as well as through annual membership fees.

4.7 Chapter Summary

In sum, all of the selected gardens in this research provide students and community members with access to gardening opportunities, and the majority of leadership within these organizations primarily consists of students. Both the ‘institution’ and ‘student’ based models of organization are expected to offer management and design strategies to younger university community gardens. Analysis on the two separate approaches of managing and organizing successful university community gardens is provided in the following chapter.

5) DATA ANALYSIS

The collection of seven key informant interviews with five university community garden coordinators, a student farm director, and a farm communications coordinator were used to assess the leadership and management techniques of these organizations, and assess the impact these organizations have had on their surrounding communities. The data was collected using four Skype interviews, two telephone interviews, and one written response. The Skype and telephone interviews were digitally recorded and transcribed by this researcher. Once the data was transcribed, the interviews were coded for key phases and sorted into categories as to how they related to each of the interview questions. The following chapter is a summary of the coded data.

5.1 Garden and Student Farm Organizer Interviews

All of the garden/farm organizers in this study were involved in the planning and visioning process of their organizations, and were responsible for representing their organizations to the public. Questions posed to farm/garden organizers were done to assess the leadership and management processes of the organizations, and explore if the university gardens/farms had impacts on their surrounding communities. Each question was analyzed for recurring themes during the three stages of coding (open, axial, and selective) within the grounded theory approach. Part of the analysis involved tabulating and characterizing the occurrences of various elements in the interview transcription (Appendix D). The following outlines the number of times specific characterizations were mentioned during the course of the interview. The findings are separated into three categories to highlight the major findings within

the three sections of the research: social and demographic information, influence on surrounding communities, and leadership and organization.

5.2 Social and Demographic Findings of University Gardens/ Farms

Participants of these organizations had a keen interest in sustainability issues and environmental protection. As one key informant explained,

If I had to model a specific type of person it would be someone who is curious in gardening. In general there is no sort of bar for your level of gardening. So people are attracted to the garden because they want to grow local food and sustainability, and these sorts of issues. People have a broader environmental focus which is channeled through this curiosity for local food as a way to connect more abstract theoretical ideas with proactive hands on experiential learning (CGO3).

Every participant confirmed that students interested in environmental protection made up the majority of their membership. Many environmental studies students were members of these university farms and gardens. However, the diversity of academic backgrounds amongst the students, administrative staff, and community members demonstrated that there was no specific type of person within these gardens (e.g. hippies). Many simply had a curiosity about gardening and wanted to meet like-minded people within their communities. There were only three key informants that specifically stated a ‘curiosity in gardening’ as an identifiable theme amongst their garden participants. Yet, all the farms and gardens in this research had a diversity of members and gardening was the common thread.

University gardens did tend to have a large portion of their memberships being mature students and community members. Interest from administrative staff and community members was so high at the UVic student garden that a policy had to be implemented so that students would be able to participate. This garden now has “a mandate that 50% of the plots are rented to students. Just because the turnover is higher, so that if a student leaves and then a staff member

comes in they are not going to be there for ten years versus the person who is waiting on the waiting list and then is gone for two years” (CGO2).

5.3 Influence of University Gardens/Farms on Surrounding Communities

The involvement of community members in university community gardens and farms was important for dedicated participation, enhancing technical knowledge, and enriching the institutional memory of the garden. The U of C currently exists because of the dedicated efforts of community members who continued to garden when student leadership and interest dissipated. As a result of these efforts there is a new influx of students, with succession planning and leadership development being priorities for the garden. Community members also tend to be more dedicated than students as they are retired, and/or have a permanent stake in the community as opposed to students who are more transient. In general, this research found community member involvement brought consistency to the garden’s activities and established linkages to municipal gardening organizations (e.g. Local Community Gardening Network, Local Transition Towns Network, and Local Environmental Networks). Moreover, community member involvement was found to enhance the participation of new immigrants and aboriginal communities and bring new knowledge, skills, and experience into the organization, which allowed for mentorship and cultural learning. The involvement of community members also enhanced the impact that gardens have on community development activities within the neighbourhoods in which they are situated. For example, York University has an abundance of new immigrants because the garden is located in a lower income neighbourhood in Toronto where access to green space is limited. As well, the UBC Farm is engaged in partnerships with aboriginal communities from the inner city and surrounding regions with its Mayan in Exile and

Urban Aboriginal Community Kitchen Garden projects. These programs help to preserve regional traditional ecological knowledge practices and allow for cultural learning amongst all cultural groups involved in the farm's activities.

Nonetheless, international students tended to be a small portion of all the garden participants, regardless of the size of the university or city. Amongst the seven key informants interviewed in this research only one identified themselves as a first generation immigrant, and all but one of the organizers noted that international student involvement was minimal. As one key informant explained,

We do get a few international students, but we do not get that many ... and some of them get really involved, and [the university] is a big agricultural school with a lot of international students, but most of them are in graduate programs that keep them very busy doing whatever their research is, and most of them do not have a whole lot of spare time (CGO7).

Given the language barrier in North America and the work load typical of graduate programs, this was not surprising. Two separate key informants cited having only a few activists in their membership while others provided numerous examples; however, activists were noted to be a small number of the participants in the university farms/gardens researched. As three key informants stated,

I am not sure what you would call 'activists' but there are a fair number who are engaged with food security activities, or interests beyond the garden. There has always been some you might describe as 'anarchist informed' but I am not sure if they are in the garden as much as supporters of the idea of a garden (CGO1).

There is a larger community and the student farm is part of that larger community. Some of the people involved in that community are part of community activism and they don't necessarily get involved out here because they are putting their energy into organizing stuff as opposed to planting and harvesting (CGO7).

One coordinator noted the Afri-Can Food Basket,⁹ a non-profit, food justice organization, was established by a former graduate student who had participated in the university garden for two years. Another former student participant began Chocosol,¹⁰ “which does horizontal trading with Mexican cacao farmers ... and the list just goes on and on and on. It’s definitely acted as a breeding ground for activists who later go out and do work within the community” (CGO3). Many activists did emerge from these farms/gardens and later started local food organizations or urban agriculture initiatives such as Alamada Point Collaborative urban farm,¹¹ Diggin’ Roots Farm,¹² and People’s Grocery.¹³ Other participants, complete an apprenticeship program within their university farm/garden, and went on to found the Stanford Student Farm, as well as the

⁹ As the organization’s website describes, “The Afri-Can Food Basket was established in 1995 and is dedicated to building strong, sustainable, local food systems that ensure access to affordable, nutritious, and culturally appropriate food for all people at all times. Our programs are a comprehensive blend of urban agriculture training and technical support for community projects helping low-income communities become more self-sufficient accessing food through growing their own. AFB is working with communities to help advance community food security through youth leadership development, urban farming, community garden, back-yard gardens and children garden animation, children/youth community food security curriculum development, urban agriculture harvest exposition and food policy advocacy.” <http://blog.africanfoodbasket.com/>

¹⁰ As ChocoSol’s website describes, “ChocoSol is a community of innovative and dynamic individuals engaged in a trans-local trading relationship that goes beyond mere commerce to intercultural dialogue and reciprocal relationship building. [It] is a learning community/social enterprise that uses artisanal chocolate as a symbolic product that incarnates the values that we make part of our art of living and dying with dignity. [] We host social gatherings known as Chocoladas to celebrate friendships, the seasons, artists, community initiatives as well as our freedom as free-thinking individuals who believe that other worlds do and can Co-Exist.” <http://chocosol.posterous.com/2012-workshops>

¹¹ A former farm/garden participant grew the urban farm program at the Alamada Point Collaborative which is primarily known as a housing and community development organization, but is now using food as a tool for urban renewal. http://www.apcollaborative.org/GYPSectionfiles/Meet_urbanfarm.html

¹² Former farm/garden participants operate an urban farm and CSA which allows them to provide consulting services for urban farm design and management using sustainable agriculture. <http://digginrootsfarm.com/consulting/>

¹³ People’s Grocery was founded by food movement ‘rock star’, Nikki Henderson; however, former farm/garden participants have worked within this organization to help it grow. As People’s Grocery’s website explains, “Over the last nine years, People’s Grocery’s urban agriculture, nutrition, and enterprise programs provided healthy food access while setting the stage for a systemic conversation about healthy food in West Oakland. Organizations across the country have replicated our work, and our leadership development models represent innovative strategies to catalyze resident power in the creation of health equity through food. Our work has raised the profile of food issues within movements addressing health, the environment, economic development, and cultural competency.” <http://www.peoplesgrocery.org/>

organization Nourishing the Planet.¹⁴ This former farm/garden participant also became a TED lecturer on urban food production related to their work as a senior fellow at the Worldwatch Institute.¹⁵ Moreover, the director of one university farm/garden was not available to be interviewed because of extended leave of absence to help establish a university farm at Yale University. In addition, past participants of university gardening organizations have established community gardens, farms, and home gardens in areas they moved to after graduation.¹⁶

In comparison, university farms had further-reaching implications than university community gardens due to the interactions they had with students on campus and within surrounding communities. This is mainly attributed to the farms' academic infrastructure, consistent supply of funding and sustained participant interest. As one key informant explained their farm is conducting a number of community development activities, such as:

- The [farm] has been a sponsor of [the local] Transition Society's Food Energy Descent Action Plan (Food Community Resilience Plan), which also involves the City['s municipal government.] Internationally, Transition Town movements provide a ... basis from which to spur large-scale planning and policy change...
- Partnering with other local grassroots non-profits and institutional organizations involved in food security initiatives.
- Involving community and regional planning students from the university.

¹⁴ As Nourishing the Planet's website describes, "The Nourishing the Planet project assesses the state of agricultural innovations—from cropping methods to irrigation technology to agricultural policy—with an emphasis on sustainability, diversity, and ecosystem health, as well as productivity. The project aims to both inform global efforts to eradicate hunger and raise the profile of these efforts, while simultaneously considering the institutional infrastructure and investment each analyzed approach requires."

<http://www.worldwatch.org/nourishingtheplanet>

¹⁵ As stated on their website the mission of the Worldwatch Institute is as follows, "Through research and outreach that inspire action, the Worldwatch Institute works to accelerate the transition to a sustainable world that meets human needs. The Institute's top mission objectives are universal access to renewable energy and nutritious food, expansion of environmentally sound jobs and development, transformation of cultures from consumerism to sustainability, and an early end to population growth through healthy and intentional childbearing."

<http://www.worldwatch.org/mission>

¹⁶ As illustrated in Table Q13.1 (Appendix D), six participants said that they knew of former participants who continue to participate in local gardening initiatives after their experience at the university farm or garden. The type of gardening activities past participants of university gardens became involved in were: community gardens, farms, farming apprenticeship programs, as well as urban agriculture and local food organizations. However, this question was difficult for even longstanding organizers, as none of the garden's had formal mechanisms to track where former participants end up, and none had remained in extensive contact with past participants.

- Hosting special gatherings, film screenings, tours, ‘free schools,’ workshops and book signings related to topics such as food sovereignty and urban agriculture planning.
- Maintain[ing] involvement on food policy councils, neighbourhood councils, cross-Canada initiatives on farm-to-school local food procurement, campus local food initiatives, etc (CGO6).

Unsurprisingly, the university community gardens (U of C, York, UVic) in this study were not as far-reaching in their community development activities as the two university farms (UBC, UC Davis) established 20-30 years earlier. University gardens, though, were able to conduct a number of community building activities (e.g. workshops, festivals, picnics, barbeques) with their members. However, as one garden organizer explains,

Obviously, without the community within the community garden you really lack the aspects and ripple effects of a community garden. Once you have the administrative portion of the garden on lockdown you need to focus on the development of community itself (CGO3).

Six of the seven key informants did not see a direct relationship between their gardening activities and planning. However, the majority of key informants (5) said university gardens/farms, as working educational models of agricultural production within cities, could be important for planners. Six of the key informants saw themselves as demonstrations projects that serve as an educational resource for obtaining practical skills and environmental knowledge. As one informant who was a garden organizer explained,

Just operating a successful example could be the best way they can inform future planning. I don’t think there is a ton of room for community garden coordinators to involve themselves in lobbying or advocacy activities, it’s beyond the job detail of the coordinator. [However,] if a progressive councilor was looking for innovative ideas to use green space, or mobilize community members; you can run a community garden to demonstrate to a planner, or a policymaker and it could be effective in that sense (CGO3).

Six of the seven key informants reported individuals from other community gardens, school garden programs, indigenous communities, local food organizations, and university administrative staff have come to them for advice. Therefore, there is anecdotal evidence

suggesting university farms and gardens are functioning as ‘good agents of change’ and constitute effective demonstration projects of urban agriculture.

The results of the practicum research suggest that university gardens/farms are indeed ‘magnets for idealism,’ or ‘gestating ground for budding food activists’ which help to integrate participants into local gardening networks. As one key informant explained,

I believe that we have helped nurture many individuals who have become agents of change. Actually I don't think they became agents of change because of us, I think we helped them develop some skills and sometimes perspectives and those sorts of things. So if you think change agents are people, I think we have a lot go through [our garden] and I think we've helped some of them become change agents (CGO7).

All of the key informants (7), when asked, thought they were ‘good agents of change’, and when compared with criteria of van Vliet (2000) and Milbrath (1989) (Section 2.4) four of the five university gardens studied in this practicum are demonstration projects that can be considered ‘good agents of change.’ One garden not able to meet the criterion continued to struggle with sustaining interest from student participants. Due to sporadic leadership from students, this garden has not been able to sustain interest or ideals from students in previous years. This factor made it difficult for the university garden to achieve steps four through seven of van Vliet’s indicators and the step four of Milbrath’s criteria. Nevertheless, the majority of university gardening organizations were considered to be effective demonstration projects in this analysis of AU. Therefore, it can be concluded that university gardening organizations are important for planners, educators, and government officials to examine, when considering ways to create more healthy and sustainable urban environments.

5.4 Leadership and Organization

A number of themes were identified through the analysis of interviews with key informants, described below, on how to create and sustain good leadership within a garden. The research indicates that the strategies in these themes contribute to long-term success.

5.4.1 Barriers and Opportunities in the Garden's Development

The largest barriers identified by three university community gardens and farm organizers were high turnover in garden leadership, lack of a stable source of funding, and insecure land tenure. The farms/gardens with a stable source of funding had more formal leadership structures which enhanced the institutional memory of the organization, and allowed the garden to build upon the successes and failures of previous years. The retention of institutional memory was notably more of a challenge for the university gardens than the university farms who received funding from their academic institutions. Yet all of the gardening organizations were able to overcome the challenge of transferring knowledge in different ways for the time being. The university farms did so through their staff and academic linkages. One garden received grants its two garden coordinator positions, while two university gardens received no funding from their academic institutions. To remedy the issue of having an unpaid coordinator one garden petitioned for a referendum question in which the student body voted to donate 76 cents per full time student to the university community garden. The key informant who organized the petition and referendum question explained,

“[P]lanning was a huge barrier, but now it isn’t because we are getting over \$20,000 dollars a year. So that’s not a huge barrier anymore [...] I think students that go out to vote have more progressive ideas and they’re like ‘yeah I’m giving 50 cents to a community garden’ because it’s hard to say no to” (CGO2).

Once funding for a stable leadership position was secured, the university farms/gardens researched in this study have shown that a garden can begin generating money through on campus farmers' markets, CSAs, and by organizing large fundraisers and harvest festivals. The two university farms were also able to generate revenue through community events, academic and community partnerships, and grant writing. As revenue is generated, infrastructure, community development projects and capacity building programs can be expanded. While a small group of dedicated volunteers can achieve similar outcomes, it is more difficult to retain knowledge. Three of the five university gardening organizations cited knowledge transfer as an ongoing difficulty, and two of the gardens were still rebuilding their garden, years after losing dedicated members of their steering committee. As one garden organizer explained,

When [my co-coordinator and I] started out, just a little before this time last year, there were few, if any, systems in place or models that have operated in the garden in years past, so there was a huge rediscovery process in sort of digging up information on the 11 years prior to my involvement in the project. As a result of the project falling into a state of disrepair, we had also lost a lot of institutional support and legitimacy we once held, so there is a process of rebuilding that in terms of profile on campus. We also had to re-obtain our club status, and rebuild our public profile on campus through promotion and events and convince faculty and the department to offer support. So far, we have received very little support but we do receive support in the supervision of courses in the garden and speaking well of the garden to other faculty in other departments ... Then continuity from year to year is a big one. I'm graduating this year and I hope to be involved in the garden but you never know. So an ongoing barrier is passing the torch from year to year, and the systems you've developed in one year are maintained the next. I think that is probably the most important (CGO3).

However, once a stable supply of money for leadership positions was established through grant funding for two coordinator positions, the enrolment in the garden began to flourish once again. The U of C garden was the only organization without a paid student coordinator position. U of C continues to struggle with gaining student interest, but has been successful due to high participation rates from members within the surrounding community. Had community members

not taken over the majority of plots, this garden would cease to exist. However, it is now difficult for students to purchase a plot in the garden unless they choose to garden in the communal plot.

Land tenure is impacted by development pressures. Three of the five university gardens had been moved by their institutions in favour of new developments such as parking lots, housing complexes, or a children's hospital. Only the two university farms researched were able to stave off development pressures by garnering extensive support from students, faculty, community members, and local environmental organizations. Since the positive efforts of these organizations were highly visible to community members, and tied to the academic activities of the institution, they were able to demonstrate their importance to both the university and its surrounding community. Two of the five gardening organizations still do not have land tenure, which has been a significant factor in building infrastructure to assist in the garden's development. As one garden organizer explained, not having land tenure when a garden begins may have negative outcomes,

We did have a landscape designer come to us when we were about to move. So we secured the site and there was this guy who wanted to do this fantastic design and he did a first draft of this really nice design, and it included an amphitheatre [where] we could have classes outside. He gave consideration to the lighting and the shade of the trees over different areas, and he designed the whole thing. We were going to give him a plaque or something within the garden because he was doing it all for free, and then the Office of Sustainability just wouldn't deal with him, they just would not let that happen. So in the end they said just do us up a plan and it was rigid, it had a maximum number of people in the space, so it doesn't have the sort of character. This could have been a real state of the art opportunity right, with a designer who could really make a showcase garden that the university could be proud of. But no, we have what looks like little graves all lined up. And alright all good and fine we'll make the most of it, but it's very square. We try and incorporate some round edges but we get our fingers slapped every time we put our shovel in the ground it's not already been authorized ... But they did give us the space and laid out all the water for us, which is more than we had before. Although they are requesting now that people pay for water that they put a meter on, and we don't know what that will cost and we are very nervous about that. But we don't know if they will charge us in the end, because they have done that in the past where they say that they are going to charge us and didn't (CGO1).

The importance of secured land tenure cannot be understated. However, the gardens researched that have been moved throughout their history have been able to build on lessons learned at the previous site. When a move takes place, a strong steering committee can make new arrangements with the university to ensure the new space is over and above what participants had at the previous site. Secured land tenure must be advocated for from the beginning, to enhance the development of a university garden or farm; otherwise, the development of garden infrastructure will be stifled as nothing permanent can be built because “things have to be moveable in theory” (CGO2).

5.4.2 Good Leadership with the Context of University Community Gardens

Key informants were asked to define ‘good leadership’ within the context of a university garden or farm. Good leadership was more or less defined as someone who can manage and engage garden participants effectively, communicate with the administration, gather participant input on an ongoing basis, and foster a sense of community within the garden so it is welcoming to outsiders. Strong and effective communication was seen as vital to creating institutional memory within the farm/garden, and strengthening relations within the academic institution. All but one of the five gardening organizations investigated here used highly collaborative decision-making processes within their organizational structure, including the university farms, which had a more formalized and hierarchical structure. There was a strong emphasis on collaboration with the administration amongst longstanding members of community gardens and farms.

A number of themes were identified by key informants to create a successful university farm/garden that stem from having a strong leadership structure. The first theme, as one organizer explained is to, “[m]ake sure you have a strong steering committee or coordinating

team in place, before you do anything and don't make it up as you go along - have realistic goals you'd like to [achieve] for the summer and work towards those" (CGO3). The organizational structure of four of the five gardening organizations had a steering committee and paid coordinators, which consisted of elected, appointed and paid representatives. When gathering input from participants the steering committee and paid positions made the final decision on whether an initiative put before the committee was plausible at the present time. Only one garden (U of C) used a broad-based form of leadership in which participants had the same voting rights as garden executives, but consensus was used as the basis for steering committee and sub-committee meetings. In circumstances where a participant wanted to begin a new project in the garden (e.g. food bank donations) the steering committee would delegate the participant the responsibility of organizing that project on behalf of the other members in the garden. As one key informant explained,

We have always had a keen group of people, who prefer to operate by consensus, so we don't stick to the formality of Robert's Rules, but we do put it out there for board members and if we had to vote, we would. Generally we talk through decisions and it seems to work. But we get a lot of people who come with ideas, and they say things like 'the garden should do 'blank'. And then I look at them and say that sounds great so why don't you take that on, and then if they want to take it on they are becoming part of the leadership team. I don't take kindly to people saying what the garden should do – it's your garden make it happen. I'm always trying to separate people from the idea that I'm going to get the executive to do something. We try and get them to take ownership and try to make something happen themselves. So they can take an idea, organize it, and make it happen. We never really have to vote, it's usually 'that sounds great why don't you become membership coordinator, or site coordinator', and that way they either stop complaining [or] the next step is [become the] coordinator (CGO1).

On the other hand, the two university farms, due to their academic linkages, had much more formal organizational structures supported by funding and infrastructure from the university. A key informant from a university farm explained its organization structure as follows:

While it involves some aspects of hierarchy, our organizational chart is fairly participatory (i.e. staff members often have input into their role and place in the chart)... Decision-making and communication: We operate on a 'cluster' system in which staff members belong to one or more clusters that relate to their work (e.g. Academic cluster, community cluster, farm cluster, Aboriginal cluster, children's programs, etc.). There is considerable overlap between clusters, and a single rep from each cluster attends a weekly 'cluster leader' meeting to report to other cluster leaders ...Within the clusters, we attempt to make decisions by consensus where possible. We also have an Academic Steering Committee consisting of staff, faculty, neighbourhood and student representatives. The purpose of this committee is to inform higher-level decisions, such as capital projects (e.g. a new Farm Centre building and on-site Sustainability College) (CGO6).

There appear to be three overlapping themes: 1) shared leadership was used to engage participants (4 of 5 gardens/farms); 2) a hierarchy of roles existed within these organizations (5 of 5 gardens/farms); and 3) all gardens used formal and informal (e.g. in-garden meetings) processes of consultation to engage participants (5 of 5 gardens/farms). The only garden that based all its decisions on broad-based consensus was the one garden without a paid coordinator which made accountability less of an issue. This garden may have to adopt more formal roles when it receives a consistent source of funding, as external funders often ask for supporting documents (e.g. end of year reports) to ensure their investment is being maximized.

The analysis also demonstrated both 'institution' and 'student' led gardening organizations had flexible and participatory organizational and management structures, and received on-going feedback from participants. However, university farms did have a more educational role, which required less input as the majority of participants are striving to acquire new knowledge (e.g. traditional ecological knowledge, sustainable agricultural practices, permaculture design principles).

In terms of an identifiable style of leadership, all of the organizations used a participatory style of leadership used more often by women in decision-making processes—despite four of the key informants being male (Pinker, 2012). As one female informant explained,

I've noticed that female leaders tend to exhibit a more participatory approach to leadership that is similar to the style of 'shared leadership' described in a recent Globe and Mail

article.^[17] They more readily recognize that despite occasionally being onerous, seeking input on major decisions and also on communication ‘check-ins’ ultimately fosters a healthier, more vibrant work environment (CGO6).

At the same time, six of the seven key informants were unable to assign a gender specific style of leadership due to a lack of experience or a diversity of personalities encountered within their gardening organizations. However, the participatory decision-making structure within these organizations is a style of leadership that has been historically used more by female leaders (Pinker, 2012). As such, this practicum research suggests a participatory or female style of leadership works best within the context of university gardens and farms.

5.4.3 Creating a Successful University Community Garden

A number of actions were identified from the analysis of the key informant interviews that organizers of existing university gardens and farms could follow to create long-term success. When asked what made their organizations successful, there were three main themes that emerged from the responses of the key informants: building the social capacity of its participants; continually gathering participant input; and creating plans that set realistic and achievable goals (Appendix D, Q12). Three key informants also specifically stated that the primary purpose of the garden is to serve the participants and expand their capacity to garden. As one garden organizer explained,

I think basically it's about knowing who the farm is for and trying to do what is the best thing to make it work for those people. Immediate users in our case are the students going all the way up the administration. If you want to use the word ‘stakeholders’, all those people are stakeholders. They all have legitimate claims and what is going on and trying to see where there is common ground and what works for people, it's been the most important

¹⁷ Joseph Nye's (2012) article *Even in a 'woman's world', gender does not matter* in the Globe and Mail highlights the findings of Harvard Psychologist Steven Pinker's research in *The Better Angels of Our Nature*. Nye (2012) concludes that, "In the past, when women fought their way to the top, they often had to adopt a 'masculine style.' Now, however, with the information revolution demanding more participatory leadership, the 'feminine style' is becoming a path to more effective leadership. Men will not only have to value this style in their women colleagues but will also have to master the same skills" (Nye, 2012, p. 1).

thing we done over time. There was a period around the early nineties where there wasn't much interest in what we do at all, [a] lot of what we've done like offering formal courses in ways to make the farm more accessible to people. So you have to find out what they want to meet them halfway and meet them where they are at, and make the farm accessible to people and make it inviting. I know we could do a better job at all of these things there is just a limit to what you can do with the resources that you have. I think the main thing is to think about it and be a little bit humble about it, and be open to new ideas and maybe people saying you can do this a little bit better (CGO7).

The university farms/gardens researched also encompassed a flexible and collaborative leadership structure to accommodate the evolving interests of participants. Since the interests of participants, in general, constantly evolve, a strong leadership structure could provide the institutional memory required for leadership development and longstanding success. However, being flexible to the interests of participants did not mean reinventing the garden on an annual basis. Rather it meant adopting a shared style of leadership, which allowed participants to pursue individual interests, if they overlapped with the guiding principles of the garden. When a collaborative leadership style was adopted it prevented a 'to each his own mentality,' which was identified by one key informant as detrimental to the success of a university community garden (CGO4).

While the majority of key informants within this research identified a few broad themes to assist new university gardening organizations, one farm organizer offered a detailed set of guidelines from his/her experience that others could follow. The organizer noted the guidelines would vary depending on the context in which they are applied:

- Ensure that the farm or garden is clearly linked to larger university academic initiatives and goals. Thoughtfully adopting the use of the university's lingo and catchphrases can be very useful.
- Learn as much as possible about the Aboriginal stewardship and history of the land upon which you are attempting to establish a garden/farm. If at all possible, involve them as decision-makers on how the land is used moving forward.
- Recognize that food production is only one way to engage people at a university farm/garden, and that food can serve as a centerpiece in a larger conversation about building healthy communities (e.g. discussions on waste, energy, distribution, culture, family, art, politics, gender, spirituality and religion, etc.)

- Draw upon a wide range of community stakeholders, and use the establishment or expansion of the farm/garden to build bridges across generations, cultures, ethnicities, class, gender, academic disciplines, spiritual beliefs, etc.
- Draw upon university resources and expertise (e.g. business and commerce students can help with the development of business plans, engineering students may have expertise in design-build projects, etc.) (CGO6).

5.4.4. Creating a Sense of Place

The creation of social relationships between garden participants was acknowledged by the key informants as very important to the success of a university garden or farm. Fostering relationships between garden participants serves to share knowledge, creates mutual trust, encourages gardeners to help one another, and helps to develop new projects within the garden.

As one key informant explained,

You need to generate a strong sense of community within the garden and you do that through community events such as potlucks, workshops, community meetings and just regular attendance to the garden. So without people attending the garden and attending events, and people physically occupying the garden you lack that important sense of what a community garden is ...I don't know if it's possible to strategically design relationships, but you can provide spaces where the environment would be more conducive to people interacting. We don't do garden speed dating or anything, but by running our community events and just maintaining a presence in the garden. I think people naturally develop those relationships, so our community events and workshops and activities for day to day just help to foster those relationships naturally, and those are positives for any number of reasons, its community building (CGO3).

The key informants within this study used work parties, in-garden picnics, workshops, harvest festivals, fundraisers, barbeques and field trips to build relationships amongst their memberships. Moreover, all of the key informants saw social relationships extend beyond the garden, as one farm organizer stated, “There are people who create or strengthen friendships out here. I created a family with someone I met out here when I was a student...” (CGO7). According to key informants in this research all of the university community gardens/farms have seen professional, personal, and even marital relationships develop, which have extended beyond the borders of the garden. As key informant CGO4 described, “the garden is the watering hole.

People come to tend the garden, but there are spin offs from that.” These include friendship, mentorship, and relationships within different community groups. Of the five university gardening organizations studied three have seen marriages, and “[m]any platonic friendships and professional relationships have also stemmed through connections that were originally instigated at the farm” (CGO6).

Six of the seven key informants noticed that design features helped to build a stronger sense of place and enhance participant’s attachment to their gardening space. Three of the university gardens researched had minimal infrastructure and design features such as: picnic tables, tool sheds, benches, access to water (Appendix D, Q11.2). Some of the special features of university community gardens included: bird feeders, fire pits, children’s play area, community art installations, and sculptures donated from students in Fine Arts. All of the university community gardens wanted to build additional infrastructure like: cob ovens, benches, play areas, and classroom spaces to have potlucks and educational events (CGO2, CGO3, CGO5). However, obtaining permission to have a cooking area on a space without permanent land designation proved difficult for the only garden that made an attempt. A garden organizer provided the following reasons for such a design intervention,

I think the first project I would like to develop would be to build a pavilion space for educational activities to take place as well. Where we are, there is very little tree cover and its full sun throughout the day. Often on the hottest days of the summer, people usually want to get in and out of there as soon as possible just because it is so swelteringly hot. If we need to look at developing a gathering space that has shade, that would facilitate people staying at the garden a little longer. So they can sit and have their lunch there and pop back into the garden (CG03).

From the cases studied, it becomes clear that university farms have significantly more design features than university community gardens. This is unsurprising given that the university farms in this study are large educational spaces with secured land tenure, academic programming facilities, and have a number of community outreach programs. In addition to the revenue the

university farms generate from their market gardens and CSA programs, they are also tied to capital planning funds from the university and have a number of students doing research projects, using these farms as a living laboratory. Also university farms have a much broader impact on their surrounding communities which has made them spaces for community events. Unique design features included within a university farm/garden were described by one key informant as follows:

1. Traditional smokehouse
2. Poplar Grove in which many weddings take place
3. Hopyard [i.e. a field where hops are raised]
4. Heritage apple orchard with 70+ varieties of apples, including informational signage (popular site for weddings).

Many people feel very drawn to the Children's Learning Garden, which includes a beautiful cob structure, hand painted signs made by children and pottery artwork made by volunteers. This garden provides extensive therapeutic benefits for site visitors and program participants.

Design interventions such as a traditional smokehouse ha[ve] allowed for urban Aboriginal communities in [the inner-city] to keep alive and pass on traditional knowledge on salmon preparation. This has been particularly important for male members of the urban Aboriginal community. Picnic tables, garden beds and a public mural near the site of our Saturday Farm Market have served to build a sense of place and welcome site visitors (CGO6).

The design features used by successful student farms allowed them to facilitate social activities like educational workshops for community groups, harvest festivals, barbeques, etc – all of which make the space more accessible to the campus and surrounding communities. The integration of the local vernacular serves to enhance the space and create opportunities for mentorship, relationship building, and intercultural interaction (e.g. Indigenous groups apply and teach traditional ecological knowledge practices). It is important to integrate traditional ecological knowledge as a design feature in the vernacular of the garden, as this knowledge serves to enhance sustainable agricultural practices in the region.

5.5 Outcomes of the Practicum Research

The interviews conducted in this research provided further insight into gaps in the emergent literature regarding the success of university community gardens, and the challenges associated with successful leadership. In relation to the analysis of successful leadership, this practicum identified that a shared leadership approach is best suited to university community gardens. Shared leadership allows for the delegation of tasks, sustains participant interest, and enhances processes of leadership development within the farm/garden, and prevents a ‘to each their own mentality’ amongst garden members.

The present research illustrated how ‘institutional’ and ‘student’ led gardens can be managed to be ‘good agents of change,’ and enhance gardening activities on university campuses and in surrounding neighbourhoods. The research also built upon the existing literature on community gardens as community development tools, and illustrated their importance to municipal planners and policymakers. Yet the research highlights that the majority of key informants had difficulty identifying one or more linkages between university gardens and future planning and policy directions. Many of the key informants saw themselves as educators of practical skills and the majority did not engage in advocacy or planning work—even though many cited past participants that had gone on to become involved in these activities. This can be seen as a challenge for planning professionals to work with organizers and within these organizations, as the perspective of many key informants in this research focused primarily on teaching participants to grow food, manage participant interests, and take responsibility within an organization. While these skills serve to build the capacity of participants, many saw advocacy or planning work as something that was currently beyond the scope of their organization.

Finally, this practicum research sought to understand why university community gardens, despite being located in highly transient neighbourhoods, continue to have long term success. University community gardens and farms benefit from highly dedicated volunteers and community members, as well as financial support from their academic institutions. Furthermore, university gardening institutions are ‘magnets of idealism’ and ‘living laboratories’ as students use them to apply ideas they are learning in the classroom, and serve to teach individuals how to garden. Additionally, many students do not have access to greenspace as many are apartment dwellers. Students, community members, and administrative staff are continually drawn to use the garden for recreational purposes as they live and/or work at the university, or live in close proximity to the campus.

5.6 Reflections on the Interview Processes

In hindsight, some additional analysis of longstanding community gardens at universities within the United States could have been added to this study. As well, additional questions would likely enhance the outcomes of this research. In particular, the present inquiry could have asked specific questions about food systems planning frameworks (e.g. Transition Towns), which would have been included in the handout as a framework complementing AU (See Appendix B). As well, this researcher could have stipulated a minimum number of years for a garden organizer to be involved in the garden in selecting informants. One key informant was unable to respond to a few of the questions, as 2012 was their first year on the steering committee. Also some of the open-ended questions caused confusion due to their generality, at least three questions needed to be clarified for the majority of key informants during each interview (Appendix A, Tables Q3, Q11, Q13). Moreover, different questions in the interview

had some overlapping responses, but many produced a diversity of responses, which reinforced themes within the emergent literature (Appendix D, Tables Q7, Q7.1, Q11.2).

Before conducting the key informant interviews, previous assumptions were made that university gardens may have had some contact with one another, but this was not the case. Time constraints had an unanticipated impact on the outcomes of this research. If time had not been as limited, a focus group involving all the key informants via Skype could have been held. A focus group with the practicum's key informants would have allowed for more social learning to take place, and helped many key informants realize the connection their organizations have to larger food systems and planning frameworks. If a focus group had been part of the research design, key informants may have had more of an opportunity to come up with collaborative solutions to integrate these guidelines into their university garden's activities. However, conducting such a focus group would have had to wait until the off-season as the majority of key informants indicated they were extremely busy; Spring being their busiest season of the year.

6) CONCLUSIONS

The intent of this research was to answer a series of questions to gain a better understanding of the leadership style, management processes, and organizational structure of successful university community gardens/farms; in addition to assessing the impact these organizations have on increasing agricultural production in the cities and regions in which they exist. Despite the increase in the number of university gardens and farms across North American campuses in the last 10 years, planners have paid little attention to the influence these spaces have on sustainable campus and community development. Without understanding the impacts of these ‘living laboratories’ on urban and regional planning, university farms/gardens may be neglected by university administrations, faculty, and campus planners.

Based on the findings derived in this practicum research, this researcher would recommend garden executives follow guidelines provide by Milburn & Vail (2010) and Sayre & Clark (2011) when a student initiated farm or garden is established or expanded. The outcomes of this study serve to reinforce many of the findings of both scholars in regards to leadership, management processes and design recommendations. Moreover, the findings of this research are consistent with the findings of Twiss et al (2003), Glover, Shinew, & Parry (2005), Teig et al (2005) who suggest that strong leadership is paramount to maximizing the long-term success and community development potential of a community garden or farm. Strong leadership builds consistency within the university gardening organization, gains respect from partnering organizations (e.g. university, local gardening organizations) and community members, and allows a university farm/garden to flourish. As Section 5.4.1 of this research shows, campus and city planners may not recognize the wider implications of university gardening organizations without support from students, faculty and community members.

6.1. Revisiting the Research Questions

The four research questions of this practicum address the tools needed to create and sustain a university gardening organization, as well as illustrate why these spaces are important to sustainable community development. Fundamentally, the questions explore the possible connections between the participants' involvement, Agricultural Urbanism, and the potential opportunities for educators and planners to work collaboratively. Revisiting the questions in this concluding chapter emphasizes this research as an ongoing process of exploration.

1) What leadership and organizational skills, knowledge and processes contribute to the success of the gardens or farms in question?

University garden organizers need to have a strong understanding of the technical, managerial, and communication skills necessary to manage the interests of participants, as well as the ability to align them with the goals and objectives of their academic institutions. Effective communication is seen as the most important quality within garden leadership, as it helps strengthen relations within academic institutions, contributes to managing the skills of garden participants, creates institutional memory, and helps effectively manage the time and resources of a university farm/garden.

To create a consistent and reliable organizational structure, a collaborative and flexible style of shared leadership between the farm/garden coordinator, steering committee, and participants should be used. An elected steering committee with a paid coordinator brings cohesion and consistency to the garden's activities, which allows garden participants to set realistic goals and objectives. Through shared leadership, the coordinator is able to identify the strengths of participants, delegate responsibilities, and enhance processes of leadership development. Successful leadership development takes place when there is a system of record

keeping, mentorship between gardeners, and workshops and courses offered which are linked to academic programs.

When continuity in the administrative tasks of the garden is achieved, the organization is then able to engage the broader community, and form partnerships with academic programs and community groups. Farm/garden activities should also extend into the greater campus and involve surrounding community members, to attract participant involvement and academic and community partnerships.

A diversity of knowledge is needed to make a university garden successful. Establishing relationships with local environmental and urban gardening groups early in the garden's development is *highly* encouraged. Participants are able to gain technical knowledge and benefit from the financial and educational resources these organizations have to offer. There are also benefits to involving faculty, administrative staff, and community members from the beginning, as garden organizers are better able to 'speak the language of the administration' and more effectively advocate on their own behalf.

Garden leaders should also have an understanding of how their garden/farm fits within larger planning and food systems frameworks (e.g. Transition Towns, Agricultural Urbanism). This allows them to be more effective when formulating partnerships with local food organizations, university administrations, and municipal governments. Knowledge of these frameworks provides them a larger ideology in which to 'hang their hat', and serves to educate participants about the larger impact their individual efforts can have in fostering sustainable behavior on campus and in surrounding communities.

2. How can newer university community gardens build on the successes of existing ones?

There are a number of overlapping social processes and design considerations that new and existing university gardens/farms can use to increase participant involvement, garner funding, and create programs to broaden the reach of their organizations. There is no ‘cookie cutter’ approach to designing a successful university garden. However, it appears that land tenure, funding, succession planning, involvement of local gardening organizations, academic linkages, and the offering of food and educational services (i.e. campus farmers’ market, composting services, educational workshops, apprenticeship programs) can help external stakeholders (i.e. partnering organizations, community members, city planners) see the value in the garden’s activities. Once younger university gardens or farms have land tenure and stabilized management structures (e.g. permanent staff), they can more effectively link their efforts to larger planning and food systems frameworks. There is currently a gap between university gardening organizations and larger planning frameworks despite having common goals and objectives. If these frameworks are explored in more depth, they may be able to help inform strategic goals and objectives and formulate new partnerships. This would serve to create more visible processes of sustainable community development within urban environments.

3. With respect to these approaches, how can they be, or how are they, translated into different urban environments?

The findings of this study illustrate that strong leadership is vital to the success of university gardens. If university gardens are to become ‘good agents of change’ within their cities they must: 1) have a have a strong, collaborative, and flexible leadership structure; 2) effectively communicate with participants, community members, and their administrations; 3)

generate a consistent source of funding; 4) demonstrate their success on their campuses and within their communities; 5) create linkages with academic and community development organizations; 6) create goals and objectives that overlap with university and municipal strategic plans and food policies.

A particular emphasis on partnerships and academic linkages allows the organization to produce innovative knowledge within the field of sustainable agriculture. While university community gardens can exist without these linkages, they are less likely to become convivial spaces that have longstanding impacts on the cities and regions in which they exist.

4. How can these gardens inform university, professional, and/or government policy with respect to building more sustainable cities?

As noted in Section 5.3, organizations in this research can potentially be ‘good agents of change’ in the communities in which they exist. As university farms and gardens serve to encourage dialogue about urban agriculture and food system thinking in urban environments, and engage students and community members in a range of community service learning projects where they can become ‘agents of change’. By increasing the visibility of agricultural processes within cities and highlighting their importance and linkages to urban planning, university farms/garden can potentially have an effect on the integration of food policies and community garden spaces on campus and in surrounding communities.

In conclusion, if planners, educators, and government officials are striving to enhance the environmental design and social and physical health of residents within their cities, they have an opportunity to use university gardening organizations as a means to educate and advocate for the integration of agricultural processes in and around urban centres. University farms/gardens are

notable resources that can be used to engage urban residents in urban agriculture, food systems planning, and to enhance the quality of life within urban environments.

6.2 Lessons for Planners

As the analysis from the key informant interviews in Chapter 5 have shown, university gardens can be important resources for urban and regional planners, as they can raise the environmental awareness of urban residents by demonstrating the social, environmental, and physical benefits associated with having agricultural spaces within cities. University gardening organizations serve as a ‘watering hole’ for larger discussions around sustainable community design, food system planning, and show participants how they can create sustainable change within their communities. The findings derived from this research also illustrate that university gardens and farms can have far reaching implications for the production and consumption of low cost organic food within their cities and surrounding regions. One of the reasons for this is because university farms/gardens have also become educational resources for schools, universities and community development programs, which serve to assist local food and urban agriculture movements.

University gardening organizations are also spaces of multicultural integration in which a diversity of participants share a common interest in growing food. City planners in North America must recognize the social impact community gardens have on agricultural processes in and around cities. As noted in Section 5.3, some university garden participants have gone on to start their own gardens, farms, urban agriculture organizations, and non-profit international food policy organizations.

As the results derived from this research show, the interdisciplinary nature of university farms/gardens has resulted in the creation and dissemination of new innovations within the field of sustainable agriculture and environmental education. These initiatives also link participants with local urban agriculture and community gardening organizations. Partnerships with aboriginal communities have been established partnership where traditional ecological knowledge is shared, preserved, and used to enhance the local vernacular. By cultivating university farms/gardens, city planners can encourage participants from all educational and cultural backgrounds to experientially learn about the social, physical, economic, and environmental benefits of agriculture within cities. As working models of how agriculture can be integrated into urban environments, university farms/gardens are able to engage urbanites in larger discussions around building healthy communities and sustainable urban design. As UBC Farm has illustrated, university farms/gardens are linked to planning frameworks (e.g. Transition Towns) and local environmental organizations (e.g. Food Policy Councils) which can act as conduits that promote healthy and sustainable community design. To maximize the positive impacts of university farms/gardens, planners should work with university sustainability coordinators, garden/farm organizers, local food organizations, and campus planners to demonstrate how agricultural activities develop communities in urban environments.

6.2.1 City Planners Role in Developing University Farms/Gardens

City planners have a limited role in the development of university farms/gardens. However, they serve to benefit from the knowledge produced by these ‘living laboratories’ (e.g. traditional ecological knowledge). Through enhanced interaction with university farms/gardens, city planners can develop positive relationships with individuals who may become ‘agents of

change' within their communities. By engaging garden organizers within university gardens/farms, city planners can develop food policies and urban renewal strategies that are cognizant of the social, cultural, and environmental variables specific to the region. Moreover, planners can develop goals and objectives with garden organizers and participants for increasing food production within and around cities. Together they can begin discussions on how a regional food system could be developed. The involvement of garden organizers in planning processes serves to educate university farm/garden participants on the goals and objectives of the city, and understand how agriculture initiatives they establish, or work within, can receive support from the municipal government.

6.2.2 Campus Planners Role in Developing University Farms/Gardens

As the findings of this study show, university farms/gardens rely heavily on the support of campus planners to occupy university land, access water, and develop the site with necessary infrastructure. Therefore, it is vital for campus planners to understand the need to protect and enhance these gardening organizations by providing them land tenure, access to water and encouraging academic linkages so these spaces can flourish. There are many benefits for campus planners who engage with participants of university farms/gardens, as they hold technical knowledge and experience on how to incorporate traditional ecological knowledge, permaculture and sustainable agriculture on the university campus. By engaging with garden organizers and participants, campus planners can increase on campus food production (e.g. edible landscaping), incorporate traditional ecological knowledge (e.g. indigenous plants/native species) and reduce water costs for the university.¹⁸ Moreover, campus planners should also see university

¹⁸ Water costs would be reduced if indigenous plants and native species are introduced into campus landscaping; however, water costs would remain the same or increase depending on the amount of edible landscaping

farms/gardens as an opportunity to enhance the reputation of their institutions. A Princeton Review (2011) survey found that 69% of college applicants say that having information about the environmental issues on a prospective college campus would contribute to their decision to apply or attend that school (The Princeton Review, 2011, p. 1). As sustainability report cards, like the Princeton Review's *Guide to 322 Green Colleges* become more well-known, it is important to integrate sustainable design practices into the university campus to enhance the reputation of the university. These environmental issues should be of concern to campus planners, as it is the responsibility of the campus planner to ensure the campus is developing in a way that is attractive to potential students; in addition to enhancing the quality of life and reputation of the institution they attend on a daily basis.

As the analysis of this practicum research illustrates, university and community gardens, whether 'student' or 'institution' led, are 'gestating grounds' for larger environmental discussions. They have the potential to illustrate to garden participants the impact collaborative planning processes could have on enhancing the sustainability of the communities, cities and regions in which they exist. If university gardens are to become transformative change agents within their regions, planners and educators should be willing to work and learn from one another to expand the capacity of university gardening organizations.

introduced to campus grounds. For instance, a campus orchard or vineyard can produce fresh organic produce but additional water consumption may be increase from traditional turf irrigation.

6.3 Defining How a University Farm/Garden Becomes a ‘Living Laboratory’

As described throughout the practicum research, university farm/gardens are important to demonstrate AU within urban environments as working models of alternative city and food system design. University campuses are living laboratories of innovation design practices, which can be implemented at a district scale, to influence similar development in other areas of the city. As David Suzuki describes (Section 4.2), the UBC Farm is a notable ‘living laboratory’ that generates and disseminates knowledge to create a more sustainable food system. Moreover, organizers from all five university farms/gardens in this research saw their gardens as ‘living laboratories’. The findings presented in this research provide an updated definition of what a ‘living laboratory’ can be within the context of university farms/gardens. The ‘living’ portion of the term can be conceived as a form of teaching tool that is constantly evolving with the interests of participants. While the term ‘laboratory’ can be described as a place in which participants experientially learn and gain practical skills which supplements knowledge learned in the classroom. As the literature review and research findings show, there are a number of specific tasks for stakeholders of university farms/gardens to undertake to construct an ideal ‘living laboratory’ that go beyond the activities of the precedents presented. If all of the stakeholders, noted below, become involved in a university farm/garden project they can enhance the impacts of the demonstration project on campus and in surrounding communities. Ideally, a ‘living laboratory’ would include the following stakeholders and complete the specified responsibilities for the university farm/garden:

Farm/Garden Coordinators

- Find funding for a full-time coordinator position to run educational programming, events, and workshops throughout the school year.
- Adopt a participatory style of leadership to engage participants and retain interest.
- Establish a consistent source of funding (e.g. CSA boxes to campus members, on campus farmers’ markets, educational workshops).

- Overlap goals of the university farm/garden with the academic and environmental goals of the university.
- Collaborate with the university administration and act as a faculty resource.
- Partner with local environmental food organizations (e.g. Transition Towns Movements).
- Create a school garden program that engages teachers and students from public schools.
- Involve interested community members (especially those without access to green space).
- Integrate communal spaces throughout the farm/garden (e.g. picnic tables, benches, gazebos, educational centres).
- Integrate student and participant art into the farm/garden (e.g. sculptures from the fine arts department, colourful signs, fences, gates, culturally reflective ornamentation).
- Use permaculture design principles throughout the farm/garden.
- Build communal spaces to facilitate interaction between students, faculty and community members.
- Host community events that are open to students, faculty, community members and local food organizations (e.g. workshops, conferences, food panel discussions, bbq's, harvest festivals).
- Invite local food and planning organizations (e.g. Food Policy Councils, Transition Towns) and cultural organizations to host events and meetings at the university farm/garden throughout the year.
- Integrate a Transition Towns Energy Descent Action Plan in the goals and objectives of the university farm/garden.
- Invite campus and city officials to community events hosted by the university farm/garden.
- Look for opportunities to establish partnerships with local schools, community groups, and indigenous communities within the region.
- Integrate Agricultural Urbanism design principles and food systems planning into the strategic plans and land use strategies of the university farm/garden.

University Administration/Operations

- Provide university farms/gardens with land tenure, a highly visible location, and access to water, and encourage academic linkages so these spaces can flourish.
- Incorporate garden organizers in administrative discussions on how to incorporate traditional ecological knowledge, permaculture and sustainable agriculture into the university campus.
- Provide space for the university farm/garden to advertise local CSA boxes.
- Encourage interdisciplinary use of the university farm/garden by authorizing sustainable agriculture and food systems planning as core credits or summer electives for all programs.
- Office of Sustainability should garner support from the administration for a Centre for Sustainable Agriculture and Food Systems to develop interdisciplinary programming between faculties.

- Endowment funds should be used to support a new educational faculty similar to UBC's Centre for Sustainable Food Systems, and UC Davis' Agricultural Sustainability Institute which has full-time staff and professors to teach sustainable agriculture curriculum in partnership with other academic programs.
- Office of Sustainability staff should work closely with the farm/garden organizers to fund capacity building projects (i.e. workshops, speakers, conferences) conducted to address on campus sustainability.
- Partnerships with local food organizations, indigenous communities, and urban renewal projects can be established through the Centre for Sustainable Agriculture and Food Systems.
- Require 'extra-curricular' involvement in the university farm/garden within academic programs related to sustainability to provide students with practical skills and experience.
- University regulations should be flexible to allow students and community members to build garden infrastructure (e.g. raised beds, sheds, benches, gazebos).
- Train grounds workers and maintenance staff to integrate permaculture, edible landscaping and traditional ecological knowledge into campus greenspaces.

Faculty

- Use an interdisciplinary approach to integrate agriculture into the university curriculum.
- Offer interdisciplinary courses at the university farm/garden to foster collaboration between different faculties.
- Offer apprenticeship programs to involve interested community members.
- Advocate for additional space, funding and staff to allow student and faculty research.
- Conduct applied design projects (e.g. architecture, engineering, fine arts) in the university farm/ garden.
- Assist in the development of research and community development projects within the university farm/garden.
- Formulate partnerships with local food organizations and indigenous communities within the city and surrounding region.

Community

- Involve local food organizations in the development of the university farms/gardens.
- Host workshops, forums, meetings, conferences, and community events at the university farm.
- Formulate partnerships between university farm/garden activities and local schools.
- Use university farm/garden as a resource for community development initiatives within their local neighbourhoods and the surrounding region.
- Involve cultural organizations in the formation of partnerships with the university farm/garden to promote healthy and sustainable living within existing organizations and socio-economic groups that participate in the garden.

City Administration

- Promote activities of university farms/gardens as a notable demonstration project within the city.
- Rent spaces at the university farm for community engagements and municipal food strategy meetings at the garden.
- Provide funding and administrative support for community development projects conducted between low income communities and the university farm/garden.
- Encourage agricultural initiatives throughout the municipality by allowing community farms/gardens to be developed within public parks and open spaces.
- Amend bylaws to allow for the integration of Agricultural Urbanism design principles and Food Systems Planning throughout the municipality.
- Integrate a Transition Towns Energy Descent Action Plan within the municipal sustainability strategy.

Professional Planning Practitioners

Campus Planners

- Collaborate with garden organizers on how to integrate edible landscaping and traditional ecological knowledge into the campus landscape.
- Amend municipal bylaws if the production of eggs or honey are restricted within the municipality.
- Encourage on campus beekeeping with bylaws for this purpose so that natural methods of pollination can take place and on campus honey produced.
- Allow chickens and bees to be kept at the university farm/garden and sold throughout the university farm/garden CSA or farmers' market.
- Encourage beekeeping throughout campus as well as at the university farm/garden to pollinate plants and sell honey to businesses on campus.
- Integrate a Transition Towns Energy Descent Action Plan within the campus sustainability strategy.
- Apply Agricultural Urbanism design principles and food systems planning within campus land use strategies.
- Facilitate the development of a closed loop for campus composting programs with the campus sustainability coordinator, operations staff, and university farm/garden organizers.

Municipal Planners

- Integrate knowledge produced from these 'living laboratories' (e.g. traditional ecological knowledge, permaculture) into municipal land use strategies.
- Engage university farm/ garden organizers and partnering food organizations to develop food policies and urban renewal strategies that are cognizant of the social, cultural, and environmental variables specific to the region.

- Develop goals and objectives with garden organizers and participants for increasing food production within and around cities.
- Educate university farm/garden participants on the goals and objectives of the city to work within or receive support from the municipal government.
- Integrate a Transition Towns Energy Descent Action Plan in the municipal sustainability strategy.
- Apply Agricultural Urbanism design principles and food systems planning within municipal planning documents and land use strategies.
- Begin discussions on how an urban and regional food system could be developed and implemented within the city and surrounding area.

6.4 Future Directions for Research to Advance University Farms/ Gardens

In the future an effort should be made to develop and establish a university community garden and farm network by researchers within North America. Ideally, an international conference should take place in which garden organizers, community members, university administrators, academics, and local food organizations are able to collaborate around solutions to enhance the success of university gardens. University buy-in is integral to creating a transformative university garden that enhances environmental education and community development programs within its municipality. A comprehensive list of speakers and support services should be offered to conference participants, and a network to facilitate ongoing dialogue between university gardens should be established thereafter. University gardens that are unable to attend this conference should be contacted to be a part of the network so that they can benefit and contribute to its development. This task can be conducted by masters' students with funded research or by staff at well-established university farms with grant funding from their institution, or become a summer project for a student working within the Office of Sustainability for a university with a successful university farm/garden.

Continuing to monitor the strategies and approaches that evolve from this network would serve to provide a number of insights for planners, local food activists, university administrators

and government officials. The conference and network serves to address barriers such as how universities without agricultural departments can create academic and community linkages to enhance the reputation of their university. Based on the results of this study there is an identified need for further research on the collective efficacy of university gardens, and how these student organizations gain support from administrators, faculty, local food organizations, as well as from the greater campus community. Future research should also analyze what kinds of skills and knowledge are enhanced through university gardens, and identify the areas in which collective efficacy is believed to be strengthened (Ozer, 2007, p. 858). Additionally, as this research has shown university secured land tenure and support from the university administration are integral to a university farm/garden's success. Future researchers and focus groups at the international conference, should analyze how agricultural colleges have 'sold' the value of their land to university administrations to attain land tenure and academic funding. By analyzing the arguments of student farms at Agricultural Colleges, university farms/gardens can expand on the discourse commonly used to advocate for spaces of sustainable agricultural production and academic research.

As well, quantitative and qualitative analysis should be conducted to determine the number of participants who either establish, or work for local food organizations after their experience participating in university farms/gardens; as well as to understand if and how their farm/garden experience influenced their current work. It is possible they may have insights that would benefit garden organizers and campus planners. By tracking the involvement of past participants in local food and gardening initiatives, planners can gain a greater understanding of the impacts that university gardens may have on the cities and regions in which they exist.

University gardening organizations within this research demonstrate the importance of having ‘living laboratories’. Students and urban residents can potentially connect with planning and food systems design frameworks, like Agricultural Urbanism and Transition Towns. Therefore, campus planners and garden organizers should collaborate to enhance the education of students, the reputation of the university, potentially attract students, and increase the overall quality of life on campus and in surrounding communities.

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Appendix A: Semi-Structured Telephone Interview Questions

Evaluation of University Community Gardens/Farms within Canada and the United States

General Background

1. How long have you been the coordinator of the community garden/farm at your university and how did you attain this position?
2. How many members does the university community garden/farm presently have? What portion of members are students, community members, and faculty?
3. What types of people are attracted to participate in your garden's activities?
 - i. Probe: activists, international students, new immigrants, parents, professors, business students?
4. What are the main reasons you feel your university garden has been successful?

Leadership and Organization

5. How would you define good leadership within the context of a university community garden/farm?
6. How would you describe the leadership structure and style of your organization
 - ii. Probe: Are decision-makers broad-based or elected/appointed?
 - iii. Probe: Have you noticed different leadership styles between men and women?
7. What were the main barriers, if any, your garden has overcome in terms of the management and operation of your university community garden(s)?
 - i. Probe: What barriers keep your program from having a greater impact?
8. What influence, if at all, does the university administration have on the garden's decision-making processes?
 - i. Probe: Relationship between garden and administrators (autonomous or dependent)?
9. How important, if at all, is obtaining gardeners' input regarding the operation and administrative processes of the garden?
 - i. Probe: How is gardener feedback obtained?
 - ii. Probe: What means are usually used to obtain feedback from stakeholders?
 - iii. Probe: Do you use social media or new technology (i.e. e-voting, webinars)?

10. How important, if at all, is building social relationships between garden participants?
 - i. Probe: What is the nature of these relationships?
 - ii. Probe: What types of activities do you organize to build relationships?
 - iii. Probe: Do these relationships extend beyond the garden?
11. Has the introduction of design features influenced social relationships?
 - i. Probe: Have design features helped build a sense of place or stronger attachment to the garden (i.e. picnic tables, community art, benches, trellises, etc.).
 - ii. What design features does your garden have that other gardens do not?
12. Considering the barriers and advances that have occurred in the development of your garden/farms, what was done to make the garden develop in the way it did? What steps would you suggest others follow when starting or expanding a university garden?
 - i. Probe: Considering the barriers and advances that have occurred and how you achieved your current level of success what did you do
 - ii. Probe: What do you think other groups elsewhere should do?

Garden's influence on surrounding communities (Interviewees will be provided with a handout on of agricultural urbanism in Appendix B):

13. What impacts, if any, does the university garden have beyond its borders?
 - i. Probe: For instance, have past participants become involved or begin other garden projects outside the university garden?
 - ii. Probe: Have you remained in contact with past participants and their projects?
 - iii. Do younger community gardens ever come to you for advice on how to garden?
 - iv. Would you consider your garden to be a 'good agent of change'? How, so?
14. Can you suggest in what ways successful university community gardens could inform future planning and policy directions for planners, for educators and for government officials?

Appendix B: Key Informant Informational Handout

Agricultural Urbanism

At present many North American cities keep agricultural processes away from urban centres, which prevent urbanites from understanding the physical, social, environmental or economic benefits of local food production. Yet when planners are able to remind urban residents of the environmental pressure they have on their ecosystem, citizens are more likely to reduce consumption of these natural resources, i.e. water, electricity, gas, agriculture (Hough, 2004). Planners have also come to realize the effect highly visible processes of urban food production have on community members within cities. In their design handbook for sustainable food and agricultural systems, *Agricultural Urbanism*, De la Salle & Holland (2010) show how to “establish a planning system that places value on agricultural land and promotes vertically integrated agribusiness. [This will help to] ensure that towns and cities will grow to be resilient in the event that global socio-economic or environmental conditions disrupt the globalized food markets” (de la Salle & Holland, 2010, p. 40). As De la Salle & Holland (2010) explain, “Agricultural Urbanism tries to support a more sustainable food system through planning and design and increase the profile and celebration of food in a community to enhance the quality of life of all who are there” (p. 93).

As Table 1.1 illustrates Agricultural Urbanism (AU) weaves together the many threads of urban planning and design with sustainable food and agriculture systems. The framework has proven successful in increasing public awareness of the physical, social, environmental and economic implications of producing and consuming local food. City planners have also noted increases in quality of life within urban environments when local food production (i.e. farmers markets, community gardens) is celebrated.

| | |
|--|---|
| Table 1.1 Threads of Agricultural Urbanism (Source: (de la Salle & Holland, 2010, p. 13) | |
| URBAN PLANNING AND DESIGN | SUSTAINABLE FOOD AND AGRICULTURE SYSTEM |
| <ul style="list-style-type: none"> • Agricultural land preservation and farmland security • Sustainable communities • New urbanism • Smart growth – and transit oriented development • Green and sustainable transportation systems • Green buildings • Community consultation and capacity building • Local economic development • Many others | <ul style="list-style-type: none"> • Urban agriculture • Farmers’ markets and direct marketing for farmers • Organic agriculture and permaculture • SPIN farming • Food security, food sovereignty • Artisan food and the slow food movement • 100-mile diet • Education on all aspects of food • Farmers’ succession planning • Co-operative farming approaches • Local food economies • Community-Supported Agriculture (CSA) • Wildlife and agriculture integration • Wide range of education on food • Gourmet food and celebrity chefs • Composting • Many others |

AU strives to expand space of agricultural infrastructure to urban centres, as De la Salle& Holland (2010) explain,

[T]he experience of food is only complete when we have a greater awareness and connection to all the steps in the food system that gives us sustenance. While there is clearly immense value in promoting the truly celebratory aspects of food, there is a deeper spiritual connection in the awareness of the honest and messy exchange of life celebrating food. In order to celebrate the entire food system in a community, the full range of steps in food production need to be visible (p. 89).

Planners, policy makers or developers who use an AU framework recognize in planning documents that every dwelling, in some measure, participates in the production of food (Duany Plater-Zyberk & Company, LLC, 2009; De la Salle& Holland, 2010). Conceptually, “AU believes in glass walls that make visible the creation of our food [and] promotes the de-sterilization of the experience of food and, by doing so, helps create places that are complex, real and memorable” (De la Salle & Holland, 2010, p. 77).

As Table 1.1 illustrates in addition to design specifications AU encompasses a number of organizational and management strategies which rely on individuals and organizations at the community level. To be successful, AU relies on community buy-in for agricultural initiatives and infrastructure, such as community gardens and demonstration gardens. Therefore, planners must understand how to create convivial spaces, which urban residents will value. Moreover, by concentrating urban development, more land is liberated for agricultural use and the area of land under cultivation can be managed more effectively. Figure 2 (p.4) shows how one third of a land can be urbanized while the production of the whole will be tripled. As Duany Plater-Zyberk & Company (2009) explain,

“This trade-off is achieved by intensifying the agricultural activity at every level of the transect; from window boxes, balcony and roof gardens in the more urban Transect Zones, to the progressively larger community gardens, yard gardens, small farms, and ultimately farms in the more suburban and rural Transect Zones” (Duany Plater-Zyberk & Company, LLC, 2009).

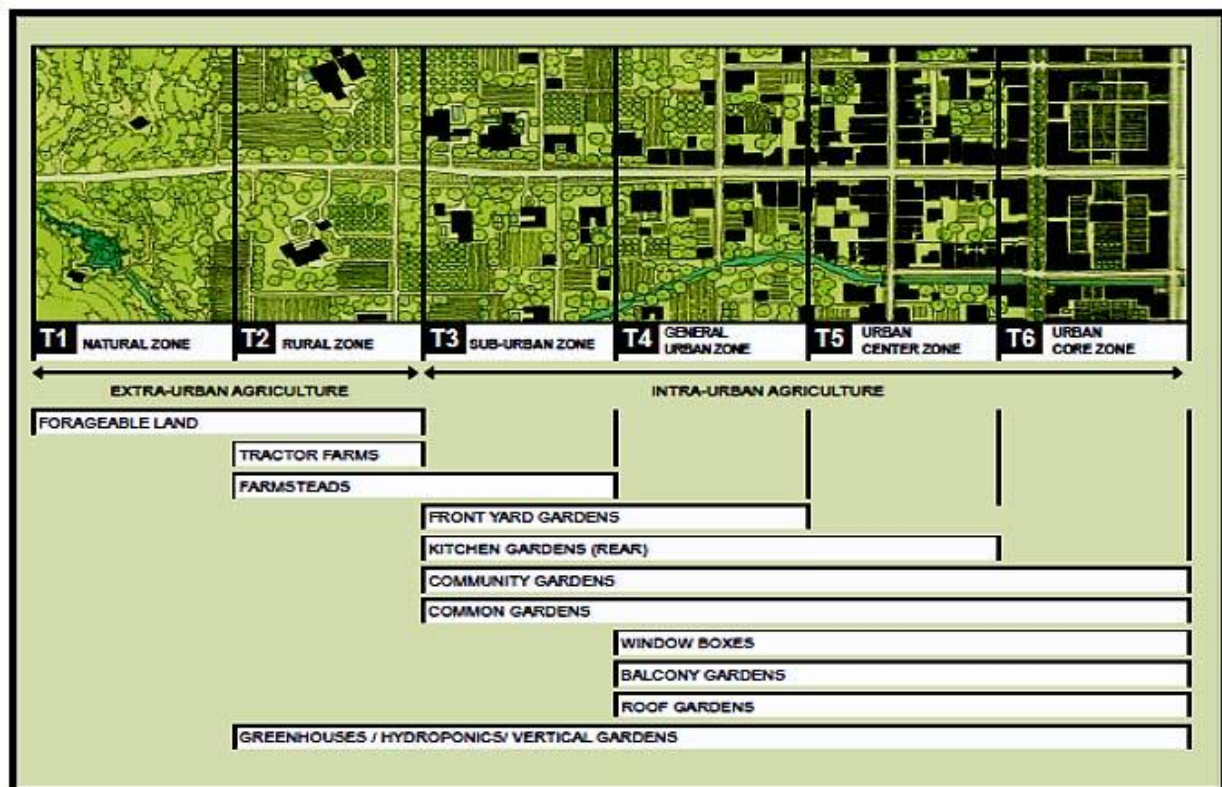


Figure 2 – Illustrates a transect road connecting rural and urban municipalities, and outlines how each community can integrate AU planning and design principles (Duany Plater-Zyberk & Company, LLC, 2009, p. 3).

The production of artisan agriculture¹⁹ within the city is augmented by farming techniques such as Small Plot Intensive (SPIN) farming which make it possible to earn significant income from land bases under an acre. SPIN farmers have grossed \$26,000 (USD) on 0.2 hectares, half-acre, of land in the first year of production within cities. Yet after four years of refining a SPIN farming system by improving the soil and building the farm's reputation for quality produce - revenues have been up to \$68, 000 USD (de la Salle & Holland, 2010, p. 169). The key aspects of the SPIN formula are minimal mechanization, maximum fiscal discipline and an emphasis on intensive relay growing. The technique has proven successful in a variety of climates, and has produced as many as three crops a year in a Northern climate like Saskatoon's (de la Salle & Holland, 2010, p. 168).

In conclusion, through cohesive design and food systems planning AU can integrate agriculture within a city's master plans and at the neighbourhood level. At the core of AU is the creation of convivial spaces around food production and consumption, and demonstrating how food is an integral component of creating vibrant, healthy and resilient cities.

¹⁹ Artisan agriculture is agriculture that is compatible in and around cities (de la Salle & Holland, 2010, p. 240).

Appendix C: Statement of Informed Consent



UNIVERSITY
OF MANITOBA

Research Project Title: *Planning the Seeds of University Community Gardens: Leadership and Management Techniques for 'Living Laboratories' of Sustainable Campus and Community Development*

Principal Investigator and contact information: Aaron Short

Research Supervisor (if applicable) and contact information: Dr. Sheri Blake,

This consent form, a copy of which will be left with you for your records and reference, is only part of the process of informed consent. It should give you the basic idea of what the research is about and what your participation will involve. If you would like more detail about something mentioned here, or information not included here, you should feel free to ask. Please take the time to read this carefully and to understand any accompanying information.

1. Purpose of the Research

The purpose of this research is to satisfy the major degree project of the Master of City Planning Degree at the University of Manitoba. Through investigating effective processes of leadership development, management techniques and organizational structure within successful university community gardens, regardless of geographic or social advantages. The goal is to provide other gardens, or related initiatives, with lessons they can use to educate community members and assist in the creation of more diverse, resilient and healthy cities.

2. Procedures:

You are being asked to participate in an interview asking questions related to the university community garden/farm you are currently organizing and read and informational handout. The interview is intended to clarify and illustrate the role leadership, management processes, and organizational structures have in the planning and development of university community garden/farms. The interview is expected to take approximately one hour to complete. Interviews will be recorded and notes taken. The project is expected to include a minimum of five key informants from university community gardens/ farms with Canada and the United States.

3. Recording Devices:

With your permission, interviews will be recorded digitally to ensure an accurate record of responses. Hand written notes of the interview will be taken. If you do not wish to be recorded, only these notes will be used. You will not be identified in the project documentation. All audio files, interview notes, and questionnaires collected during the research process will be stored securely, and destroyed upon completion of the project.

4. Risk:

There are no particular risks or benefits to you in participating in this practicum. There are no risks associated with this project beyond normal everyday risk. The study does not address personal or confidential issues. The study asks only for your professional knowledge and opinion about the role of leadership, management processes, and organizational structure in the planning and development of university community gardens/farms.

5. Confidentiality:

Your privacy is important. You will not be identified in the thesis document. Recording of interviews, notes taken, and completed questionnaires will be secured during the project and destroyed at project completion, expected in August 2012. You should be aware that the general role you played in the garden's development will be identified. It may be possible for those with knowledge of the gardens within this practicum to infer your identity. Given the small pool of relevant participants, a participant might be identifiable by their turn of phrase as used in the project's documentation. However, no personal information will be gathered and questions will only relate to your professional expertise on the subject. If at any time you wish to withdraw from the project, your responses will not be used in the final document.

6. Credit or Remuneration:

There is no credit, remuneration, or compensation for participant involvement in this study.

7. Debriefing:

A summary of research results will be made available to all participants. For those who are interested, the final completed Major Degree Project will also be made available. Feedback will be provided by email in PDF format.

Your signature on this form indicates that you have understood to your satisfaction the information regarding participation in the research project and agree to participate as a subject. In no way does this waive your legal rights nor release the researchers, sponsors, or involved institutions from their legal and professional responsibilities. You are free to withdraw from the study at any time, and /or refrain from answering any questions you prefer to omit, without prejudice or consequence. Your continued participation should be as informed as your initial consent, so you should feel free to ask for clarification or new information throughout your participation.

The University of Manitoba Research Ethics Board(s) and a representative (s) of the University of Manitoba Research Quality Management/Assurance office may also require access to your research records for safety and quality assurance purposes.

This research has been approved by the Joint Faculty Research Ethics Board. If you have any concerns or complaints about this project you may contact any of the above-named persons or the Human Ethics Coordinator (HEC) at 474-7122. A copy of this consent form has been given to you to keep for your records and reference.

Participant's Signature _____ Date _____

Researcher and/or Delegate's Signature _____ Date _____

Appendix D: Results of Data Analysis

| Q1. | UBC | U of C | U of C | UVic | UVic | York | UC Davis |
|--|-------------------|--------|---------|---------|--------|---------|----------|
| How long have you been the coordinator (involved) with the community garden/farm at your university? | 3 years (2008) | 1 year | 6 years | 6 years | 1 year | 2 years | 25 years |

| Q2 | UBC | UC Davis | U Vic | U of C | York |
|--|---|--|--|--|--|
| How many members does the university community garden/farm presently have? What portion of members are students, community members, and faculty? | <p>Student curricular activities – 2,200</p> <p>Faculty – 66</p> <p>Full time staff – 14</p> <p>Partner Program's Staff – 21</p> <p>Student and community member volunteers – 350 (approximately)</p> <p>Total – 2651 (approximately)</p> | <p>Student curricular activities –160</p> <p>Student extra-curricular – 136</p> <p>Full time staff – 4</p> <p>Contract/part-time staff -8</p> <p>CSA subscribers – 50</p> <p>Community members (i.e. school children, parents, teachers) – 2,000</p> <p>Total – 2308 (approximately)</p> | <p>Only open to persons currently involved with the university (i.e. students, staff, faculty)</p> <p>Students curricular activities – 35</p> <p>Students extra-curricular – 35</p> <p>5 student groups plots – 50</p> <p>Staff plots – 32</p> <p>Community members - 0</p> <p>Total – 152 (approximately)</p> | <p>Students with individual plots - 3</p> <p>Community members with individuals plots - 34</p> <p>Students sharing three communal plots - 28 (approximately)</p> <p>Total – 65 (approximately)</p> | <p>Students extra-curricular - 13</p> <p>Community members - 13</p> <p>Alumni - 13</p> <p>Total – 39 (approximately)</p> |

| Q3. | Environmental Concerns | Curiosity in Gardening | Agriculture Students | Apartment dwellers without access to green space | A wide variety of participants |
|--|------------------------|------------------------|----------------------|--|--------------------------------|
| What types of people are attracted to participate in your garden's activities? | 7 | 3 | 1 | 2 | 7 |

| Q3.1. | Activists | International Students | New Immigrants | Parents | Graduate Students | Faculty |
|---|-----------|------------------------|----------------|---------|-------------------|------------------------------------|
| What types of people are attracted to participate in your garden's activities? Probe: Do you have any activists, international students, new immigrants, parents, professors, business students? | 2 | 3 | 2 | 3 | 5 | 3 (including two student farms) |

| Q4. | Academic Linkages | Community Involvement | Local Food/Gardening Organization Involvement | Institutional Support outside University community | Dedicated Group of Organized Staff/Volunteers | Student Union Support | University Support | Location and Proper Site Conditions | Advantages Geographic Conditions |
|--|-------------------|-----------------------|---|--|---|-----------------------|--------------------|-------------------------------------|----------------------------------|
| What are the main reasons you feel your university garden has been successful? | 2 | 3 | 2 | 2 | 7 | 1 | 2 | 1 | 1 |

Leadership and Organization

| Q5. | Able to work with the university administration | Strong interpersonal and communication skills | Manages time and resources (human & financial) effectively | Dedicated steering committee | Acts as a resource for existing student and academic projects | Horizontal power structure | Makes themselves accessible to garden and community members |
|--|---|---|--|------------------------------|---|----------------------------|---|
| How would you define good leadership within the context of a university community garden/farm? | 3 | 6 | 5 | 2 | 2 | 1 | 1 |

| Q6. | Consensus as a basis for engaging stakeholders | Use of Broad-based leadership only (vote of garden members equal to steering committee) | Academic Steering Committee integrating university staff, faculty, community and student representative | Elected steering committee with broad-based input from stakeholders | Supervising Committee made up of community members, on top of student Steering Committee | Paid student coordinators | Paid staff coordinator | Unpaid coordinator |
|---|--|---|---|---|--|---------------------------|------------------------|--------------------|
| How would you describe the leadership structure and style of your organization? | 7 | 1 | 2 | 4 | 1 | 3 | 2 | 1 |

| | | | | | |
|---|-----|------------------------------------|---|--|---|
| Q6.1 | Yes | Unable to make a clear distinction | No experience with females in decision-making positions | Females have been more involved in the decision-making processes of the garden | Females exhibit a more participatory approach to leadership |
| Have you noticed different leadership styles between men and women? | 1 | 5 | 1 | 2 | 1 |

| | | | | | | | | | | | |
|--|---|---------|----------------|---------------------|-----------------------------|----------------------|-----------------------------|-------------------------|---------------------|---|--|
| Q7 | Unclear roles within the organizational structure | Funding | Infrastructure | Sustaining interest | Working with Administration | Unsecure Land Tenure | Low Volunteer Participation | Lack of a paid position | Loss of club status | Knowledge transfer in garden leadership | Offering a major requirement for students to participate in the garden |
| What were the main barriers, if any, your garden has overcome in terms of the management and operation of your university community garden/farm? | 1 | 2 | 1 | 3 | 2 | 3 | 2 | 2 | 2 | 3 | 1 |

| Q7.1 | Funding | Infrastructure | Student Interest | Vandalism | Limitations imposed by University Administration | Unsecure Land Tenure | Climatic limitations in a Northern Climate | Inability to build permanent structures | Lack of space for individual student plots | Knowledge transfer from year to year |
|--|---------|----------------|------------------|-----------|--|----------------------|--|---|--|--------------------------------------|
| What barriers keep your university garden/farm from having a greater impact? | 2 | 1 | 2 | 2 | 2 | 2 | 1 | 2 | 1 | 2 |

| Q8. | Strategic decisions are based on Academic Plans approved by the university which are tied to larger level university plans. | Every decision related to site design has to go through the University Administration. | Dependent on the university for the land, but garden activities are autonomous. |
|---|---|--|---|
| What influence, if at all, does the university administration have on the garden's decision-making processes? | 2 | 2 | 5 |

| Q9. | Very Important | Important | Did not indicate level of importance | Not applicable |
|---|----------------|-----------|--------------------------------------|----------------|
| How important, if at all, is obtaining gardeners' input regarding the operation and administrative processes of the garden? | 3 | 2 | 1 | 1 |

| Q9.1 | In garden (i.e. workdays, workshops) | Participant Surveys | Formal Meetings | Wiki/we bsite | Social media (i.e. Facebook, Twitter, Google groups | Listser v | Telephon e | Mail |
|---|---|------------------------|--------------------|------------------|--|--------------|---------------|------|
| How is gardener feedback obtained ? | 3 | 3 | 6 | 3 | 6 | 5 | 1 | 1 |

| Q10. | Very Important | Important | Not Important |
|---|----------------|-----------|---------------|
| How important, if at all, is building social relationships between garden participants? | 7 | 0 | 0 |

| Q10.1 | Work Parties | In- garden Potlucks & Picnics | Worksh ops | Meals/Picnics within the Garden | Harvest Festivals | Fund- raisers | Barbeque s | Field Trips |
|---|-----------------|---|---------------|---------------------------------------|----------------------|------------------|---------------|----------------|
| What types of activities do you organize to build relationships? | 7 | 7 | 7 | 7 | 3 | 2 | 3 | 1 |

| Q10.2 | Yes | No |
|--|-----|----|
| Do these relationships extend beyond the garden? | 7 | 0 |

| | | | |
|--|-----|--------------------|--|
| Q11. | Yes | Unsure of response | In the midst of developing social spaces |
| Has the introduction of design features influenced social relationships? | 5 | 1 | 1 |

| | | |
|--|-----|---|
| Q11.1 | Yes | In the processing of developing these features. |
| Have design features helped build a sense of place or stronger attachment to the garden? | 6 | 1 |

| Q11.2 | Green house | Fire Pit | Children's Play Area (kids toys, lawn chairs) | Picnic tables | Benches | Tool Shed | Access to Water | Expansive system of composting | Bird house | Permaculture demonstration garden | Bulletin Board |
|---|-------------|----------|---|---------------|---------|-----------|-----------------|--------------------------------|------------|-----------------------------------|----------------|
| What design features does your garden have that other gardens do not? | 1 | 1 | 2 | 4 | 4 | 4 | 4 | 1 | 1 | 1 | 1 |

| Q12. | Ensure garden is linked with goals and strategies of the university | Draw upon university resources and expertise | Building social capacity of participants | Use a mixed model of communal and individual plots | Create stable funding | Gathering stakeholder input and set realistic goals. | Consolidation communication through one person when dealing with administration |
|--|---|--|--|--|-----------------------|--|---|
| Considering the barriers and advances that have occurred in the development of your garden/farms , what was done to make the garden develop in the way it did? | 2 | 3 | 4 | 2 | 1 | 3 | 1 |

| Q12.1 | Create a source of funding and economic plan | Established relationships with academic programs | Have a strong steering committee/governance structure in place | Identify strengths of participants and build their social capacity | Start small, set a realistic plan and goals, and expand incrementally |
|--|--|--|--|--|---|
| What steps would you suggest others follow when starting or expanding a university garden? | 2 | 3 | 3 | 1 | 3 |

| Q13. | Partnerships with community groups outside of the garden | Student gardeners become involved in sustainable agriculture projects after convocation | Involves neighbours from surrounding community in gardening activities | Garden participants support local food events (i.e. Farmers' Markets', Seed Sales) | Host on campus farmers' market, and CSA subscribers in local community | Teach children of different communities how to garden | Participates in green mapping exercises | Participates in community festivals or allows community groups to host festivals in garden space |
|---|--|---|--|--|--|---|---|--|
| What impacts, if any, does the university garden have beyond its borders? | 7 | 4 | 5 | 4 | 2 | 2 | 1 | 3 |

| Q13.1 | Yes | No | Unsure (First year in position) |
|--|-----|----|---------------------------------|
| Have past participants become involved or began other garden projects outside the university garden? | 6 | 0 | 1 |

| Q13.2 | Yes | No |
|--|-----|----|
| Do younger community gardens ever come to you for advice on how to garden? | 6 | 1 |

| Q13.3 | Yes | Used to be |
|--|-----|------------|
| Would you consider your garden to be a 'good agent of change'? How so? | 6 | 1 |

| Q14. | Illustrates demand for gardening space within cities | Demonstration sites of agricultural processes in urban environments | Can be tied Transition Towns large scale planning and policy change | Living labs' teaching practical skills and a framework for people to work with | Help form partnerships with local food security and food systems planning organizations | Host public events related to food sovereignty and urban agriculture planning | Maintain involvement on food policy councils, neighborhood councils, and farm-to-school local food procurement | NA (new to position and did not have a response) |
|--|--|---|---|--|---|---|--|--|
| Can you suggest in what ways successful university community gardens could inform future planning and policy directions for planners, for educators, and for government officials? | 1 | 5 | 1 | 5 | 1 | 1 | 1 | 1 |