

## THE 'HEALING CITY' – SOCIAL AND THERAPEUTIC HORTICULTURE AS A NEW DIMENSION OF URBAN AGRICULTURE?

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*Abstract: The healing effects of nature and natural environments have been known for centuries. Recent studies suggest that the incorporation of horticulture into therapeutic activities benefits people with diverse social and health problems. This knowledge has engendered the development of a large number of facilities offering horticulture-based therapeutic activities, mostly in rural areas in Western Europe and the US. However, as a significant majority of their potential beneficiaries live in urban environments, the rural location of these facilities might significantly lower their accessibility for certain disadvantaged groups.*

*Developing a network of public areas used for urban agriculture for therapeutic purposes could thus be an important policy strategy that combines the accessibility to city-based services with the health benefits of nature-based therapeutic activities and social and environmental benefits of urban agriculture. In developed countries where populations are rapidly ageing and policies ensuring the provision of affordable good quality healthcare will be increasingly needed, horticulture-based therapeutic activities might offer an interesting alternative.*

*This paper discusses the possibilities of practicing therapeutic horticultural activities as a new dimension of urban agriculture. It raises questions to be addressed in order to develop strategies that would successfully integrate therapeutic horticulture activities in urban planning using the concept of Continuous Productive Urban Landscapes. The paper further highlights the use of participatory systems methods of group model building as a means of collecting data and developing decision tools with diverse sets of stakeholders to successfully implement such policies in practice.*

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### 1. Introduction

In recent years, cities around the world have witnessed a growing number of urban-based initiatives that reflect the demands, needs, and values of current urban dwellers (such as access to affordable healthy food, a need for enjoyable healthy leisure activities and social contacts, or a desire to reconnect with nature and the basic process of growing one's own food) through urban agriculture (UA). Even though various UA initiatives address different goals and are established to pursue different purposes, they face common complications and challenges arising from their location in urban areas.

Concomitant with the rising numbers of UA initiatives in urban areas, a significant number of facilities providing horticulture-based therapies have been established in recent years in rural areas and urban fringes, mostly in Western Europe and the US. Therapeutic activities offered at these establishments belong to what is termed 'green care', a group of therapeutic practices using activities such as horticulture or taking care of animals, and conducted in natural or farm settings to

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improve the health and well-being of people with a wide range of health and social problems (Hine et al., 2008). However, while opportunities to participate in such activities are mostly located in rural areas, a significant majority of their potential beneficiaries live in urban environments where formal healthcare and other services are more accessible. The distance between urban areas and rural care farms could potentially limit the access of certain disadvantaged groups to partake in nature- and horticulture-based therapies to improve their quality of life.

Developing a network of public areas in urban settings that could be used for UA for therapeutic purposes could thus be an important policy strategy that combines the accessibility to city-based services, the benefits of nature-based therapeutic activities, and other benefits of UA such as social and environmental ones (Viljoen et al., 2005). In developed countries where populations are rapidly ageing and policies ensuring the provision of affordable good quality healthcare will be increasingly needed, horticulture-based therapeutic activities might offer a useful alternative.

In this paper, we aim to identify and address some of the common problems faced by initiatives that provide nature- and horticulture-based therapies by introducing the idea of incorporating horticulture-based therapies into UA and urban planning. We conducted case studies of four UA initiatives, each of which differed in terms of the degree of horticulture-based therapeutic activities on offer and the diversity of beneficiary groups. The case studies were conducted using semi-structured interviews with managers or therapists. Three case studies were located in the US and one in the Czech republic.

We suggest that the integration of horticulture-based therapies into the concept of Continuous Productive Urban Landscapes (CPULs) could create a potential win-win policy situation that would benefit a wide array of stakeholders. To successfully implement such policies in practice, we propose using appropriate participatory systems methods of group model building as a means of collecting data and developing decision tools with diverse sets of stakeholders (Rich, Rich, and Hamza 2015).

The paper is organized as follows. First, we provide background information and a summary of the state-of-the art of research on horticulture-based therapies. We then summarize our findings from the four case studies and provide arguments supporting the integration of horticulture-based therapies in UA and urban planning. In the following section, we suggest the spatial integration of areas used for therapeutic purposes in urban environments through their incorporation into the CPUL concept and explain appropriate participatory systems methods that could be used as a tool for developing and implementing such policies. In the last section, we summarize our paper and draw conclusions.

## **2. State of the art of green care and horticulture-based therapies**

### **2.1 Definition of green care**

The healing effects of nature and interaction with natural elements and the environment have been known for centuries. Recognition on a formal clinical level first occurred in the 19<sup>th</sup> century when psychiatrists in the UK and the US observed the positive influence of farming and gardening activities on their patients. Mental health asylums thus often included farms or gardens where patients could improve their health and wellbeing through manual labour (Relf, 2006; Sempik and Aldridge, 2006).

However, during the 20<sup>th</sup> century, following the technical and scientific progress in agriculture and medicine, nature- and farm-based rehabilitation programs were gradually replaced by pharmacological treatments (Relf, 2006). Scientific interest in the therapeutic effects of active interaction with natural elements re-emerged in the 1990s, followed by the rise in the number of facilities established to offer these kinds of services. However, even though both the body of research and the number of such facilities have been growing steadily, no unified classification of these therapies has been developed. One of the most widely-used classifications of nature- and horticulture-based therapies uses the term 'green care' as an over-arching term for an array of therapies such as social and therapeutic horticulture (STH), animal assisted interventions, care farming, or ecotherapy (Pretty, 2006; Hine et al., 2008). Bragg et al. (2014) later refined the green care definition as consisting of "a facilitated, regular and specific intervention, for a particular participant (or group of service users), rather than simply a 'natural' experience for the general public" (Bragg et al., 2014, p.1).

In this paper, we focus on two of the most common green care practices – care farming and social and therapeutic horticulture, as their implementation in urban areas appears more feasible than other segments of green care.

## **2.2 Care farming**

Care farming is defined as "the use of commercial farms and agricultural landscapes as a base for promoting mental and physical health, through normal farming activity" (Hine et al., 2008, p.6). Care farms target diverse groups of clients and patients with health problems (mental illnesses, addictions, intellectual disabilities), social problems (young offenders, long-term unemployed), and older persons to whom they offer an informal and non-institutionalized form of care (Hassink et al., 2012). The positive effects of care farming on human health and wellbeing have been demonstrated by a number of studies (Elings and Hassink, 2008; Hine et al., 2008; De Bruin, 2009) and include psychological benefits of increased self-esteem and self-respect; social benefits of improved social skills; and an improved physical state of the participants.

Care farms have been established in rural areas, mostly in the US and Western Europe, in a grass-roots process primarily initiated by farmers interested in the diversification of their activities and sources of income (Hassink and van Dijk, 2006). The flagship countries in care farming in Europe are the Netherlands with more than 1000 care farms (Haubehofer et al., 2010) and Norway with more than 500 care farms (Hassink and van Dijk, 2006). Other countries with significant numbers of care farms include Switzerland, Belgium, UK, Germany, Austria, Sweden, and Italy. The major differences between care farms in different countries are associated with the target groups of their clients/patients. While Norwegian care farms mostly target people with mental health problems, farms in Sweden and Switzerland focus on children with social problems, while care farms in the Netherlands and Italy serve a wide range of people with both health and social problems (Haubehofer et al., 2010).

## **2.3 Social and therapeutic horticulture**

There are many diverse ways in which horticultural activities are used for the therapeutic purpose of enhancing human health and wellbeing. While all these activities are often generally referred to as horticultural therapy, there are significant differences between these activities and require a more

precise classification. The *American Horticultural Therapy Association* lists four basic types of horticulture-based activities and interventions: horticultural therapy; therapeutic horticulture; social horticulture; and vocational horticulture (AHTA, 2012). In our study, we focus on horticultural therapy and therapeutic horticulture.

According to AHTA (2012, p.1), horticultural therapy is "the engagement of a client in horticultural activities by a trained therapist to achieve specific and documented treatment goals." The same association gives us a definition of therapeutic horticulture as "a process that uses plants and plant-related activities through which participants strive to improve their wellbeing through active or passive involvement" (AHTA, 2012, p.1). In contrast with horticultural therapy, therapeutic horticulture focuses more on improving wellbeing more generally as it does not aim to achieve any specific treatment goals. However, the role of a trained specialist is a common feature of both therapeutic practices. Since we are analyzing these two practices together, we will use the umbrella term 'social and therapeutic horticulture' (STH) which is broadly used in the UK, one of the leading countries in the implementation of such therapeutic practices (Sempik et al., 2014).

The literature based predominantly on research using questionnaires and observational methods indicates various positive effects of STH on mental and physical wellbeing as well as in the social interaction of participants. The major impact on mental health is in the form of reduced symptoms of depression and anxiety, and improved emotional wellbeing and self-esteem (Chatworthy et al., 2013; Lee et al., 2008). Sempik (2010) stresses that the overall positive impacts of STH arise from enhancing the social functioning of participants, which can lead to an improved quality of life. Major groups of potential STH beneficiaries include people with mental or physical illnesses and disabilities, learning disabilities, older people, offenders, and people with a history of drug or alcohol addiction (Aldridge and Sempik, 2002).

The country with the best-documented implementation of STH is the UK. According to a survey carried out by Sempik (2010), there are more than 800 active projects of diverse scales and forms providing STH services in a diverse set of environments including urban areas. There is no common concept or platform that these projects follow, but they all belong to a network began by charity called Thrive that enables them to share useful information. However, as most of these initiatives are related to facilities such as hospitals or schools, there is no evidence that STH gardens and practices could be incorporated into urban public areas and urban planning in general.

#### **2.4 Common features, problems, challenges**

Care farming and social and therapeutic horticulture share a number of common features as they are both based on an active interaction with natural elements and they also target similar groups of clients/patients. As a result, they face multiple common challenges and difficulties. One of these challenges lies in their location. Specialized services targeting potential clients of STH and care farming facilities are typically concentrated in cities. This means that a significant number of people in need of their services are located in urban areas. Since care farming and STH facilities are typically established in rural and peri-urban areas, they might be difficult to reach for some disadvantaged groups who are unable to travel out of the city in order to participate in such activities. Developing urban areas dedicated to STH and care farming thus might be a means to provide benefits to the city and its inhabitants on multiple levels.

A substantial part of the positive impacts of STH and care farming in an urban environment correspond with the positive impacts of UA in general. These include, *inter alia*, ecological benefits such as improved water retention, localized food-production and elimination of food miles, improvement of neglected or otherwise unused urban sites, potential economic advantages of saving money by growing one's own food, and the social benefits associated with supporting communities and social contacts in general.

However, the social aspect of UA takes greater importance in the case of STH and care farming. People in need of these therapies generally suffer from problems that can potentially isolate them from the rest of the society. Thus, providing such groups with the opportunity to participate in activities that provide contact with other people, whether by direct cooperation or simply by sharing space, can have strong positive effects and greatly help in social inclusion.

In addition, practising STH and care farming in urban environments could represent an alternative means of providing cost-effective healthcare. A survey conducted in the UK by Sempik et al. in 2004 compared the costs of day care for multiple client groups at facilities providing STH and day care at conventional facilities run by the NHS. The survey revealed only a fractional difference between these costs, as the price for a full day of care at an STH facility averaged at 53.68 GBP, compared to 54 GBP paid by clients at NHS-run facilities (Sempik et al., 2004). The results of this study suggest that STH-oriented day care can be provided at a similar cost of conventional day care. However, considering all the other intangible benefits of STH (i.e. ecological, social, etc.), the overall value provided by STH could be significantly higher than the value created by conventional facilities.

At present, there are a number of projects providing STH in an urban environment, such as Kokoza in Prague, Czech Republic, or Digging for Dementia in Salford, UK. These projects have been typically started through a grassroots process at an individual level, without or with only limited support from formal planning or healthcare authorities. In the absence of policies that could support such projects, they operate as stand-alone initiatives, typically dependent on charities, grants, and private donors as sources of funding. Creating a system that can integrate these initiatives both spatially into an urban fabric and its network of public spaces, and formally into urban planning policies could leverage the full potential of STH in an urban environment and strengthen its overall resilience.

### **3. Existing STH and care farming initiatives in urban settings: four case studies**

#### **3.1 Case studies**

##### *3.1.1 Overview and methodology*

While there is a significant and growing body of literature on care farming, the literature on STH practices has been more limited. However, in both cases research has mainly focused on the effects of therapies provided for clients/patients, the types of clients these facilities serve, or the state of the art of these therapeutic practices in different countries. Studies depicting practical information (i.e. concrete therapeutic practices and their demands for space, material and staff, every-day organization, and management) that could be used by policy makers and planners have been largely neglected. In addition, the existing body of research that focuses on these therapeutic practices has only focused on a limited number of countries, mostly in Western Europe.

In order to obtain insights into more practical issues associated with care farming and STH, we conducted four case study visits of facilities providing these services in urban settings. An overview of basic information about the case studies is provided below in Table 1. Two of these were urban farms located in the USA, while the other two were community gardens, one located in the USA and the other in the Czech Republic:

- Growing Power Community Food Center and Urban Farm, Milwaukee, USA (urban farm)
- Growing Solutions Farm, Chicago, USA (urban farm)
- City Slicker Farms, West Oakland, USA (community garden)
- Kokoza, Prague, Czech Republic (community garden)

The case study of Growing Power Urban Farm was conducted through participation in a public tour of the facility, while the other three case studies were conducted as semi-structured interviews with managers and/or therapists directly involved in STH activities.

**Table 1. Description of the case study facilities**

|                          | Total area (acres) | Client groups  | Produce                   | Livestock                  | Other services  | Source of income / funding  |
|--------------------------|--------------------|--|---------------------------|----------------------------|---|---|
| Growing Power Urban Farm | 2                  | Youth  | Vegetables, herbs         | Goats, hens, turkeys, fish | Training in sustainable agricultural practices, education, vermicompost production                      | Income from own commercial activities   |
| Growing Solutions Farm   | 1.2                | Young people with autism spectrum                            | Vegetables, fruits, herbs | None                       | None  | Grants; donations   |
| City Slicker Farms       | 3 <sup>4</sup>     | Children with autism spectrum, people recovering from trauma | Vegetables                | Chickens                   | Services of starting a garden for individuals and organizations, conventional community garden services | Grants and donations from government, individuals, corporate and local business; in-kind donations; income from own commercial activities |
| Kokoza                   | 1.2 <sup>5</sup>   | Adults with psychotic illnesses (schizophrenia)              | Vegetable, herbs, flowers | None                       | Conventional community garden services; Services of starting a garden; workshops                        | Local employment bureau; EU funds focused on employment of disadvantaged people; income from own commercial activities                    |

### 3.1.2 Growing Power Urban Farm, Milwaukee, USA

Growing Power Urban Farm was founded by Will Allen in 1993 and became a flagship facility of the Growing Power organization that now manages more than 20 locations in the city of Milwaukee with

<sup>4</sup> Total area of three sites belonging to City Slicker Farms

<sup>5</sup> Kokoza runs two community gardens, however, in our case study we only involved the community garden where STH is conducted.

farm sizes ranging from 0.25 to 34 acres. Growing Power also runs more than ten other UA sites in Chicago and Madison. From its inception, Growing Power focused on community engagement and training, with a special emphasis on urban youth. It cooperates with public schools by setting up their productive school gardens and provides training on sustainable food production to students. For many years, the organization was dependent on funding through grants. However, in the last two years, it has managed to fully sustain its operation without the need for external grants.

Growing Power Urban Farm houses a highly diverse set of agricultural production activities, including horticulture, aquaponics, vermiculture, and vermicompost production, and a small section of animal husbandry. Horticultural production of vegetables and herbs, and aquaponic production of fish take place in greenhouses where the interior is organized in a vertical production system to maximize the space inside the greenhouses. Most of the other types of production are located outdoors. As soil in urban areas can be of variable quality and with a danger of environmental contamination, significant efforts have been made at Growing Power Urban Farm to produce high quality compost that is both used internally and sold to customers.

Growing Power Urban Farm has succeeded in developing a portfolio of a large variety of products for sale. The main segment of its marketed production is in fresh produce, fish, and vermicompost. These products are sold both in an unsubsidized market in shops and to restaurants, and as subsidized products to poorer households as a means of providing affordable healthy food. In addition, Growing Power offers a variety of training courses and services for those interested in starting a productive garden.

### *3.1.3 Growing Solutions Farm, Chicago, USA*

Growing Solutions Farm was established by the Julie and Michael Tracy Family Foundation, which supports young people with autism spectrum. It is located in Chicago on a site belonging to the Illinois Medical District that was made available through a long-term lease. The total area of the farm is 1.2 acres which houses raised beds and smaller containers with a total growing area of 6000 ft<sup>2</sup>. The farm employs two full-time gardeners who are joined from Monday to Friday by up to 30 young people with autism spectrum accompanied by volunteers and caregivers for about two hours. As the produce is only grown in outdoor raised beds and containers, the production period when the farm can operate is from April to the end of October (i.e., until Halloween). However, this period is likely to be extended and the production capacity increased in the future as a new hoop house is being constructed at the moment.

The farm produces more than 20 kinds of fruits, vegetables, and herbs. Half of the products grown at the farm are sold to restaurants and the remainder is donated to food pantries. Income from these sales does not cover the running costs of the urban farm, which it is vitally dependent on external funding in the form of grants and donations.

### *3.1.4 City Slicker Farms, West Oakland, USA*

City Slicker Farms was established in 2001 and currently manages three community gardens with a total area of three acres. The sites where the community gardens are located belong to a private owner, the municipality, and a local school district, respectively, who all made them available for the

purposes of community gardening. City Slicker Farms runs two programs: a farm program and a garden program.

The farm program consists of managing the three community gardens mentioned beforehand. They are organized partly as conventional community gardens where people rent a raised bed to grow food individually, and partly as collective gardens where volunteers work together to grow food. Products from the collective parts of the gardens are sold at weekly farm stands. These farm stands maintain a policy of people only paying as much as they can, as one of the major goals of the organization is to provide affordable healthy food to the local community in areas where supermarkets or other sources of healthy food are scarce.

The garden program includes services for starting backyard productive gardens for individual clients as well as for organizations, institutions, and companies. So far, City Slicker Farms have started about 300 gardens through this program. A substantial part of the clients of the garden program are the elderly who constitute about 30% of its clientele, including 15 elderly care homes. As the manager of City Slicker Farms noted, one of the main reasons why the elderly are interested in having a productive garden is that they usually have gardening experience or memories related to horticulture.

City Slicker Farms does not run any special STH program. However, their community gardens are regularly visited by students with autism spectrum who participate through working in the collective parts of the gardens. In addition, people recovering from trauma are among the community gardening participants, although there is not a special program for them and the garden managers do not have any special education in providing STH.

### *3.1.5 Kokoza, Prague, Czech Republic*

Kokoza is an organization that aims to promote ecological practices such as composting and UA, social inclusion, and training of disadvantaged people. Since 2013, they have run a vocational training program for people with psychotic illnesses, mainly schizophrenia, during which their clients are trained in gardening. This program is conducted at a community garden run by Kokoza and which consists of three parts. Similar to City Slicker Farms, a part (about one third) of the garden is used as a conventional community garden with raised beds rented by individuals. Another third is run as a collective garden where people work together. In this case, the collective part is used for therapeutic purposes. The rest of the space is a common area used for socializing and other activities.

The therapeutic program is co-financed by EU funds supporting the employment of disadvantaged people and by a local employment authority. It is designed as a work training for people with psychotic illness, especially for those who have been unemployed for a longer period of time. Each participant is required to fulfil 300 hours of work in the garden while the intensity with which this amount of work is completed depends on the abilities of each participant.

The produce that is grown at the garden mainly includes vegetables and herbs. Products are not sold and are instead available for participants or other users of the garden. People who rent raised beds in the community part of the garden are mostly seniors, young people, and women on maternity leave. Both the therapeutic program and the community garden services currently operate at full capacity and there are waiting lists of people who would like to participate. Other services offered by



Kokoza include workshops focused on composting and other ecological UA practices, and starting a garden for individuals who would like to begin to grow their food.

### 3.2 Levels of STH services and their correlation with funding sources

The level of STH implementation provided at the case study facilities differs greatly. While Growing Power focuses on services with local youth which have more of a social character rather than a therapeutic one, Growing Solutions Farm focuses solely on therapeutic activities and does not include any other services. Kokoza and City Slicker Farms are somewhere between these two extremes as their activities combine community gardening with different levels of STH. As mentioned above, about one third of the space in the community garden run by Kokoza is used for STH while in case of City Slicker Farms there is no space dedicated solely to STH but students with autism regularly visit the collectively maintained gardens.

An interesting comparison emerges when we consider the levels of STH activities provided at these facilities and their sources of funding. While Growing Power Urban Farm is highly production-oriented and has managed to be independent of any external funding sources and fully self-sufficient, it appears that the more therapy-oriented an initiative is, the higher level of external funding is needed. Figure 1 shows a schematic diagram of this comparison. The question is whether it would be possible to pick the best-working elements and practices from existing projects and combine them in a way that would enable such initiatives to provide intense STH therapies while being financially self-sustainable with no or very limited dependence on external funding.

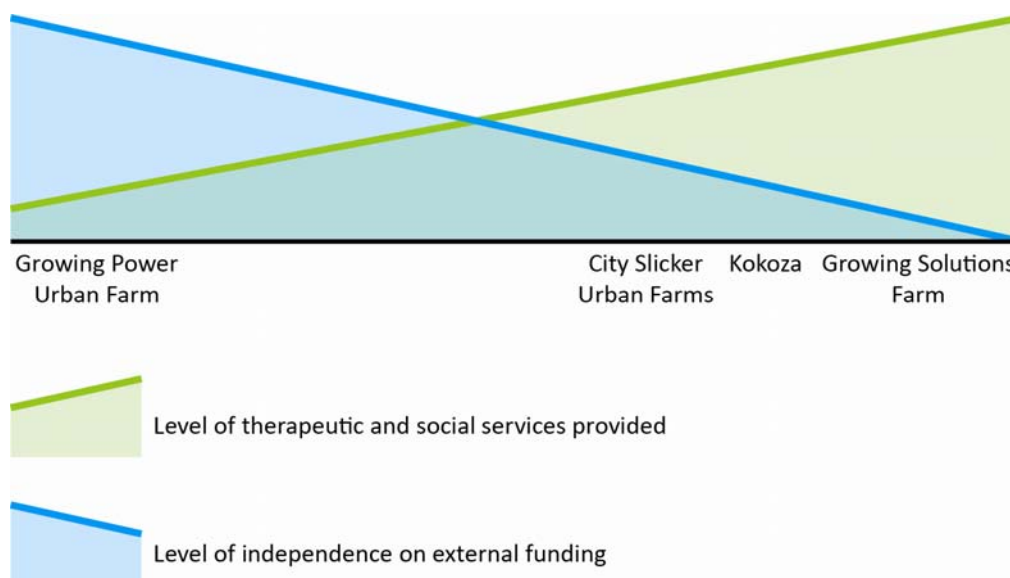


Figure 1. Correlation between the level of STH services and independence from external funding. Magda Rich.

### 3.3 Site location and connection of the case study facilities with their environment

All case study facilities are located in urban areas with a different urban density. Table 2 shows the ownership situation of these sites. As we can see in the table, only Growing Power Urban Farm is

located on a site that belongs to the project itself. This situation increases its resilience and independence from other entities such as the public authorities. Other case study projects operate on sites that are leased from others. Even though such leases are long-term, this situation depends on many aspects such as local politics that puts these facilities in a more vulnerable long-term position.

The public sites that are used for STH purposes by the case study projects are mostly unused open spaces such as areas between a parking lot and a road or an unused park/garden belonging to the building of a city district town hall (table 2). While the sites of all the case study facilities are clearly marked and fenced, this physical disconnection is partly reconciled by their attempts to connect with their surroundings on a social level by being open for the public in several ways. This can take the form of public tours, an opportunity to volunteer and participate in their activities, or simply by allowing people to spend time and take a walk around the facility.

**Table 2. Land ownership characteristics of the case study facilities**

|  | Growing Power Urban Farm | Growing Farm            | Solutions | City Slicker Farms  | Kokoza   |
|--|--------------------------|-------------------------|-----------|---|--|
| Site is a property of the farm/garden        | Yes                      | No                      |           | No  | No   |
| Site is provided to the farm/garden (by who) | Not Applicable           | Yes (Illinois District) | Medical   | Yes (private owner, the city, local school district) <sup>6</sup> | Yes (city district – the garden is adjacent to the city district townhall) |

One of the objectives of our study was to identify ways in which local planning authorities could support the case study project. Growing Power is located in a city where the social and environmental benefits of UA initiatives are appreciated by the mayor who thus acts supportively to facilitate more projects of this kind (Viljoen and Bohn, 2014). Growing Power Urban Farm thus reportedly has not experienced any complications from the formal planning authority and did not suggest any need for more formal support. However, in the other three cases, the interviewees stated a need of more land with appropriate technical infrastructure such as water supply and fencing. These projects operate on very tight budgets so any additional expense they need to make means a complication.

In general, it is possible to say that our case studies mostly confirmed the information obtained from the literature on STH and care farming. They were all initiated from a bottom-up process with a very diverse (yet usually fairly limited) level of formal support. Growing Power Urban Farm is unique as after more than ten years when external funding was necessary, it is now capable of generating enough income to sustain its operation and growth. It is apparent that while the other projects mostly focus on the input side in the sense of activities provided, Growing Power focuses just as much if not more on agricultural output and productivity which is reflected by the high level of diversification of their products and activities. Such a strategy makes the project more resilient as it is capable of adjusting to changes and not dependent on unreliable sources of funding.

<sup>6</sup> City Slicker Farms operate on three sites in total.

#### **4. Spatial integration of STH and care farming in urban areas: Continuous Productive Urban Landscape (CPUL)**

##### **4.1 CPUL introduction**

The Continuous Productive Urban Landscape concept was first introduced by Bohn and Viljoen more than 10 years ago in 2004, as a result of the authors' extensive work and research on urban agriculture (Viljoen and Bohn, 2014; Viljoen and Bohn, 2009). It represents a strategy combining diverse types of UA practices and public spaces into one integrated system on a citywide scale. While the places where UA is practiced are typically scattered and function individually, in a CPUL concept they become interconnected with other green open spaces to create a continuous network of public spaces serving multiple purposes, *inter alia*, production of food, leisure, and circulation of people (Bohn and Viljoen, 2005). The basic elements of CPUL networks are "urban agriculture, outdoor spaces for people (leisure and commercial), natural habitats, ecological corridors and circulation routes for non-vehicular traffic" (Bohn and Viljoen, 2011, pp. 150).

CPUL thus can be explained as a continuous network of interconnected green spaces running through a city and connecting urban areas to the surrounding landscape. The continuity of CPULs is a crucial feature as it enhances its positive ecological impact by becoming a natural bio-corridor, as well as creating a pleasant passage for urban dwellers. Since it runs through and connects different parts and districts of the city, it has the capacity to connect a very diverse set of stakeholders with a wide range of needs and demands, some of which can be addressed by one of the many forms of UA.

##### **4.2 Integration of STH and care farming into CPULs**

Given the great diversity of spaces belonging to CPULs, this concept appears to be a natural way to spatially integrate areas for therapeutic purposes into a network of public spaces at the scale of a whole city. Such integration could lead into the incorporation on other levels as well, such as in the form of information and material exchange. In such an integrated network, some common projects and strategies (e.g. waste management strategy, composting strategy, etc.) could be developed which would be impossible to realize by individual initiatives for reasons such as lack of financial resources. Within a CPUL framework, these could be implemented to enhance the productivity and efficiency of all partners involved.

In addition, just as inclusive school education has been recognized as beneficial for all parties involved, both the literature and our case studies suggest that inclusive urban planning might be an objective worth following. As a therapist from Kokoza pointed out, working in the community garden not only helps people with mental health problems learn how to cope with other people in an every day environment but also enables other city dwellers to meet and communicate with people with such problems and remove certain social barriers. As part of a CPUL, such a community garden would be integrated into a network of green corridors especially designated for non-vehicular circulation and potentially used by people from broader surroundings. Activities conducted and organized in the community garden thus could reach a further circle of people.

An example of using circulation pathways to efficiently extend its reach and involvement of people in an UA project is Spiel/Feld Marzahn in Berlin (Viljoen and Bohn, 2014). In this project, an unused brownfield surrounded by large blocks of flats was turned into an urban garden, while carefully respecting and sustaining existing pathways. In this way, people can keep using the same circulation pathways as they are used to, while the surroundings are improving. As the project aimed to include

the community to the highest possible extent, existing pathways were used from the beginning as a communication tool for sharing ideas and information (e.g. design plans were displayed along the pathways before they were publicly discussed at the site). In this way, it was possible to reach not only residents living in immediate surroundings of the site but anyone using the pathways in question.

## **5. Formal integration of STH and care farming in urban planning: the role of participatory methods and GMB**

An important constraint in the development of UA-friendly policies is the dissonance between urban planners and planning authorities that are in charge of planning activities, and those that initiate UA activities on the ground. While the number of UA initiatives has grown substantially in the past few decades, planners have only realized the importance of UA and food planning during the past fifteen years (Lovell, 2010; Morgan, 2015). This delay has led to a situation whereby UA initiatives have appeared and worked in spite of the lack of support and assistance of planning authorities. In order to integrate spaces for therapeutic purposes, as well as to support UA in general, it will be important to reconcile the top-down approach of urban planners with the bottom-up character of UA initiatives to identify common goals and develop efficient policies to reach these goals.

Rich, Rich, and Hamza (2015) recently highlighted the role that system dynamics modelling could play to support the development of UA. System dynamics models are dynamic models (qualitative or quantitative) of complex systems that allow the simulation of alternative policy and planning interventions to assess their impact over time and among different stakeholders. An important component in such modelling efforts is a participatory process known as group model-building (GMB) that can be used to conceptualize and parameterize such planning models through participatory means. Jac Vennix, one of the leading experts on GMB defines it as "a system dynamics model-building process in which a client group is deeply involved in the process of model construction" (Vennix, 1999, pp. 1). Vennix suggests that GMB is a suitable method in "situations in which there are large differences of opinion on the problem or even on the question of whether there is a problem" (Vennix, 1999, pp. 2). In the context of integrating UA and STH, where stakeholders come from diverse backgrounds (planning, health, agriculture, community work) and perceptions about space and location mediate different views, a GMB process would provide stakeholders a platform to discuss issues, set goals, and develop strategies together which could play a critical role in a successful implementation of such policies. It would further provide a process through which planning models could be developed for long-term resource allocation purposes that has been validated through participatory means.

The GMB process is based on a cyclical repetition of group model-building sessions during which divergent thinking is induced in brainstorming exercises. This is followed by facilitated discussions encouraging convergent thinking and defining outcomes (Vennix, 1999). The GMB process for implementing UA and STH could consist of two stages: preliminary sessions to identify goals, means, and stakeholders; and main policy development/oriented sessions of stakeholders identified earlier. Fig. 2 shows a diagram of such a process. In each stage, there would be several iterations of interaction, depending on how many cycles are needed to reach a mutually desired output.

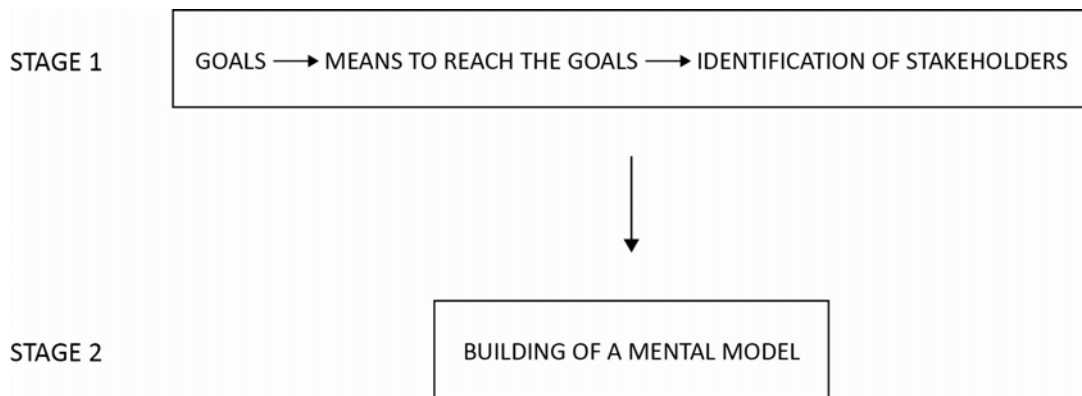


Figure 2. Stages of the GMB process. Magda Rich.

A crucial issue to consider before initiating a GMB process would be defining roles of the different stakeholders. Even if the initial impulse (and most likely funding) comes from a municipality or its planning department, they should not direct or manage the GMB process but rather participate as stakeholders, as a GMB facilitator should be a strictly neutral third party to the subject of discussion (Vennix, 1999).

## 6. Conclusions

In this paper, we have introduced STH as a potential new dimension of UA. We have highlighted some of the problems in the implementation of STH from the literature and addressed these in the analysis of four case studies of STH facilities found in urban areas. We propose the spatial integration of STH into an urban fabric through the CPUL concept and its formal integration into urban planning policies through GMB processes. By integrating STH in CPULs, areas suitable for STH could potentially reach more people, and enhance information exchange and cooperation with other CPUL components. Similarly, as STH and UA are both processes that involve a diverse set of stakeholders, their successful implementation requires a wide range of participation in the process. GMB has potential in this vein. In particular, GMB provides stakeholders with the means to jointly develop platforms for evaluating alternative strategies and adjusting them as situations evolve. Such an approach would thus not be imposed on stakeholders from above but rather “owned” by them. Such flexible participatory approaches could significantly enhance the potential of successful STH and UA implementation and lead to better urban and food planning in general.

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