

Gourmet Gardens

- for Indoors Urban Farming -

*From exploring urban green solutions in New York City
to the application of household microfarms in Budapest*

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English Abstract

The Gourmet Gardens Project aims to expose the potential of urban agriculture and the growing movement of local food production that has the power to substantially benefit our cities - and ourselves. It offers a product-service-system enabling people to become active participants in local food systems, with the purpose of producing goods within their own home for personal use or for small businesses that can potentially scale-up.

In order to facilitate this process, a modular grower system with seedlings-supply service is being designed for helping people to construct and maintain household gardens.

In parallel, the web platform offers gardening self-education with the involvement of other like-minded participating gardeners.

The product-system is designed to give access to a wide range of users with different economic and spatial constraints or gardening experience. The products can be assembled as a basic set-up and then can be easily reconfigured into different designs or more expanded systems with automated functions. Ultimately, the goal was to design solutions for

promotion, awareness and effective application in order to realize food production in a daily life environment. To improve society's relationship to nature, to draw on to people's enthusiasms so that motivation can be followed through into action.

The project is a proof of concept, on designing urban systems for ecologically supportable, conscious, contemporary lifestyle with emphasis on the implementation of eco-conscious objects, a model where household furniture adapts to the functionality of food production.

Both the physical product-system and the virtual web platform aims to bring back the power of local, small-scale, and on-demand production, for oneself or the market, creating healthy and safe food. It is about introducing ideas about self-sufficiency in an instable environmental and economic atmosphere. It enforces conscious consumption and transparent economic relationships between the involved partners, producers, stakeholders and citizens.

Italian Abstract

The Gourmet Garden Project mira a mettere in luce le potenzialità dell'agricoltura urbana e il crescente movimento di produzione locale di cibo che sostanzialmente ha la capacità di offrire un beneficio alle nostre città - e a noi stessi.

Il progetto offre un product-service system che consente alle persone di diventare partecipanti attivi dei sistemi di cibo locale, con lo scopo di produrre beni nelle loro stesse abitazioni, per uso personale o per piccoli business che possono essere potenzialmente ingranditi.

Per favorire tale processo, si è pensato ad un sistema modulare di coltivazione con un servizio di fornitura di piantine per aiutare la gente a costruire e mantenere dei giardini domestici. In parallelo, la piattaforma web offre corsi di giardinaggio per autodidatti con il coinvolgimento di altri giardinieri partecipanti che hanno idee simili.

Il products-system è progettato per essere accessibile ad un vasto numero di utenti con diversi vincoli economici e di spazio o esperienza di giardinaggio.

Gli elementi possono essere assemblati in una configurazione standard base e possono anche essere facilmente riconfigurati in diversi modi o in sistemi più grandi automatizzati.

In definitiva, lo scopo è stato quello di progettare soluzioni per incoraggiare, sensibilizzare e dunque realizzare concretamente una produzione di cibo in un ambiente di vita quotidiano; per migliorare la relazione della collettività con la natura, per far leva sull'entusiasmo della gente così che la motivazione venga poi portata avanti nella pratica.

Il progetto è una dimostrazione di un concept riguardante la progettazione di sistemi urbani per uno stile di vita contemporaneo eco-sostenibile e consapevole con un' enfasi sulla realizzazione di oggetti eco-consapevoli; un modello in cui l'arredo domestico abbraccia la funzione di produzione del cibo.

Sia il products-system in sé che la piattaforma web virtuale mirano a ridare forza alla produzione locale, su piccola scala e su richiesta - per se stessi o per il mercato - di cibo salutare e sicuro. L'idea è di introdurre dei concetti riguardanti l'autosufficienza in un'atmosfera sia ambientale che economica instabile, rafforzando un consumo consapevole e relazioni economiche trasparenti tra i partner, i produttori e i cittadini coinvolti.

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PART ONE

Declaration of Intent
Structure and Methods
Context

// A century ago, the planet was primarily rural; today it is half urban; and in twenty-five years it will be predominately urban. What does this mean for the design, production, sustainability and experience of our buildings and cities? For the sense of community and place? //
John Thackara



Introduction

This thesis project has been initiated and developed in New York City, in the context of the Polimi - Parsons exchange program. The program aims to promote and enhance educational and cultural opportunities by permitting each institution to send students to study at the other institution in support of the relationship between Parsons and Politecnico di Milano through the DESIS-USA Network. The fact of being in New York City, studying in Parsons and the close relationship to the DESIS Lab have been played an important part in the process of the project.

I arrived to the City with the intentions of working on the topic of 'urban green solutions' for my thesis project. I was interested in 'green auto-production' and 'green utopias', curious about how can we reintegrate nature into the daily life, with the help of innovative or interesting technological solutions. I wanted to see how New Yorkers pursuit the green life in a city so dense and intense, and in the same time always following the hottest trends.

This topic was huge but it was also giving me the possibility to work on solutions about the use of green as a way to make (the city) life more sustainable, something that I am most interested in as a designer.

Plants have physiological (improved humidity, reduced noise etc.) and psychological effects. Being and working around plants certainly seems to reduce stress and to increase the sense of belonging and the participation of the people.¹

The goal was to improve society's relationship to nature, to draw on to people's enthusiasms so that motivation can be followed through into action - how anyone can make the changes needed to lead a green lifestyle and then, take that positive action into their communities to create change.

Most of the research work was carried on during the exchange program, but the final design intervention was conducted back in Europe, when I arrived home to Budapest. This situation created a particular constellation of circumstances that led me to design the 'Urban adaptive systems' embodied in a Budapest blocks of flats scene.

1. Interior Landscape Plants For Indoor Air Pollution Abatement [1989] NASA



Central Park & Manhattan, view from the MET rooftop



Parsons, Manhattan, 5th Avenue



Looking south from Top of the Rock

Influences

NEW YORK CITY *Green Creativity*

New York is known for its status as a center for finance and culture and it is not necessarily labelled as being a green city, although the City and its citizens are extremely sensible for adapting and going on with the hottest trends - and being green has been hot for a long time. But what does it mean to be green in New York City?

In fact, New Yorkers have a smaller ecological footprint than most Americans², they drive less, take public transportation, live in tiny apartments, have less space, tend to buy fewer things and create less waste. New Yorkers shop at their local green market, visit parks and community gardens and recycle everything that can be recycled.

It is the way of life there that you can also have living in Europe but there is even more than that.

After the first couple of weeks, when the monumental skyscrapers started to become less astonishing, I could focus on smaller details. Even just by walking on the streets, you can bump into random little spaces that has been turned into backyard gardens or community gardens or other green art manifestos.

I became more and more excited to explore the city through a green lens, and in the meantime, tried to use the possibilities that Parsons were offering.

PARSONS THE NEW SCHOOL FOR DESIGN *Critical thinking*

Parsons is the university's highly competitive art school, a pioneer in progressive design education. In Parsons' education students learn critical thinking skills and apply them to diverse design challenges to solve complex problems. I learned a lot while being in Parsons and working together with the students; their professional attitude and persistence showed me a role model and set up a point of reference for the diploma project as well as for my future works.

Moreover, I had the chance to enjoy the benefits of their immerse network. I was attending lectures and talks from John Thackara, David Boyle, Dr. Michael Braungart and other lecturers from companies (or schools) like IDEO, Pantopicon, Kaos Pilots. These experiences also had a great influence on my work.

THE DESIS LAB [Design for Social Innovation and Sustainability Research Lab, School of Design Strategies]

Social Innovation and Sustainability

Many lectures and roundtables were organized by the DESIS Lab, that was the partner organizer of the exchange program.

For this reason, I was present in most of their events through the semester.

The talks were about the ways in which design can enhance community-led initiatives in the development of more sustainable ways of living and working.

I learned a lot from the discussions about the impact of design-enabled social innovation towards more sustainable cities and I was about to implement this in the project as well.

POLITECNICO DI MILANO

Product-Service-System Design

For the past two years, I have been absorbed in the multidisciplinary approach of product-service-system design that trained me to treat the design process as a transferable set of tools and approaches that can be applied to a far wider range of enquiry than the production of further three dimensional products or spaces.

Focusing on design-systems, I learnt how to use extended working-methods in practice. The PSSD course showed me that as a designer, we have to consider not just the physical outcome of a project but the whole system of material-flows and resource management with high sensitivity on the social-economic effects.

The design practices acquired during the past two years formed a model for the development of the thesis work; to solve problems by gathering and analyzing all the necessary information, transform the inputs and provide solutions for issues at all scale.

2. National Footprint Account [2011] Global Footprint Network

Observations

From the mass of intriguing insights and stimulations that I had the chance to experience during my stay in New York, my focus has been narrowed to three observations. Observations that illustrate the specific cultural peculiarities that took my attention and that presented the starting point for my further interests.

URBAN CULTIVATION

New York is home of undoubtedly one of the most active urban agricultural communities that represent what are the current modalities that people are already doing in the context of urban agriculture; there are hundreds of community gardens and farms, both on the ground and on rooftops, in backyards or public spaces, where basically people use every available or under-utilized spaces for the cultivation of food.

SPACE

New York's identity is associated with Manhattan's distinctive skyline with skyscrapers lining up next to each other. The city is designed for this concentrated structure and even if much of the park looks natural, it is almost entirely landscaped.

New York is all about spaces - it is the most densely populated county in the United States. Apartments are small with even smaller outdoor space. But constraints give spirit for inventiveness - mini gardens are greening in the holes of fire escapes or in old tires in the concrete backyard.

ACTIVENESS

In the City that never sleeps it seemed easier to catch up with the native New Yorkers and just do things all the time, all day. Maybe it's in the air there, but apart from the art and cultural events, exhibitions, bars and cafés, people do engage in social communal activities. If there is something not right, in the next moment the protesting group is already formed and they are out in the streets convincing others to join and take action. This behaviour is not that strong in European cultures and it had a great effect on my attitude as well.

Drivers & motivations

PLANTS & FISH

My personal interest in living with plants & fish in general and the experience with previous eco-tech projects have been fundamental for the selection and definition of the area of interest for my thesis.

SAME INTERESTS

Additionally, in Parsons I had the chance to meet Chris Piuggi, a graduate student from the Design and Technology MFA course, whom later I was collaborating with. I will present the results of the common work in the 'Prototypes' chapter of Part II.

His thesis project was about developing open-source data collection tools for urban farmers in order to monitor and communicate the health of their ecosystems.

OUR ECONOMIC CRISIS

And for last but not least, we are living in times of transition, when every one of us is affected by the economic and environmental crisis.

We are becoming increasingly aware of our present unsustainable practices.

We all know by now that "the fantasy of limitless growth; the fantasy that actions can be taken that don't have consequences; and the fantasy that human beings are separate from, and above, the natural world" are impossible³.

Without using vast simplifications, (the precise details of the constraints of unlimited growth expectations combined with finite resources is beyond the scope of this project) but I do intend to relate to this matter with a designer's responsibility.

3. "The three impossible fantasies" - *The Fool and the Great Turning*, Dr Chris Seeley

Focus

Green Living is not only about treating the planet better, it means living better. Eating healthier, locally grown foods that support the regional farmers. Living in homes free of toxins and neighbourhoods filled with green spaces, not noise pollution.

My observations and experiments started in New York City, but the development of the project continued back in Europe. Still, the influence of New York remained strong and I believe left a big mark on the project.

The topic of this thesis revolves around the concept of living green in the city. After the first initial observations about the sustainable New York context and the projects I've had the chance to work on so far have driven my initial research towards the topic of urban green solutions from a holistic standpoint.

Further considerations on a global scale have then shifted the focus on the narrower topic of urban agriculture as an essential element for a sustainable future.

The conclusions that came from the research part of the thesis work led me to form the concept of the "urban adaptive system", as a design intervention that translates the insights into a design opportunity. Consequently, the ultimate focus is on product-service-systems that allow different scenarios of use - possible solutions that can adapt to specific needs of the local environments.



The garden is open, Brooklyn



Flowers in a shoe, Brooklyn

Structure & methods

DESIGN RESEARCH

Through secondary research I studied and synthesized the macro-topic of the challenges generated by these 'transition times' that we are living in, and the movements that are consequent in society. Later as I advanced, I investigated the more specific theme of urban agriculture and the related trends and technologies.

The primary research has been used to raise questions and find design opportunities that later I could address during the project development. I used in-depth interviews in-context observations. The findings and conclusions gained from this part of the research became essential for the rest of the work.

LEARNING BY DOING

The nature of the project and my personal objectives pushed me to fully prototype the process of realizing a small urban farming unit. For the development of the project, it was crucial to understand what set of skills, talents and experiences are needed to be applied for this activity. By trying things out and experimenting I learnt first hand what works and what doesn't. Moreover, this behaviour is much encouraged in Parsons, since learning by doing promotes critical thinking, which is essential in design projects but also a good life skill.

Doing things and experimenting not only allows you to discover new things but also increases the chances of realizing sooner false beliefs.

5 PRINCIPLES OF ECOLOGICAL DESIGN

Sim Van der Ryn's 5 principles of Ecological Design have been supported and influenced my work throughout the project, and my objectives were to address the points with the best intentions.

// The environmental crisis is a design crisis. ... It is a consequence of how things are made, buildings are constructed, and landscapes are used. Design manifests culture, and culture rests firmly on what we believe to be true about the world. Our present forms of agriculture, architecture, engineering, and industry are derived from design epistemologies incompatible with nature's own. //

The core of the ecological design process⁴ consists of the followings:

1. Solutions grow from place : *ecological design begins with the intimate knowledge of a particular place. ...it is small scale and direct, responsive to both local conditions and local people.*
2. Ecological Accounting informs design: *in order to determine the most ecologically sound design possibility.*
3. Design with Nature: *by working with the patterns and processes favoured by the living world, we can dramatically reduce the ecological impacts of our designs.*
4. Everyone is a Designer: *listen to every voice in the design process. No one is participant only, or designer only.*
5. Make Nature Visible: *effective design helps inform us of our place within nature.*

4. *Ecological Design, Sim Van der Ryn - Stuart Cowan [1996]*

Context

The year is 2012

The majority of the world today lives in urban areas, in fact we are undergoing the largest wave of urban growth. For the first time in history, half of the world's population is living in towns and cities⁵. By 2050 city dwellers are expected to number 6 billion, 70 per cent of the world's population⁶, with urban growth concentrated in Africa and Asia.

It is a fact that the world's population is becoming increasingly urban. An other fact is that infinite growth in a world whose carrying capacity is finite is impossible. The challenge for the next few decades is understanding, evaluating and re-envisioning the systems by which cities operate in order to have the chance to create a sustainable future. Architects and designers have to learn how to exploit the possibilities urbanization offers and how to respond to the magnitude of the change.

Last year around October, the world's population was projected to hit 7 billion. According to "The State of World Population 2011" report⁷, how we respond now will determine whether we have a healthy, sustainable and prosperous future or one that is marked by inequalities, environmental decline and economic setbacks.

The 7 billion milestone "is a challenge, an opportunity and a call to action," writes Babatunde Osotimehin, executive director of the UNFPA.

In response to the report, seven notable figures⁸ were asked to identify some major issues — that represent both problems and potential remedies — confronting a world with 7 billion inhabitants.

Their list was consisting: Food shortage, damage to environment, Access to information technology, education, Women's rights and gender inequality, Climate change, Aging, Energy, Water, Consumer innovation (and of course the list could grow much longer).

Without going into further details in each of these topics, I have to state here that my project does not mean to provide solutions for such complex and ambiguous problems. But it does intend to address to some of them, to the issues that even I notice and experience (even if living in the wealthier half of the world).

// We created a way of raising standards of living that we can't possibly pass on to our children. We have been getting rich by depleting all our natural stocks – water, hydrocarbons, forests, rivers, fish and arable land – and not by generating renewable flows. // Joe Romm, physicist and climate expert

Regarding Food and Agriculture, the 7 billion growth is just culminating the problems. While population continues to grow, the rise in land productivity continues to slow. Several long-standing environmental trends are contributing to this course, leading to an increasing global loss of agricultural momentum. Among these are the newer environmental trends too – falling water tables and rising temperatures – that are slowing the growth in world food production.

But crisis contains opportunity. There are today and will be ever increasing opportunities in the future for different alternatives. Solutions that make small scale locally produced agriculture affordable, that make organic agriculture the rule rather than the exception. It is high time to create awareness about the need for a new way of thinking about the future of food.

5. *The total population of urban areas is estimated at nearly 1.8 billion, 48 percent of the world urban population [2012] Demographia World Urban Areas [World Agglomerations] 8th Annual Edition*

6. *The United Nations Population Fund [UNPF], <http://www.unfpa.org/pds/urbanization.htm>*

7. *The State of World Population [2011] - People and possibilities in a world of 7 billion [UNPF]*

8. *Seven big problems for 7 billion people, James Eng, [10/26/2011], msnbc.com*

World population by the billions:

1 billion - 1804
2 billion - 1927
3 billion - 1959
4 billion - 1974
5 billion - 1987
6 billion - 1999*
7 billion - 2011

*Year when the milestone was observed by the United Nations [UNPF]

FOOD. US. NYC.

America is the land of choices. Coming from Europe (especially from Eastern Europe) I was quite surprised by the endless possibilities of all consumer goods that can feed the diverse desires.

But not everybody can live the American Dream and reality shows that the 'Dream of a Democracy of Goods' (saying that everyone has access to the same products regardless of race, gender, ethnicity, or class, thereby challenging the aristocratic norms of the rest of the world whereby only the rich or well-connected are granted access to luxury)⁹ is just not for everyone.

In fact, income inequality is greater in New York State and in the New York City region than in any other state or metropolitan area in the US.¹⁰

FOOD DESERTS

One of the manifestations of these inequalities is the phenomena of food deserts.

Food deserts are described as an area in the United States with limited access to affordable nutritious food, particularly such an area composed of predominantly lower-income neighbourhoods and communities. ¹¹

A recent study by the New York City Department of City Planning¹², shows some disturbing numbers. The study estimates that 3 million people in NYC live in what are considered high-need neighbourhoods, with not enough supermarkets and too many health problems. That is a lot of people, more than a third of New York City's population.

// Many people in low-income neighbourhoods are spending their food budget at discount stores or pharmacies where there is no fresh produce. In our study, a significant percentage of them reported that in the day before our survey, they had not eaten fresh fruit or vegetables. Not one. That really is a health crisis in the City. // Amanda Burden, planning director of NYC

In the meantime, according to the New York Daily News, the USDA's map says that only 26,000 people live in a food desert in New York (comparing to those 3 million people estimated by the City officials)¹³.

This highlights the fact that this problem is not supported from the National Government of the United States. Solutions for this issue will not come from the top-down but they have the chance to come from the bottom-up.

9. *The Four Dreams of Consumerism*, http://en.wikipedia.org/wiki/American_Dream

10. *Income Disparity Is Greatest in New York, Census Finds*, Sam Roberts, *New York Times*, [10/27/2011]

11. *Definition from The United States Department of Agriculture*, <http://www.ers.usda.gov>

12. *Food desert Status Denied to 3 million New Yorkers Without Grocery Stores*, Kathleen Lucadamo, *New York Daily News*, [08/14/2011]

13. *Going to Market: New York City's Neighbourhoods Grocery Store and Supermarket Shortage*, New York City Department of City Planning [10/29/2008]

Urban Farms

But society or at least a certain part for society acknowledged that there are problems in the system. Small changes are already happening when local communities and organizations participate in the solution by creating their own sources of food, individually and collaboratively.

Urban farming is an alternate possibility, one in which urban dwellers grow their own food - it is the growing movement of local food production that inspire positive local action around issues of food access, as well as social and economic justice.

Urban farming is one strategy that helps minimizing the effects of the issues mentioned - it is not a stand-alone solution, but it has being experimented with the livability in the city where food is becoming a big focal point.

NEW YORK CULTIVATORS

The City's cultivators are a varied crowd. New York has one of the most vivid urban agricultural communities in the United States and possibly in the world. These farms are run by gardeners, farmers, students and volunteers who believe in the idea that urban agriculture is an eligible way to increase city dwellers' access to good, healthy food, produced organically with minimal impact to the environment. Not only there is a huge farming activity, there are also many different innovative and exciting urban agriculture projects; high school programs, buying club of urban agricultural

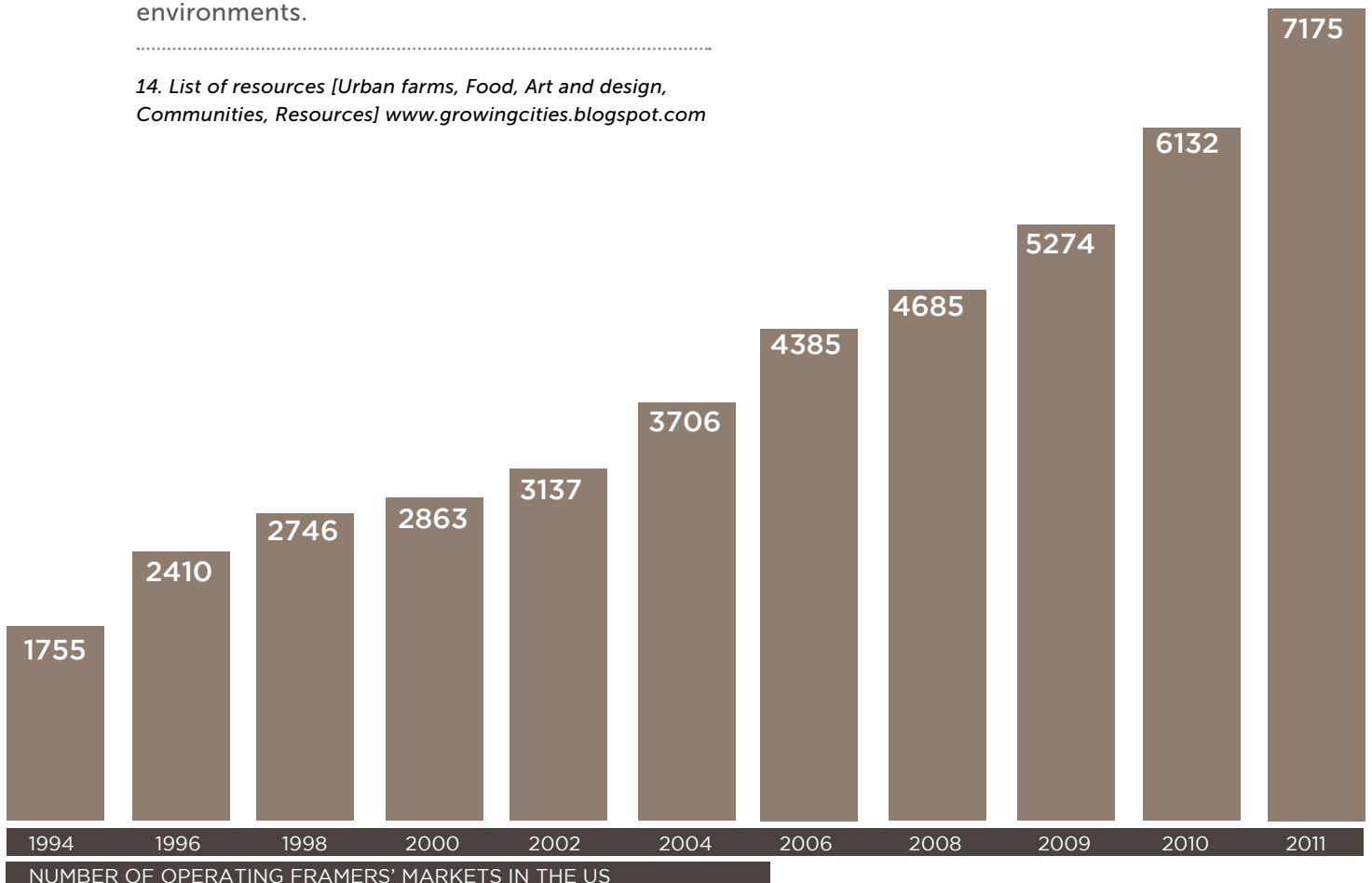
products for restaurants, city composting programs, free seedlings from Green Thumb, free educational courses... etc.¹⁴

This is the reason behind the success of the urban agriculture movement in New York; the City provides a lot of support and opportunities for the farmers and gardeners who want to grow. But even with a lot of support from the city organisations, the main driver is the community assistance, the factor that makes these small ventures a profitable success. There are many arguments that explain this behaviour, but one clear thing is that American people are paying more attention to food today than long time before, concerning about its safety, origins and healthfulness and not only about its price.

When there is a gathering sense among the people that they themselves has to take actions, all this suggests that a political effort for change is building. Responding for the signs that the industrial-food system is broken, markets for alternative kinds of food are thriving as never before.

Urban farms in New York and all over the world are a response to the inefficiencies of the current systems, and aim to empower urban dwellers to produce food in their everyday lives. They represent a small but growing population. Their role in cultivation is changing the way we produce, distribute and even consume agricultural products. Many research and development projects are ongoing to promote and facilitate greater participation in urban cultivation, in order to augment the role of individuals within the food chain of urban environments.

14. List of resources [Urban farms, Food, Art and design, Communities, Resources] www.growingcities.blogspot.com



The Roots

Reflections on design and urban food systems is not a totally novel topic - there are various examples where agricultural issues are shaping urban spaces and buildings.¹⁵

Also, this is not the first time in history that urban agriculture has been discovered by design. The roots indeed go back long before, to the times of the industrial revolution, the shifting point where changes in agriculture, manufacturing, mining, transportation, and technology had a profound effect on the social, economic and cultural conditions of the times.¹⁶

Johann Heinrich von Thünen - THE ISOLATED STATE [1826]¹⁷

Johann Heinrich von Thünen was a prominent nineteenth century economist, who in his book "The Isolated State", developed the first serious treatment of spatial economics, articulating the economic and agricultural logic for locating fruits and vegetables close to a city's center as a planning tool.

Ebenezer Howard - GARDEN CITIES OF TOMORROW [1902]¹⁸

In his publication, the "Garden Cities of Tomorrow" he described the utopian city in which people live harmoniously together with nature. It is an early modernist concepts of the city, where food production is integral in the functioning of the city with five-sixths of the land be dedicated to food production.

Le Corbusier - CONTEMPORARY CITY [1922]¹⁹

Le Corbusier, a pioneer of modern architecture and dedicated to providing better living conditions for the residents of crowded cities, presented a scheme for a "Contemporary City" for three million inhabitants with three types of food producing areas included.

Frank Lloyd Wright - BROADACRE CITY [~1930]²⁰

In his suburban development concept, Frank Lloyd Wright proposed to integrate agriculture into dispersed low-density living areas.

VICTORY GARDENS [~1920, ~1940]²¹

Victory gardens were vegetable, fruit and herb gardens planted at private residences and public parks in the United States, United Kingdom, Canada and Germany during World War I and World War II to reduce the pressure on the public food supply brought on by the war effort that dramatically cut down food production.

"A victory garden is like a share in an airplane factory. It helps win the War and pays dividends too." Claude R. Wickard, Secretary of Agriculture (US, 1940-45)

But why these inspiring plans, concepts and initiations did not have an enduring effect on urban societies? What happened, was 200 years of cheap energy fuelling industrial growth. Even the success of victory gardens, that transformed spaces in many countries into remarkably productive areas, disappeared after the war with the growth of globalized industrial food systems.

Agri + Culture

But there is a big difference today, that is urban farming is coming from necessity and not from the top decision-makers. The grassroots urban farming movement of recent years has opened possibilities for farmers markets, community-supported agriculture, the 100-mile diet, and Slow Food.

The physical and cultural connection of food and cities has been a largely bottom-up process to which the design world is now responding. In the book of Carrot City - Designing for Urban Agriculture²², it is articulated that the challenge for designers now is to develop "exciting and innovative proposals for a future Productive City that will capture the imaginations of the public. For urban agriculture to gain wide acceptance, the design of buildings and garden spaces around need to incorporate edible landscaping, and space for small livestock – and these must be aesthetically pleasing."

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15. *Carrot City: Design's New Shtick*, John Thackara, [09/30/2011] www.doorsofperception.com
 16. http://en.wikipedia.org/wiki/Industrial_Revolution
 17. http://en.wikipedia.org/wiki/Johann_Heinrich_von_Th%C3%BCnen
 18. http://en.wikipedia.org/wiki/Ebenezer_Howard
 19. http://en.wikipedia.org/wiki/Ville_Contemporaine
 20. http://en.wikipedia.org/wiki/Broadacre_City
 21. http://en.wikipedia.org/wiki/Victory_garden
 22. *Carrot City: Creating Places for Urban Agriculture*, Mark Gorgolewski, June Komisar, Joe Nasr [2011]

AGRI [lat: field, country] + CULTURA [lat: cultivation]

CULTURA [lat: cultivation] » CULTURE [eng: development or improvement of the mind by education or training]²³

Agriculture was the key development in the rise of human civilization, and still today, the level of advancement of a civilization is often measured by its progress in agriculture (with other measurement factors as well).

We are sharing one world, with lots of differences, but as the pace of the inevitable phenomenon of globalization²⁴ has become much faster and more dramatic over the last few decades, the different cultures have been brought closer than ever before in human history.

The unprecedented advancements in technology, communications, science, transport and industry increase human connectivity and the interchange of world views, products, ideas, and other aspects of culture, and precipitate further interdependence of economic and cultural activities.

23. Latin dictionary: <http://www.math.ubc.ca/~cass/frivs/latin/latin-dict-full.html#C>

24. <http://en.wikipedia.org/wiki/Globalization>

Changes in society

At the beginning of the new century, the revival of urban agriculture is indeed complex. The trends in predominantly urban developed countries and industrializing nations are distinct from those in low-income, food-short urbanizing countries. There are, however, considerable overlaps or similarities, that the research work of Jac Smit, Joe Nasr, and Annu Ratta aims to identify and quantify in the report on "Urban Agriculture: Food Jobs and Sustainable Cities."²⁵

Based on more than 40 years of cumulative work in the field (extending back to the 1960's), and visits to more than 40 countries and 100 towns and cities on four continents, they identified and summarized the factors and trends influencing urban agriculture.

The study presents the expansion of urban agriculture over the past 20-30 years that occurred in response to urbanization, information, policies, and other influences²⁶. It also captures the advantages of this expansion, indicating that in most cities and countries, the benefits from production of food within the human settlement will outweigh the costs. The research concludes that urban agriculture tends to be a more environmentally sustainable form of food production than agriculture in rural areas.

It is explained, that urban agriculture is fired by urbanization, and particularly by modern low-density urbanization. Urban agriculture expands with the growth of a city in a low-income economy as part of the informal and formal economy. And it also expands in a high income economy at the leading edge of consumer specificity — this trend is especially relevant to the New York context where citizens want "not just a melon, but a yellow melon with sweet red meat".

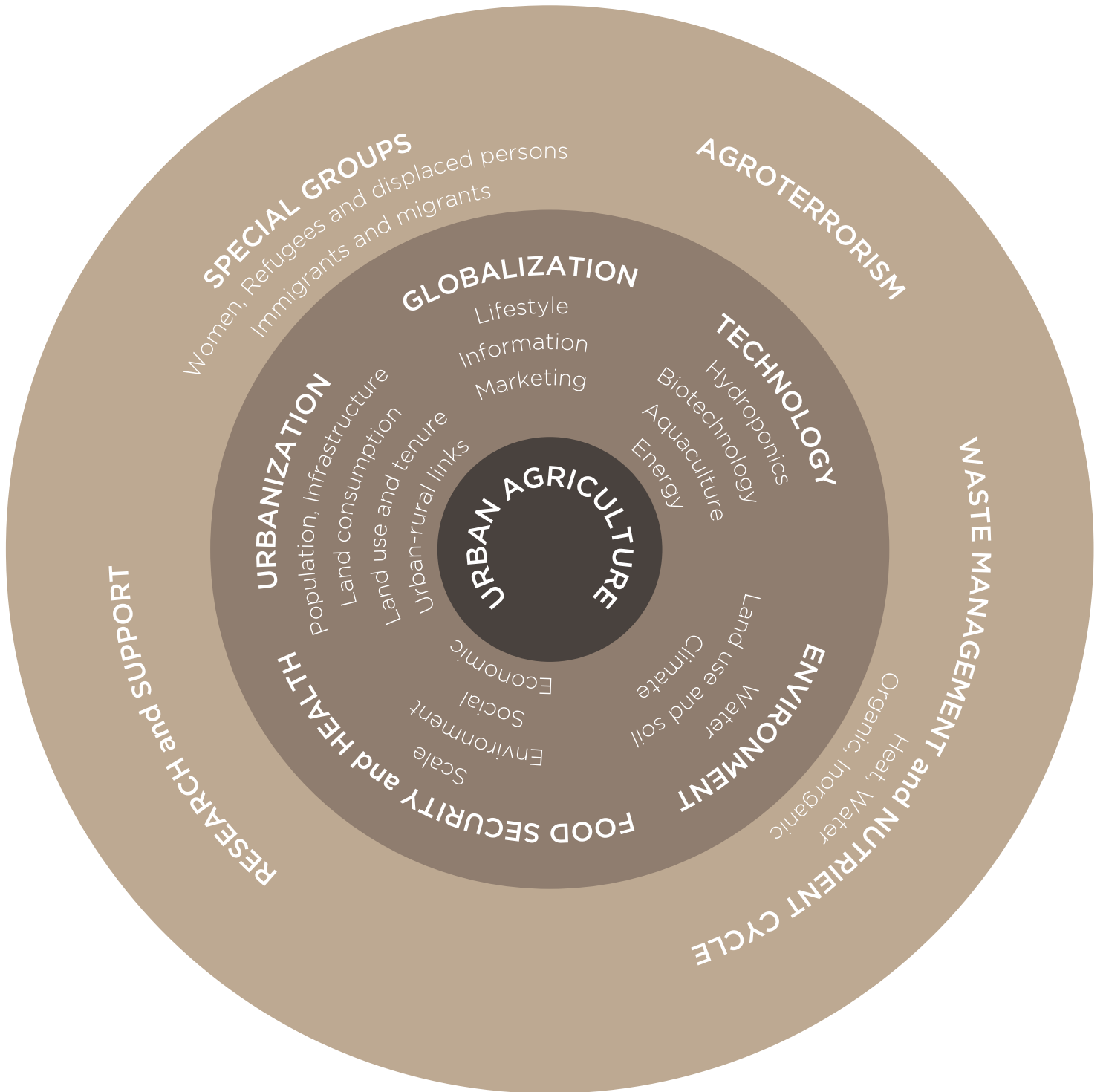
It is important to point out the two reinforcing factors that appear to be occurring in both North and South:

*urban agriculture diffuses and grows as a result of the information revolution, and is part of globalization, and

*urban agriculture is a counter-trend as the world globalizes — it occurs as a community or civic activity similar to agriculture in the traditional village or the neighbourhood pub or coffee shop.

25. *Urban Agriculture: Food Jobs and Sustainable Cities*, Jac Smit, Joe Nasr, and Annu Ratta [2001 edition, United Nations Development Programme]

26. *Selected factors influencing the evolution of urban agriculture, data from [25] Urban Agriculture: Food Jobs and Sustainable Cities*



Trends for Urban Agriculture

INFORMATION REVOLUTION

What are the social movements and trends brought by the information revolution supporting the spread of urban agriculture?

The technical trends in the information revolution resulted new artefacts and services that have been becoming widespread during the past 10 years.

We witnessed the convergence of voice and data communications and a quantum jump in bandwidth, the appearance of diverse, powerful, inexpensive sensors and devices with wireless communications. We can also observe the shift in business emphasis from products to services with an impact on health care, education, entertainment, and supply-chain management.

Amongst other aspects, individual and societal tensions arose from these developments as well, such as battles between advocates of 'open' and 'closed' worlds of protocols and standards, and the threats to intellectual property rights and to individual privacy.²⁷

OPEN SOURCE SOFTWARE

But no matter how ambiguous, the open source software movement revolutionized the global markets by creating equal opportunities for people all over the world to participate in the global economy.

The adoption of open software technology allows Individuals or organizations to have the means needed to develop technical material for a variety of consumers. They have the access to the software they need to create, organize or distribute content freely, with a degree of global computing access that might have been unthinkable in a world where proprietary was the only option.²⁸

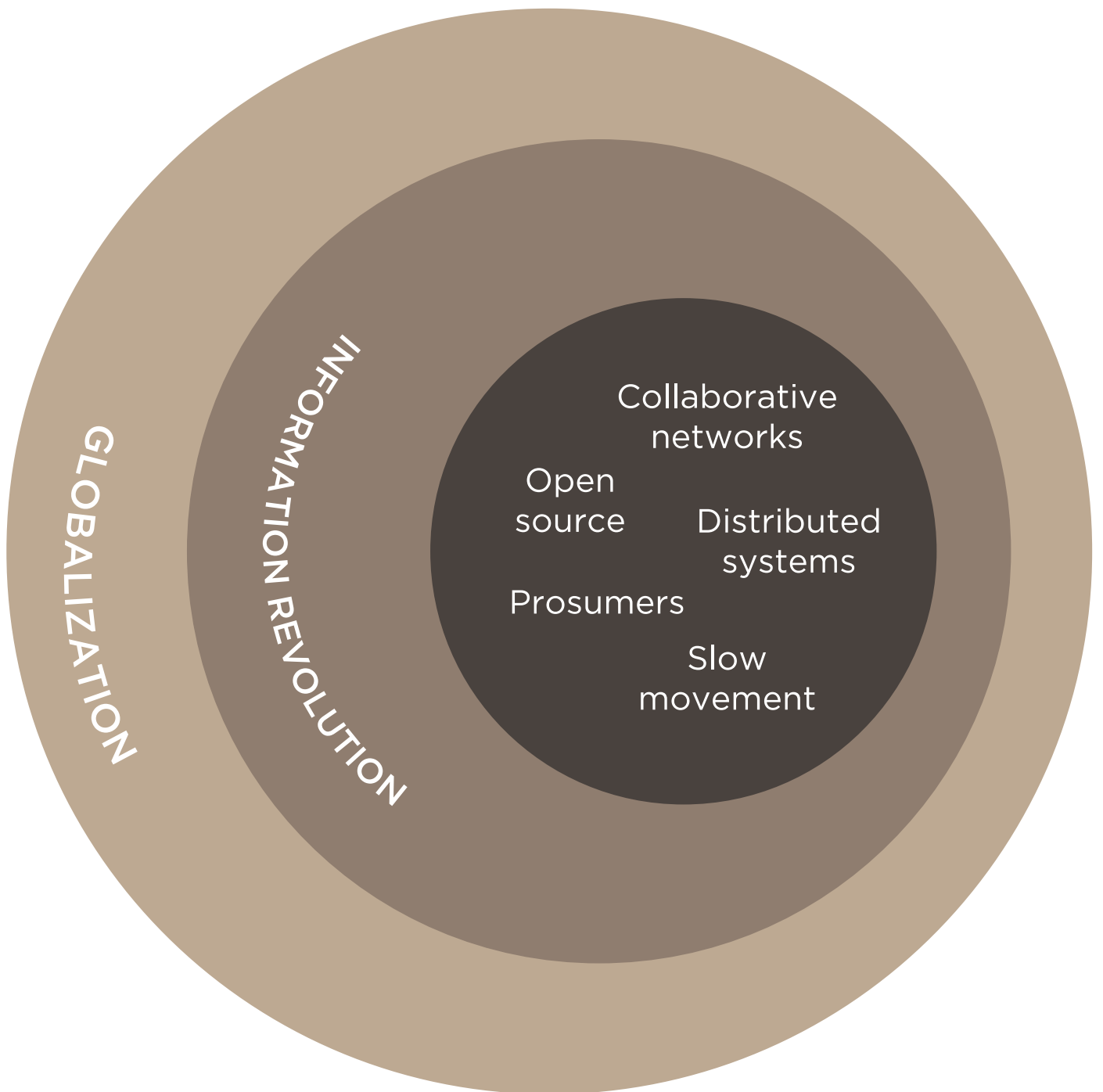
COLLABORATIVE NETWORKS

The open software movement of the last decades gave birth to the forming of new creative communities: collaborative networks. People participating in these communities are working together for a common goal, even outside of the world of computing. Ezio Manzini describes them as "collaborative networks are a mix of motivation and ways of doings that were not possible before, capable of catalysing large members of interested people, organize them into a peer to peer modality, build a common vision and a common direction and develop very complex projects such in the case of wikipedia".²⁹ These trends open up new ways to work together; people are connecting online not only for social reasons, but to work together.

27. *The Global Course of the Information Revolution: Technological Trends* [2000]

28. http://en.wikipedia.org/wiki/Open_source_movement/

29. *Collaborative Services: Social innovation and design for sustainability*, Jégou F., Manzini E. [2007]



DISTRIBUTED SYSTEMS

The term of distributed systems comes from the description of a specific computing mode; distributed computing (where the system consists of multiple autonomous computers communicating through a common network, interacting with each other in order to achieve a common goal.³⁰

The analogy is used for describing horizontal system architectures where a high number of connected elements act in parallel together to complete the tasks. They are triggered by a technological platform enabled by the use of the internet and the possibilities of the communication technology.

With the presence of the open software / open hardware movement, distributed systems helped the appearance of distributed manufacturing / production. It is a decentralized process, where the production happens in-place, just-in-time, in the needed quantity and where decisions come from the free engagement and cooperation of the people who unite to create common value.

CONTEXT ECONOMY - PROSUMERS

The information revolution changed how we live, work together, consume and value things. And with new values comes a new economy. In the book of "Democratizing the future, Towards a new era of creativity and growth", Josephine Green (Senior Director of Trends

and Strategy at Philips Design) says that we are living in transition times. She explains this transition as the shift from mass consumption towards mass creativity, giving an increasing influence and power to consumers.³¹

Environments become smart, technology supports and facilitates our daily living, general well-being is redefined. Health and wellness, connectedness, personal growth and personal control are in the lime-light of the new era. What becomes important instead of the material ways is the quality and the choice of interaction, which require connected and networked environments that enable a more systems-based delivery of value. Green calls it 'context economy', a system that is decentralized and user-centered.

The new era of context economy - where the Web 2.0, the open source movement, and the emerging mode of peer production started new fields of openness, participation, and cooperation - created new models as foundation for rebuilding the civilizations of the modern world.

This new social, productive, and exchange model has emerged and changed its participants as well. The new shape of 'prosumers' emerged (~ producer + consumer), who simultaneously innovate, produce, distribute, and consume (*more ideas on the prosumer's phenomena is developed in the 'Case study: Prosumers' paragraph, page 40*).

COUNTER-TREND: THE SLOW MOVEMENT

The slow movement supports a growing cultural shift towards slowing down. It is a worldwide movement aiming to recapture the lost connection to the natural world and rhythms around us.

This connection is not about the technological interconnectedness that the development of the communication technologies brought in recent times - it is about the connection to all that it means to live: to people (ourselves, our family, our community, our friends), to food, to place (where we live) and to life itself.

The beginnings

The Slow Movement advocates a cultural shift toward slowing down life's pace. It began with Carlo Petrini's protest against the opening of a McDonald's restaurant in Piazza di Spagna, Rome in 1986, that sparked the creation of the Slow Food organization³². Over time, this developed into a subculture in other areas, such as Cittaslow (Slow Cities), Slow living, Slow Travel, and Slow Design.

Slow Food

Slow Food, as an alternative to fast food, strives to preserve traditional and regional cuisine and encourages farming of plants, seeds and livestock characteristic of the local ecosystem. Its goals of sustainable foods and promotion of local small businesses are paralleled by a political agenda directed against globalization of agricultural products.³³

30. http://en.wikipedia.org/wiki/Distributed_computing

31. *Democratizing the future. Towards a new era of creativity and growth*, Green, J. [2009]

32. http://en.wikipedia.org/wiki/Slow_movement

33. http://en.wikipedia.org/wiki/Slow_Food

Urban Farming 2.0

Farming and technology always had a strong relationship. In fact, modern farming became possible by the technological inventions brought by the industrial revolution that allowed farms to become bigger and more efficient.

Even genetics have played a part in helping the crops to grow in colder weather and grow in size. Of course, too much technology and too much modification can shoot back, controversies around factory farming and genetically modified foods have shown the miscarriages of agriculture where it makes more damage than good.

But the recent popularity of green markets and home gardens has span the gap from personal projects to multi million-dollar innovations.

Urban farming projects of all shapes and kinds take their place in the market, pointing out that city agriculture is no longer the province of only nonprofit organizations, school groups and renegade gardeners but it is also a place for serious businesses.

Case Studies

The recent popularity of urban farming projects has resulted in many different solutions, products, software or social initiatives.

After a broad research in this topic, I selected for further analysis those that are about to integrate ecological practices into urban environments today (and have developed from the possibilities by the current trends earlier presented).

I was searching for examples that deliver successful methods for raising awareness, managing the integration of ecosystems, or using supporting automated processes.



Case Study: Open source

ARDUINO

There are many projects dealing with the automation for gardening processes, such as the irrigation and lighting of the plants. Usually they work with Arduino boards.

Arduino is a popular open-source single-board microcontroller, designed to make the process of using electronics in multidisciplinary projects more accessible.³⁴ It is basically a hardware hacking platform for designers, artists and hobbyists or for anyone interested in creating interactive objects or environments.

BOTANICALLS - communicative plants

Botanicalls, started in 2007, as a collaborative art&tech project, initiated by Rob Faludi, Kate Hartman, and Kati London. The Botanicalls is a leaf-shaped electronic board that allows transmission via Twitter of your plant conditions. As an art manifesto, it aimed to open a new channel of communication between plants and humans, in an effort to promote successful inter-species understanding.

The team was originally not that concerned about the technical gardening processes, however they started to implement a technique inventing new avenues of communication with the plants, engaging the user for a whole new level of interactions.

GARDUINO - assisted gardening

Garduino is a gardening Arduino, that waters the plants whenever their soil moisture level drops below a predefined value, turns on grow lights, sends alerts if the temperature around the plants drops below 50 degrees.

It was the first grow-light and auto-water setup that takes into account natural sunlight received and soil moisture level, all open-source and documented on Instructables.

It became very popular and Luke Iseman, the creator quickly developed it to the next level: the Growerbot.

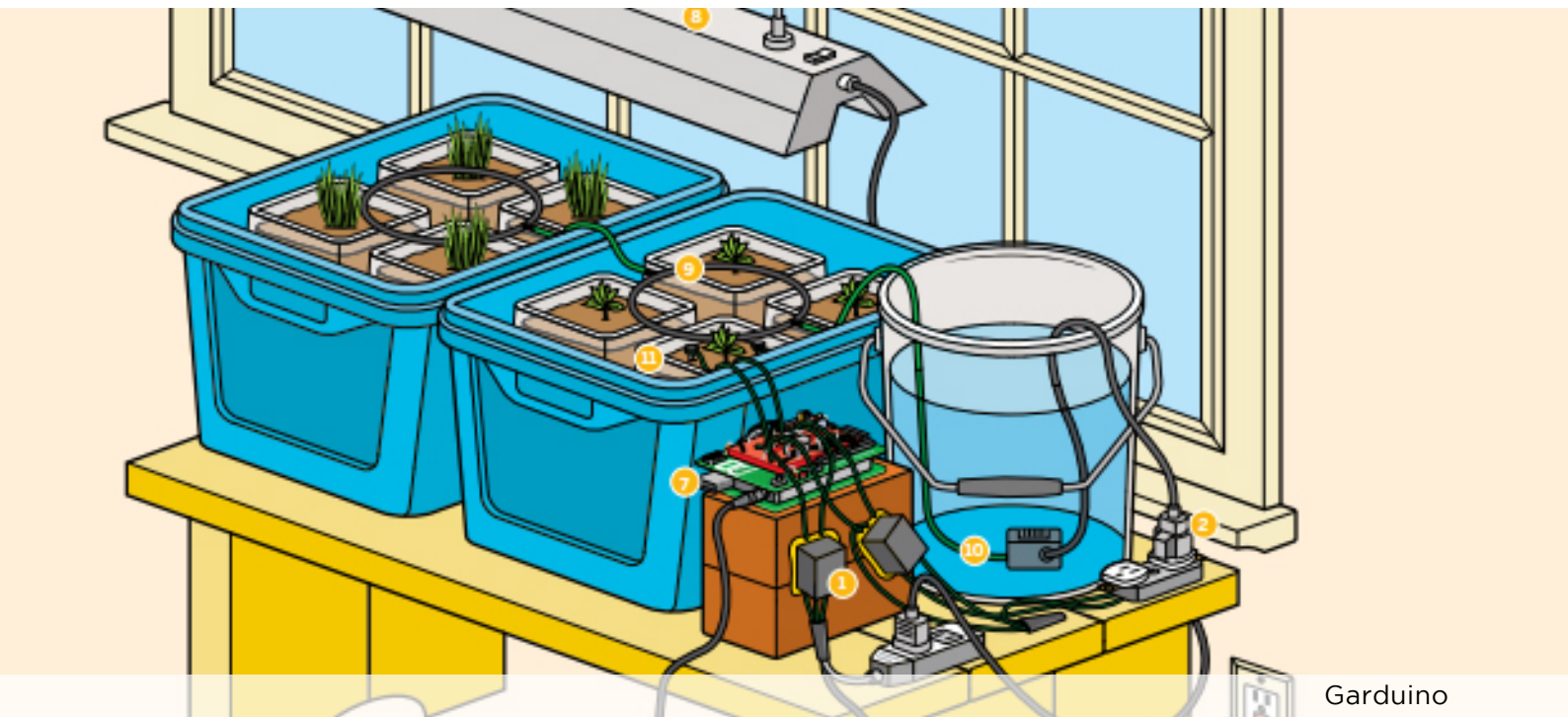
GROWERBOT -social gardening

Gowerbot is an arduino-integrated device that mixes the power of automation to keep food growing optimally with gamification to get people excited about gardening, by sharing the data on the social networks

³⁴. <http://www.arduino.cc/>



Botanicalls



Garduino



Growerbot

Case Study: Collaborative Networks

PROJECT NOAH - networked organisms

Project Noah is an online platform and mobile application that allows 'curious naturalists' to contribute to ongoing scientific research through data collection and documentation efforts.

Although it is not strictly connected to urban farming but I think it is a good example to mention here since the app seeks to create personal connections to the natural world and aims to boost eco-literacy.

Yasser Ansari, co-founder of a group called Networked Organisms, which first launched the app, said he hopes "to mobilize a new wave of environmental awareness."³⁵

The idea behind this free application is to help people identify plants and animals as well as collect data from 'citizen scientists' about where certain species are located.

The working model of Project Noah is based on its community of users - which, to date, is more than 10,000 - and the site also integrates with reddit.com, the online network, to widen the net of people who are looking at the content posted from the app.

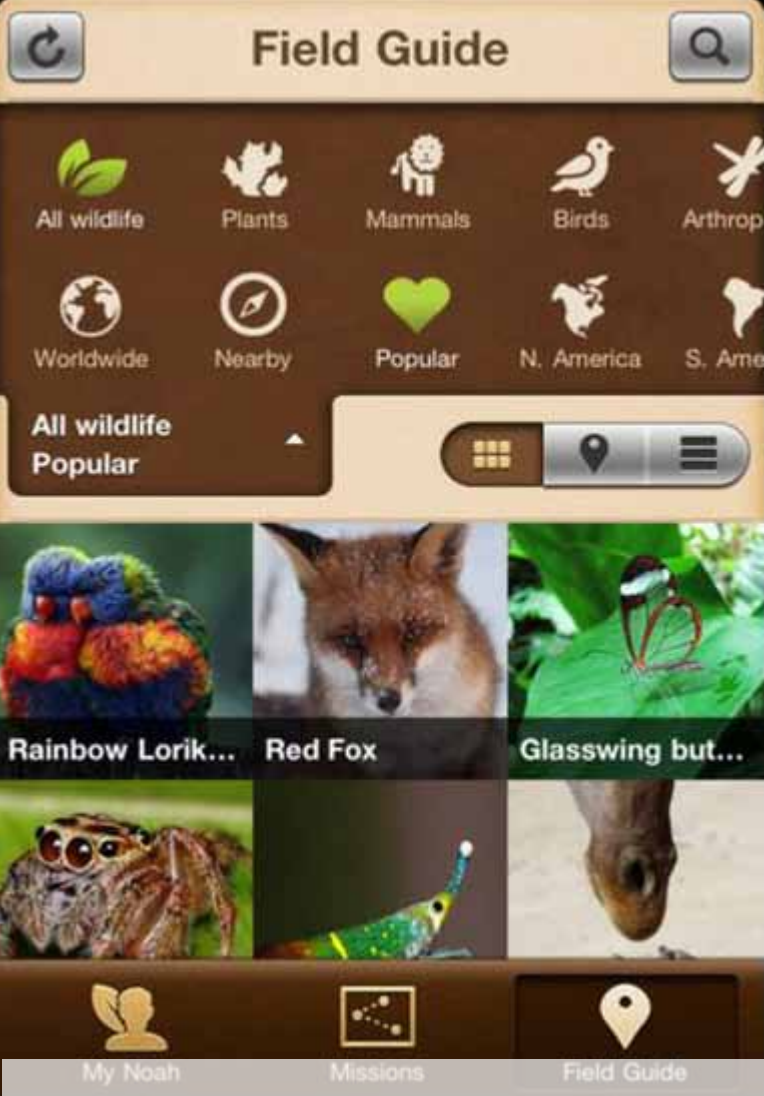
The app asks people to upload photos, GPS coordinates and other anecdotal info about the wildlife they see, and the data is shared with the science community.

The app features several so-called 'nature challenges', which encourage people to learn about specific plants and animals near their current location and then the submissions are fed directly to the research group that's looking for them.

The app also shares information with the Encyclopedia of Life, an online repository of biological information.

Yasser Ansari said he sees uploading photos of mushrooms and insects as its own form of activism. He created Project Noah with the principle of // focusing on the importance of design in providing meaningful experiences... to enable others to follow their passion and to use their best talent in pursuit of a common dream, and create an ecosystem, where all parties accomplish greater things together than they can do on their own. //

³⁵ What kind of beetle? This app knows, John D. Sutter, CNN, [22/10/2011]



Snake-mimic Caterpillar



Pearl-bordered Fritillary



Goniobranchus Kuniei



Mindanao Horned Frog

Case Study: Distributed systems

WINDOWFARMS - viral gardening

In 2009 artists Britta Riley and Rebecca Bray started to experiment with vertical gardening and posted online details about how to do it; on the windowfarms web site they provided instructions on how to put together a system that grows plants.

In fact this was a core element of the project: how to grow enthusiasm for the apartment farming in a viral like manner.

They managed to implement environmental innovation through web 2.0 crowdsourcing and apparently the public was participating - people started to publish their own improvements.

Today the windowfarms.org community consists of more than 20.000 active users from the US to Italy, Israel and Hong Kong.

One of the reasons behind their success was that they can show people how simple it can be to construct and manage a hydroponic gardening system with very little costs.

A windowfarm consists of recycled water bottles, clay pellets, plastic tubing and inexpensive fish tank air pumps. Riley calls the process 'R&D-I-Y' or Research and Develop It Yourself.³⁶

Windowfarms is a proof that a distributed network of individuals sharing information can implement a wide variety of designs that accommodate specific local needs and implement them locally.

The windowfarming urban farmers use the Internet to exchange ideas for improving the windowfarms technology and that is how the project continues to develop.

Now there are pre-made windowfarm developer kits for several types of systems and they are planning to combine windowfarms with aquaponic techniques too.

³⁶. <http://www.windowfarms.org/story>



Britta Riley with Windowfarms



New Windowfarms design



Windowfarms illustrations

// If we're doing the green lifestyle right, ultimately we become prosumers instead of consumers. // John F. Wasik

// You can't grow food with an iPhone app. // John Thackara

Case Study: Prosumers

n. A person in postindustrial society who combines the economic roles of producer and consumer.³⁷

The term prosumer originated with Alvin Toffler, who first used the term in his 1980 book 'The Third Wave'. Toffler defined the prosumer as someone who blurs the distinction between a 'consumer' and a 'producer'.³⁸

The term has since come to mean a variety of things, but here I define it as someone who makes little distinction between the sphere of the home and work lives. Because of the complexity of their lifestyle, prosumers are eager adopters of Web 2.0 products and services—a convergence of process innovation, global marketplaces, and advanced technologies that fundamentally changes the way consumers buy, retailers sell, and products are brought to market. But not all prosumers use all Web 2.0 technologies, they value any technology that enhances and serves these needs.

And this is true to people who grow food in the window or make their own compost for fertilizing the garden or mix their own potion to dye their hair... and through these voluntary simplicity actions they seek personal, social, and environmental goals. One of my favourite examples is the Back To The Roots mushroom growing kit that uses recycled coffee grounds as base and where you can harvest straight from the box.

Case Study: Slow movement

As a counter-trend of globalization, the slow movement affects all aspects of our lives; we can now talk about slow travel, cities, food, school, books, living, money... or slow fishing.

Slow food is also about conscious consumption, where there is a transparent economic relationships between producers and citizens. At seafood chains, we need to know where the fish came from, how or when it was caught, by whom, or what has happened to it since then.

Ocean fish are wildlife—the last such creatures that humans hunt on a large scale. Over the past five decades technology has allowed us to fish farther, deeper and more efficiently than ever before and the impact of over fishing on our oceans is unthinkable. Yet there are fisheries being run in a sustainable way. Aquaculture, or fish farming, could be a great solution to the ever-increasing pressures on our ocean resources. But the ecological impact of fish farming depends on the species chosen, where the farm is located, and how they are raised.

This traceability is an essential element in seafood sustainability. And there is a mobile phone application for this purpose, designed to make fish consumers smarter. Monterey Bay Aquarium's Seafood Watch gives information and shows the locations of restaurants and markets of sustainable seafood.

37. Definition from Wiktionary

38. Prosumers: A New Growth Opportunity, William Gerhardt, Service Provider Practice, IBSG [2008] Cisco Systems



Back to the roots growing kit



Seafood watch paper version



Seafood watch mobile app

Conclusions

Today our world changes faster than ever before in human history and globalization makes profound cultural and behavioural impact in people's life. Globalization leaves people behind from the system from various contexts but at the same time gives them new kind of opportunities. These opportunities come from the mainstream system but offer the chance to and deal with the problems encountered as individuals and social beings every day.

While the consumption of genetically modified food is increasing as pushed from the governments, the organic food movement have become stronger and bigger with louder advocates. Just like with the growth of supermarkets selling imported goods, there are more and more small markets and shops promoting the local economy. Besides the mainstream global systems, small-scale and local is sprouting as well, and with the visibility brought by the Web 2.0 their impact is even more amplified.

A new kind of economy - that John Thackara calls 'restorative economy' - is emerging in the shape of a million grassroots projects all over the world.

// It is already present wherever people are growing food in cities, or turning school backyards into edible gardens, where people

are restoring ecosystems and watersheds. They are creating value without destroying natural and social assets. For every daily life-support system that is unsustainable now - food and health, shelter and clothing... - alternatives are being experimented and innovated. //39

These are exciting times for designers, high time to utilize the skills and energy that design thinking can bring to these initiatives. Design can show people that a better world is possible and motivate them to try and make the outcomes happen.

With its focus on services, not just on products, design thinking also has the ability to adopt the whole systems approach to projects with the emphasis on prototyping ideas early and often. For urban contexts, it serves to re-imagine the urban landscape itself as an ecology with the potential to support us.

39. John Thackara, keynote speech at the Buckminster Fuller Challenge awards [New York, 08/06/2010]

With all these in mind, in the next part, I go deeper in the design investigation in order to shape:

a product-service-system for individuals (and communities) that:

- 1) improves the urban living gardening experience, while communicating urban dwellers the potential benefits of a more self-sufficient way of living,
- 2) introduces ideas about food production in an urban environment and at the same time re-introduces an ancient connection humans have lost/ cultivated with the earth,
- 3) maintains a well balanced home environment with sufficient greenery to keep the atmosphere healthy and fresh.

PART TWO

Small Scale Farming

Production Methods

Prototypes

From Brooklyn to Budapest

Budapest Green Tour

Living with Plants

Working with Plants

Products for Production

Synthesis

// Urban agriculture is a growth
industry. //

Dr. Dickson Despommier



Tapis rouge!

Small Scale Farming and Micro Farms

FOR SUSTAINABLE FARMING AND TO BE SELF-SUFFICIENT

There are several descriptions for small-scale agriculture that include a number of sustainable farm practices such as: organic farming, permaculture, biodynamic etc.

Still the end result is always the same: food to eat. Whether it is a small patio garden, a tiny backyard garden or a large garden, the point is that people are producing food for themselves, and sometimes food to share with others. Even if a person is living in a small apartment, they can grow a small garden on their patio/balcony.

// Sustainable agriculture is not merely a package of prescribed methods. More important, it is a change in mindset whereby agriculture acknowledges its dependence on a finite natural resource base - including the finite quality of fossil fuel energy that is now a critical component of conventional farming systems. //40

SCALES

Compared to industrial agriculture dimensions, even the largest urban farm systems are considered small-scale, but the movement is scaling up to meet a rising demand in city centers for safe, organic and locally grown food.

In New York, along the nonprofit organizations, school groups and hobby gardeners, a new line of business farmers appeared who manage commercial-scale indoor urban farms employing high tech greenhouse methods – hydroponics, aeroponics, aquaponics.

These methods - that I introduce in details in the next section - are resource efficient and locally appropriate agricultural solutions, with the flexibility to produce food in different scales and spaces. They take the advantage of the fact that we can easily grow most of what we need inside technologically controlled environment structures. Not to mention that they have the ability to be constructed literally anywhere with a power supply.

40. Harms of Industrial Agriculture - How Sustainable Agriculture Can Address the Environmental and Human Health, Leo Horrigan, Robert S. Lawrence, Polly Walker, Environmental Health Perspectives Volume [2002]

INDOORS VS. OUTDOORS

In the very near future, we are going to see how food prices will raise because of the recent crop loss, caused by the '2012 drought'⁴¹.

It is the most severe and extensive drought in at least 25 years that we are experiencing worldwide but in the US almost 80 percent of the agricultural land is touched, with impacts on the crop and livestock sectors. The estimates of how the drought will affect food prices cannot be specified yet, especially the impact for beef, pork, poultry and dairy.

But what is most likely that the indoor farmer's crops are safe this year, who chose to grow their crops in a more secure, predictable way. Indoors farming have many advantages besides that food prices do not fluctuate with the uncontrollable weather patterns. It ensures year-round crop production, eliminates the weather-related crop failures due to droughts, floods, pests, gives the basis to grow food organically without herbicides, pesticides, or fertilizers, dramatically reduces fossil fuel use (no tractors, plows, shipping) and have the possibility to convert abandoned urban properties into food production centers.

Urban agriculture and small-scale farming cannot yet substitute the mainstream agricultural system, but neither will stop the disruption caused by the climate change.

What is for sure, is the need for the development of innovative, resource efficient and locally appropriate agricultural solutions that are resilient and can face today's and the future's problems.

ENERGY and PROFIT

On the other hand, critics predict that today's urban farm startups give us false promises and despite the enthusiastic startups they will be brought down by electrical bills they can't afford. Moving agriculture indoors solves many energy problems associated with outdoor farming, but creates others that need to be addressed if this approach is to succeed.

And it is true, that lighting an indoor farm with conventional incandescent or fluorescent bulbs has proven inefficient and highly expensive, due to the fact that these kinds of lights give off a wide spectrum of energy, most of which is useless for the plants. Plants need light only in the blue and red spectral ranges. Using the right bulbs, the efficiency of LEDs emitting light at the desired wavelengths for green plants saves enormous amounts of energy (and also it is much more economical in the long run compared to conventional lighting).

⁴¹. *United States Department of Agriculture (USDA), Economic Research Service [August 2012]*

Production Methods

AQUACULTURE

Aquaculture is the cultivation and rearing of aquatic plants and animals in a fully or semi-controlled environment. Many species are produced around the world by means of aquaculture including both freshwater and saltwater fish, crustaceans, and molluscs, along with plants such as seaweed.

By 2009 aquaculture was provided more than 50 percent of all world fisheries production and is showing a growing tendency. According to the Fisheries and Aquaculture Department of the UN aquaculture is needed to ease the stress on the world's oceans that are in dire circumstances, whereas demand and consumption for seafood is at an all time high⁴². Aquaculture has the potential to be a powerful tool to reconcile this paradox.

On the other hand, many significant issues are present within the world of aquaculture. Decreasing genetic variation associated with fish farming, competition between wild and farmed animals, propagation of diseases associated with aquaculture's high stocking densities, and waste management are but to name a few. In-shore aquaculture requires massive amounts of water exchange to keep water quality at non-toxic levels. Moreover, finding uses for the wastewater produced in aquaculture has proved to be a laborious and endeavour that is very hard to manage.

HYDROPONICS

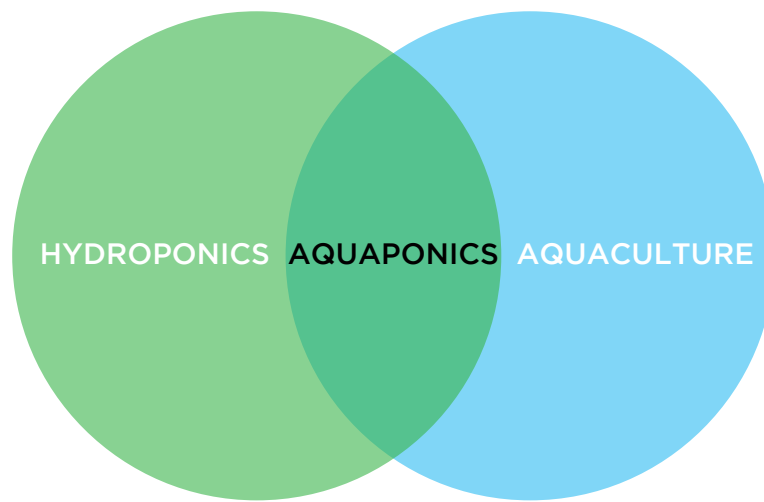
HYDRO [Greek: water] + PONOS [Greek: labour]⁴³

Hydroponics is a method of growing plants using a mineral nutrient solution in water, without soil. In traditional agricultural methods soil is used as the medium whereby nutrients are dissolved in water, which can then be taken up by the plant roots, although the soil itself is not necessary. If nutrients are added to the water in which the plants are grown, then the soil medium is not needed.

Hydroponic methods have a very old history, they have been used for centuries and are quite simple to employ. The hanging gardens of Babylon, the floating gardens of the Aztecs in Mexico are all precursors to modern day hydroponic cultures, just as the ancient Chinese polyculture systems where farm wastes were commonly added as feed to fish cultured in flooded rice paddies. There are many great advantages of hydroponics; the most important is the ability to grow plants in areas where soil is not favourable for in-ground agriculture.

The further advantaged of hydroponic farming:

- *water use is much more efficient since the water stays in the system and can be reused,*
- *greater control over nutrient levels (that results in healthier crops),*
- *fertilizers are not used (which often contribute to pollution),*



- pesticides are not needed to deal with pests,
- much higher and more stable crop yields are achieved.

Current hydroponic methods take many forms. The possible system types will be further discussed while outlining the hydroponic component of aquaponics systems.

AQUAPONICS

Aquaponic systems combine the two forms of agricultural production methods mentioned above, recirculating aquaculture and hydroponics. They complete each other; providing a solution to the main issues these two systems face; the need for sustainable ways of filtering or disposing the nutrient-rich fish waste in aquaculture and the need for nutrient-rich water to act as a fertilizer with all of the nutrients and minerals needed for plants grown through hydroponics⁴⁴.

Combining these two systems provides an all-natural nutrient solution for plant growth while eliminating the waste product which is often disposed of as wastewater. In these systems, the fish grown in a freshwater tank accumulate the effluents in the water. Over time, the waste compounds, which are toxic to the fish but can be used as an organic fertilizer for the plants. This nutrient-rich water is led to a connected hydroponic system where the by-products from the aquaculture are filtered out by the plants as vital nutrients, after which the cleaned water is recirculated back to the animals.

Essentially, the hydroponic bed and its crops serve as a biofilter for the fish waste water before it is returned, cleaned back into the fish tank. In this way the waste of one biological system becomes nutrients for another biological system.

Description of the aquaponic circle:

Aquaponics organisms - plants, bacteria, fish - support each other in an (almost) self-sufficient system.

1. Fish produce ammonium in their waste, which is converted by bacteria into nitrite and then nitrate, which plants need to produce proteins.
2. The plants in turn filter the water for the fish.
3. As the fish breathe, they take in oxygen and produce carbon dioxide. Plants use CO₂ to build their leaves and give off the remaining O₂. This O₂ is then brought back to the fish through the water.
4. But aquaponics is not a closed system. The fish must be provided food from outside of the aquaponics system.
5. Any excess food produces ammonia, which enters the cycle.
6. The plants have waste too: remnants produce ammonia.
7. Wastes can build up, as not all are absorbed by the plants, and anaerobic bacteria can produce toxic gases not processed by the system. A portion of water needs to be changed on a regular basis.

42. Fisheries and Aquaculture Department (FAO), Food And Agriculture Organization of the United Nations [2012]

43. <http://en.wikipedia.org/wiki/Hydroponics>

44. Aquaponic Food Production - Raising fish and plants for food and profit, R. L. Nelson [2008]

Aquaponics allows the growth of a full meal (protein from fish and fibre, nutrients and minerals from vegetable, fruit, or herb production) in one closed-loop system, where the cultivation of two types of crops (fish and plants) is accomplished using only one body of water and one infrastructure. Aquaponics is an extremely resource-efficient and sustainable method of producing crops on any scale that imitates the plant-fish interactions found in a natural waterway.

The world's growing population created the need for highly productive, urban and sustainable food production systems and aquaponics is a possible way to address this need. Also, increasing health consciousness require a solution such as aquaponics that can provide an answer to the greater picture with increased resource-efficiency, all while giving individuals and families greater control over the quality, safety and origin of their food.

Besides the many advantages, there are challenges as well, coming from the nature of the technique itself, that are:

- 1. The initial expenses for housings, tanks, plumbing, pumps, and grow beds can be high.*
- 2. The lack of standard configurations turn every installation into an experiment - the variety of ways in which a system can be configured leads to equally varying results and successes or failures.*
- 3. Reliance on man-made energy, technology, and environmental regulation to control circulation and temperatures.*

4. Since all components are dependant from each other these systems can have multiple 'single points of failure', such as an electrical failure or pipe blockage that can cause a complete loss of fish stock⁴⁵.

COMPARISON OF FOOD PRODUCTION METHODS

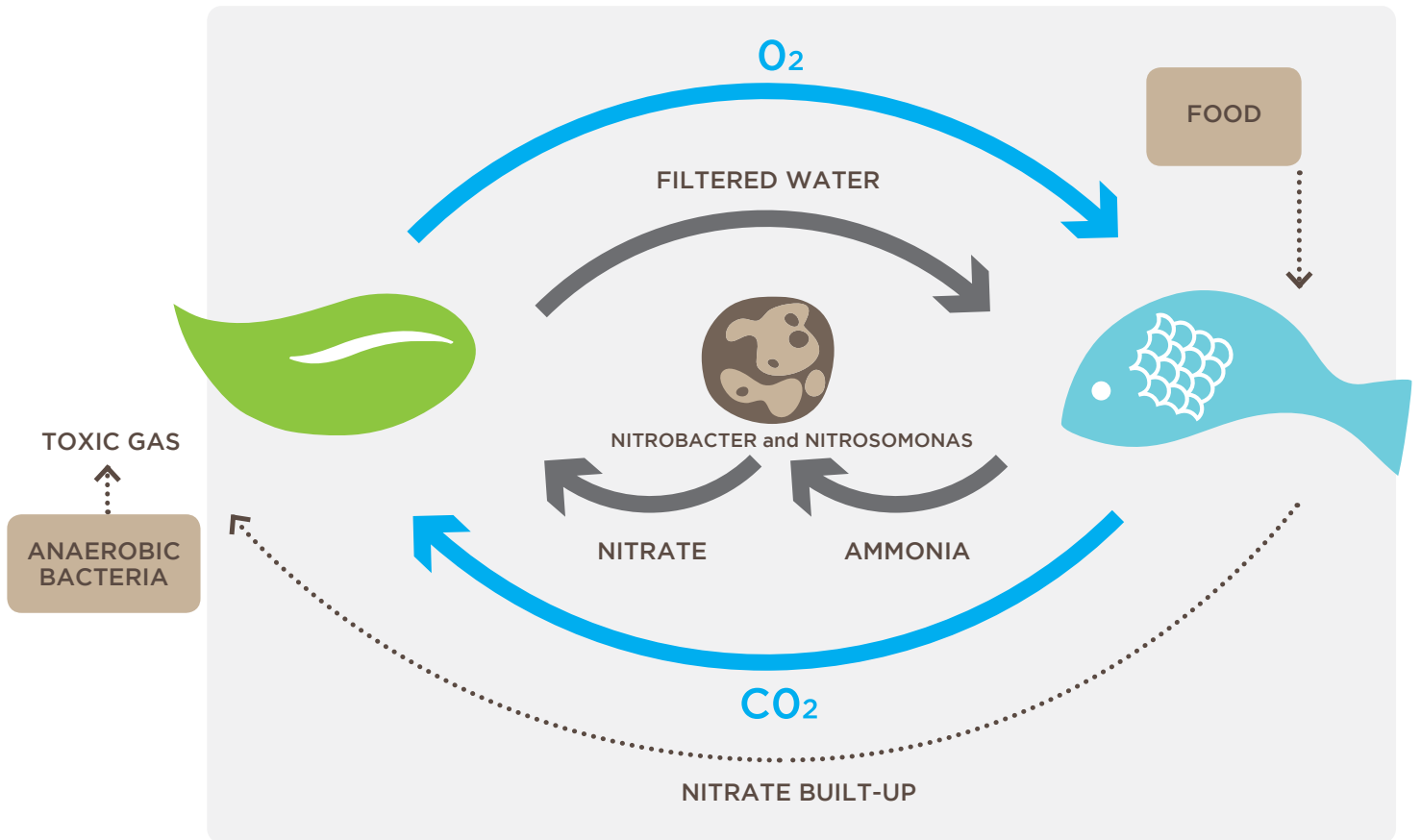
Aquaponics combines the advantages of both hydroponics and aquaculture, while eliminating the disadvantages of both systems. It also reduces operating costs in comparison to either of these methods alone. A summary of the above mentioned systems along with comparison to organic farming is summarized in the table of 'Comparison of various forms of food production'.

Engaging in aquaponic production is as simple as it is not. While it provides the most sustainable modern farming method, the technology itself is complicated for the many reasons illustrated above.

Would it be possible for an urban dweller to adapt for the different lifestyle that aquaponics require? How can we integrate this agricultural practice into an individual's environment?

To answer these questions, in the next section of the thesis work, through prototyping (= learning by doing) I explore the different conditions when aquaponics is applied.

45. Optimization of a Backyard Aquaponic Food Production System, Keith Connolly, Tatjana Trebic [2010]



The Aquaponic circle

ADVANTAGES

DISADVANTAGES

ORGANIC FARMING

- Presumed as a healthier method of growing food than commercial farming and thus has become popularized.
- Uses organic wastes as fertilizer.
- Uses natural pest control.
- Tends to produce better tasting and at times more nutritional crops.

- Requires more land than conventional farming.
- Often higher costs to grow and certify crops.
- Agribusiness is quickly replacing small-scale organic operations.

AQUACULTURE

- High biomass of fish produced in a small space.

- High rate of failure due to small margin for error.
- Large waste stream produced.

HYDROPONICS

- High volumes of food are produced in a small space.
- Has potential for year-round production if controlled.

- Highly dependent on costly manufactured/mined fertilizers.

AQUAPONICS

- All of the advantages of the other methods and additionally:
- Reuse of fish waste as nutrients for plants.
- Fish don't carry the pathogens found in warm-blooded animals.
- Imitates a natural cycle and is the most sustainable of the four methods.
- Consistent fish biomass in the fish tanks lets plant growth thrive.

- Operator must have knowledge of both fish and plant production.
- Major fluctuations in fish stocks in the tank can disrupt plant growth.

Prototypes

WINDOWFARMS - Testing an already existing method

Windowfarms is one of the most popular and trendy urban farming products that more and more people are familiar with, so I wanted to test this idea with the real settings. I was curious if it is really that easy and simple, how productive it is, what are the maintenance necessities?

With Chris Piuggi, whose intentions were to test his hardware model with the Windowfarms prototype, we started the planning in the beginning of April. We decided to set up a system on the 12th floor in Parsons, using a wall with huge windows, so that the plants would have enough light. We collected all the necessary parts that needed some modifications and adjusted them to their new functions. Then when all the parts were ready we could assemble the system based on the instructions⁴⁶ found on the Windowfarms website.

We already started to grow the seed a few weeks before the operation, so we could insert the seedlings right once the system was working. We planted tomato, pepper and aubergine. We connected a timer to the set-up so that the water-pump doesn't run 24/7 but around 10 minutes per every half hour (for energy saving reasons). Chris mixed the appropriate nutrient solution and then we waited for the plants to grow. After two weeks, there was a significant difference and in one month, the first vegetable crops appeared.

The growing speed of the plants was really surprising - it was very pleasing to see them getting bigger - and I think this sense of satisfaction covered the other uncomfortable issues of the system.

Because neither the set-up nor the maintenance was without problems; just some examples:
** the tubes cannot be too high or get crooked or be too small/big, otherwise the water won't get through,*

** with hydroponic circulation, the evaporation is significant - if the water level drops, the pressure drops then the air pump cannot uplift the water - so in reality you have to add water to the system every 2-3 days,*

** if the water is not circulating, everything dies within a few days,*

** algae starts to grow in the bottles, they appear about in a month than you have to change bottles or clean the algae.*

The installation was present until the end of the semester, the middle of May.

⁴⁶. <http://www.windowfarms.org/buildyourown>



Windowfarms prototype April 2012



Windowfarms prototype May 2012



pachube

Feeds Apps Support Blog Community

Hello crispone! (logout)

Updated on Tue, 03 Apr 2012 09:37:27 +0000 | Published by 6286028

Parsons Windowfarm

TAGS

Hydroponics

LOCATION NAME

MFAdt 12th FL Lab - 6E 16th Street NY, NY

LOCATION MAP

LATITUDE

My account

My profile

Change password

Feeds

My feeds

Create a feed

Search feeds

Secure sharing keys

My keys

About keys

Pachube help

Debug info

API documentation

Get help

Quickstart

Hardware unit - connected to Pachube.com

CULTIVATOR - Prototyping a new method

After the "simple" windowfarms prototype Chris and I took a bigger step; the goal was to design and build an indoors aquaponic system, a productive device that can support a small household with a full meal. Since the beginning, we wanted to install the system in the school, that brought several constraints on us, but in the same time the end result became a clean, small, compact and most importantly safe installation (we had to respect all the wishes of the fire marshall).

For me, building this prototype served two purposes: one was to understand the process thoroughly and to encounter all the technical issues that could come up, and the other purpose was to collect feedback from the people. And also Chris needed a more complex system to test his sensor network on.

One of the many great advantages that this prototype could have been developed in Parsons was that we got financial support from the school. And even though we had to keep attention to the limits of the budget, we were less restricted in the realization of it (without that help it would have been impossible to proceed). After that we knew we would be able to go through with it, we started the planning phase. My task was to design the furniture and the system, called Cultivator (following Chris's guidance), while Chris took care about the plants and fish and the sensor network, called Hydron⁴⁷.

The end result was a classic prototype,

systematically drawn down to what is necessarily needed in it; a system that holds together the essential elements. This simplification served the purpose to understand if / how we can redress such a small aquaponic device in order to suit an ecologically supportable, conscious, contemporary lifestyle.

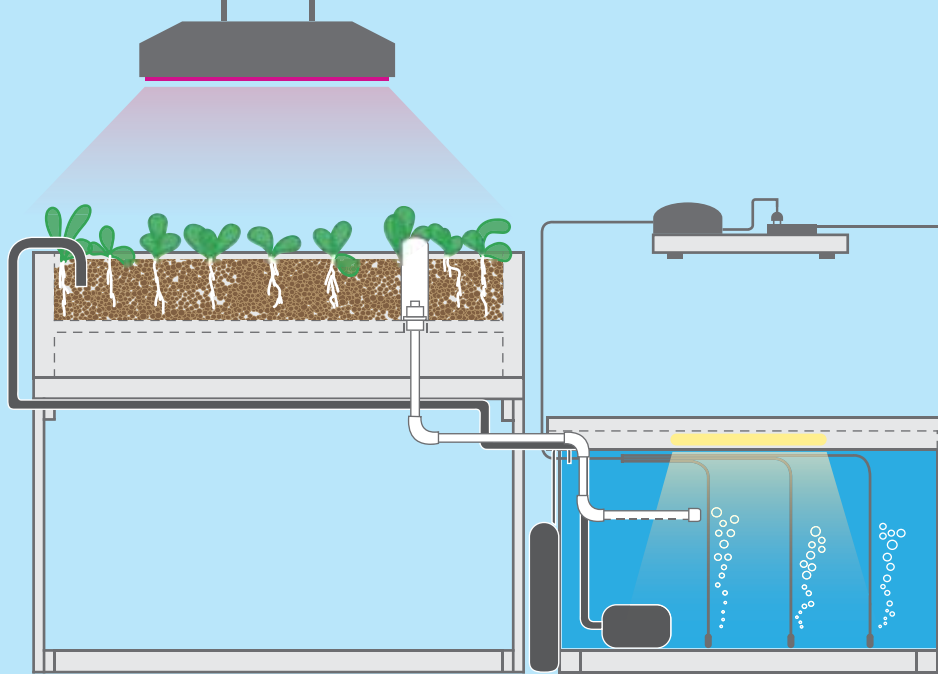
The final design was presented at the Kellen Gallery in New York, in the context of the MFA Design and Technology Thesis Exhibition⁴⁸. An aquaponic installation is that kind of thing you rarely meet in a gallery space, so people visiting the exhibition were rather taken aback seeing the project. Mostly they found it more interesting or entertaining than necessary or useful. Admittedly, the aquaponic form of urban farming still needs an advanced fashion to touch a broader audience.

In any case, going through the whole process of planning, building and running this system gave me the opportunity to experience all the difficulties that can come up, the most important ones are;

- * construction knowledge is highly needed,*
- * the whole weight of the device is for utmost consideration (once you put it somewhere, it will be very difficult to move it),*
- * a considerable understanding of the aquaponic lifecycle is indispensable,*
- * serious security measurements have to be taken (basically an electric device that uses water).*

47. <http://amt.parsons.edu/mfadt/thesis/2012/project/hydron/>

48. <http://amt.parsons.edu/mfadt/thesis/2012/>



Cultivator Prototype Plan



Construction phases



Exhibition by night and day

From Brooklyn to Budapest

Recently (for the past ten years), many large cities in the world have seen the growth of the urban farming movement, some has several ventures and already developed urban farming projects, some has just started them - but what they all have in common is that they take the idea of growing greens in the city very seriously.

NEW YORK

Brooklyn Grange started with the mission to create a fiscally sustainable model for urban agriculture and to produce healthy, delicious vegetables for local communities.

They are cultivating over two acres of rooftop in Brooklyn and Queens and now expanded the vegetable business; they keep egg-laying hens and a commercial apiary, cultivating bees for their honey and breeding regional hardiness into their DNA. Brooklyn Grange is a commercial farm, it is profitable and is expanding; they broke even in the first year and showed 40% growth in the second year.

The other largest new urban farming venture is **Gotham Greens**, that uses hydroponics to grow everything from bok choy to basil in an enclosed rooftop greenhouse in the middle of Brooklyn. They run a 15,000 square-foot greenhouse, producing 40 tons of crops a year, most of which they sell to a local green markets and Whole Foods stores.

Big Box Farms Their model is to build small farms inside industrial warehouses using a special,

patented rack technology. It is a disruptive, revolutionary hybrid that combines the benefits of small-scale farming and large-scale agribusiness. This model allows farms to be built in practically any warehouse space with added benefits.

JAPAN

Another successful commercial venture is the Japanese **Nuvege**, showing that urban food production can be highly profitable. Nuvege grows vegetables in technologically controlled hydroponic environments, same as the vertical farm models advocated by Dr. Dickson Despommier⁴⁹.

Nuvege has a rapidly growing client base with over 70% designated for supermarket chains and various department stores, and with the remaining 30% for professional food service clients⁵⁰.

Pasona O2 converted an old underground vault (right underneath an office block in the heart of Tokyo's business district) into a green space, using light-emitting diodes, metal halide lamps and sodium vapour lamps to grow rice, fruits and vegetables underground. They use energy-efficient LEDs and spotlights and the temperature of the whole complex is carefully controlled to optimize the crop yields. The system works so well that they manage to produce three rice crops a year.

49. <http://www.verticalfarm.com/>

50. <http://www.nuvege.com/>



Gotham Greens



Nuvege



Pasona O2

A very interesting approach is the **Agri-Cube** unit, developed by Daiwa House, Japan's largest homebuilder. They introduced a line of prefabricated hydroponic vegetable factories, aimed at housing complexes, hotels, and top-end restaurants. Daiwa calls these units as "the first step in the industrialization of agriculture"⁵¹, to be located amongst the places where people live, work, and play.

UNITED KINGDOM

MyFarm is not exactly an urban farm project, but a big online experiment in farming and food production. MyFarm is a real life farm in Cambridgeshire, England, that is allowing the digital crowd to decide how to run the daily operations - just like in FarmVille⁵². MyFarm Farmers join forces to make decisions (through monthly votes) on every aspect of the farm with the aim to be profitable, and to maintain the highest standards of sustainability and welfare. The farm manager informs his online farmers about life on the farm, but the decisions will ultimately be left up to the crowd.

Farm:Shop is an urban food hub in London; a cafe and arts venue with an aquaponic farm, rooftop chicken coops, indoor polytunnel. They combine art, engineering and business know-how to create a widespread community of urban farmers, who bring their goods to the central Farm:Shop to sell. It is a sort of community-supported agriculture (CSA), but instead of communal giving, there are communal sales.

It is the focus on aquaponics that makes the project even more interesting.

ITALY

Italy is the home of the Slow Movement with many farm-to-fork and agri tourism initiatives. But some of them go even further that - like the **Orti Solidali** in Rome - a solidarity gardens project - an ambitious example of CSA. It aims to be an economically - environmentally - socially sustainable initiative by creating stable income for young refugees through low-scale agricultural activity. In the Progetto Orti Solidali the farm workers come from a semi-autonomous care home which hosts refugees and socially disadvantaged youth. After a training course on synergistic agriculture, the farmers built garden plots allocated to a family (or individual) who pays an annual subscription and receives a box of vegetables delivered to his/her home every week. The subscription fee covers the direct farming costs and the workers' salary, so that Orti Solidali is entirely self-financing. But the greatest benefit is the rebuilt relationship of cooperation between producers and consumers, creating social inclusion for the refugee farmers through work opportunities.

51. "Agri-Cube grows mass quantities of vegetables in a one-car parking spot", Brian Dodson, 14/08/2012, gizmag.com
52. FarmVille is a farming simulation social network game. The game involves various aspects of farm management such as plowing land, planting, growing and harvesting crops, harvesting trees and bushes, and raising livestock. It was once the most popular Facebook game.



Daiwa Agricube



My Farm



Orti Solidali

Another socially sensible example is the Milanese **Ortofficina Consortium**, started by the social enterprise 'La Cordata', located in a social housing complex. The Ortofficina is a community garden that the citizens, neighbours, friends, and fans can use. It is open daily for anybody who wants to carve out a small green space within the frenetic pace of the city of Milan. In order to extend the experience of having greens between the buildings, weekly educational workshops are organized for adults and children to learn about home growing practices and how to produce vegetables on their own using scrap materials, and natural fertilizers. They teach also about using food waste as fertilizer and how to choose products that are truly zero km. And it also the place where people just get together to slow down a bit while enjoying 'the green touch'.

THE NETHERLANDS

PlantLab is run by a Dutch bioengineering team. They use special plant production units with a combination of LED and infrared light that has a total control over light, climate and nutrition. PlantLab claims that with the help of this unique plant production unit, the growth rate of their 'high value and low volume' greenhouse plants are three times faster than under natural conditions, using 90 percent less water without any pesticides⁵³.

AND MORE...

And there are many other good and inspiring examples that could be explained here - like the famous **Prinzessinnengarten** in Berlin, as well as interesting and highly ambitious plans like **Urbanana**, an urban renovation concept that would bring banana plantation to Paris, or **Zuidpark** that will be Europe's largest urban farm; a 3000 m² rooftop farm in Amsterdam - but the list could fill up a whole new paper so I have to restrain it to only a few ones.

By selecting these examples, my intention was to show some glimpses conveying that urban agriculture is being technologically liberated from the burdens of an utopian vision.

The creation of urban micro-farms is one of the most fascinating topic of design research (that used to be visible only virtually in exclusive simulations) — from demographics to Facebook farms. Today, however, technological possibilities are delivering their implementation and standardization tangible and concrete.

BUDAPEST

The urban farming movement has (finally) reached Budapest too and has manifested in various urban farming endeavours; some share similarities with the ones above mentioned but some are specific to the Budapest scene - that I explain in the next chapter.

53. <http://plantlab.nl/>



Ortofficina



PlantLab goods



Urbanana at night

The Budapest Green Tour

Budapest is catching up with the current trends for greening the city and slowly the advocates of the Slow Life movement (that has started almost three decades ago) appeared as well, to establish community gardens and school gardens, buying clubs and farm-to-fork unions... (in fact, the main topic of this year's Budapest Design Week is Slow Life and sustainable design).

URBAN TECH

As for the technological progress of urban farming, it is also happening; Hungary's first aquaponic farm is now running, has been tested and proved to be efficient even in the cold winter weather. Although this establishment is not in Budapest, but in Debrecen (the second biggest city of Hungary), it is important to mention here, being the first successful pioneer. Péter Gönczi, the owner has experimented with the technology and implemented a Passive Solar Greenhouse technology, that requires no heating at all, takes the energy from the sun. In cold weather, it is naturally heating the insides and when it's hot, it provides cooling. In this way, the energy costs are highly reduced and he can really produce crops all year long. Now he has already organized the first **Central European Aquaponic Jamboree** also many workshops for schools to teach kids about ecology. Following his example, another aquaponic venture is about to be realized, a company called **Passzív Akvapónia (~ Passive Aquaponics)**, is planning to launch a whole aquaponic products line with system designs for families as well as for technological centers.

URBAN COMMUNITIES

For the moment, there are three running community gardens in Budapest. Their number is small but their popularity is highly growing, that can be demonstrated by the enthusiasm that other dozens of unused plots in the city has been offered for community gardening activities.

They are coming alive slowly; it took two years of planning and negotiating for the first one to get established. The "**Első Kis-Pesti Kert**" (~ **First Garden of Kis-Pest**) already has a waiting list of more than 100 people. They have just closed an unexpectedly productive first season; on 26 parcels they produced 31 types of crops.

But now, having learnt from the experiences of developing the very first community garden and owning the right know-how, the organizers are more confident about how to make the starting process easier, in order to replicate the garden. Gábor Rosta, who is one of the main forces behind the activity has said that the goal is to spread the community gardening culture especially amongst the blocks of flats, the so-called 'panel-buildings' (the main housing type built in the Socialist era), because of the high level of alienation of the people (that comes from the aggregated problems of these living environments)⁵⁴. And community gardening is one good way to restore neighbourliness.

54. Gábor Rosta, Keynote speech at the 2nd Carbon Roundtable, Climate Embassy Association, Budapest [24/08/2012]

55. <http://www.avarositanya.hu/>

The most significant crops of the Első Kis-Pesti Kert during the first season: 412 kg of tomatoes, 40 kg of paprika, 65 kg of cucumber, 20 kg of radish, 57 kg of aubergine, 35 kg of zucchini, 42 kg of lettuce, 16 kg of celery, 23 kg of carrot, 14 kg of beans, 10 kg of spinach, 8 kg of peas...⁵⁵



Első Kis-Pesti Kert: community garden in the XIX. district



The first Central European Aquaponic Jamboree in Debrecen

Panel Blocks

Indeed, the urban planning of the communist regime managed to impair the cityscape in most Eastern European countries. After World War II all eastern European countries had suffered due to the war and their economies were in a very poor state. The cities needed a reconstruction. The ideological guidelines generated in Moscow, even in fields like urban planning, were followed by the various communist regimes, even if there were differences in the specific urban landscapes of the different communist countries.

Though the historical center of Budapest was restored and the old historical buildings were saved (at least partially), the “house factories” began to work; from 1959 to 1990, 788,000 panel flats⁵⁶ were built in Hungary. As of today, about 2 million people (~ one fifth of the Hungary’s total population) live in these flats. In terms of scales, Budapest is at the second place; 22,6% of the apartments are panel blocks⁵⁷.

These living environments, once considered as modern homes, over time has become obsolete, their aesthetics is highly disputable and they cannot provide sufficient, required services. The Hungarian and local municipalities made great move after year 2000 when they decided on the renovation program.

Although in the program they have insulated these buildings, replaced the old doors and windows with multi-layer thermo glass, renewed the heating system and coloured some buildings in a more pleasant way, the panel block rehabilitation is still a technological, economic and social problem.

The vast community of panel block citizens represents a relevant potential target for urban green improvement, both inside the buildings, on the balconies or around the communal areas.

56. Housing units built of prefabricated concrete blocks, named differently in various countries. In Hungarian, they are called “panelház” (~ panel block).

57. <http://www.oc.hu/ingatlanpiac/269>



Panel blocks at Újlipótváros, XIII. district



Panel blocks at Kelenföld, XI. district

Budapest Markets

In order to get local fresh fruits or vegetables, people of Budapest have several possibilities to choose from; there are the big weekly markets (or some indoor market halls that are open during the week) and the tiny grocery shops with limited offer. And there is also the more alternative way; the online farm-to-fork-bio-local buying club, called Szatyor Egyesület, that offers a weekly home delivery of a box of fresh, seasonal fruits and vegetables.

One good example for an indoor market hall is the **Nagycsarnok (~ Great Market Hall)** at the center of the city. It is the largest indoor market and a popular site in the same time, so there are always a lot of tourists amongst the citizens doing their groceries. The market offers a huge variety of stalls selling fruits and vegetables, meats, fish, pastries, candies, spices, spirits and there are eateries too.

A very interesting initiative is the Sunday's farmers market at **Szimpla (~ Simple)**, which is a characteristic open-air club in Budapest. These kind of places are called 'ruin-taverns', they pop up in ruined buildings due to midtown's renovation. Most of them are transient but some resist, like Szimpla has survived since 2001 and is an amazing place to have a drink outdoors or indoors. Ever since the opening, they have been promoting local young artists and musicians and now they are also promoting local agriculture.

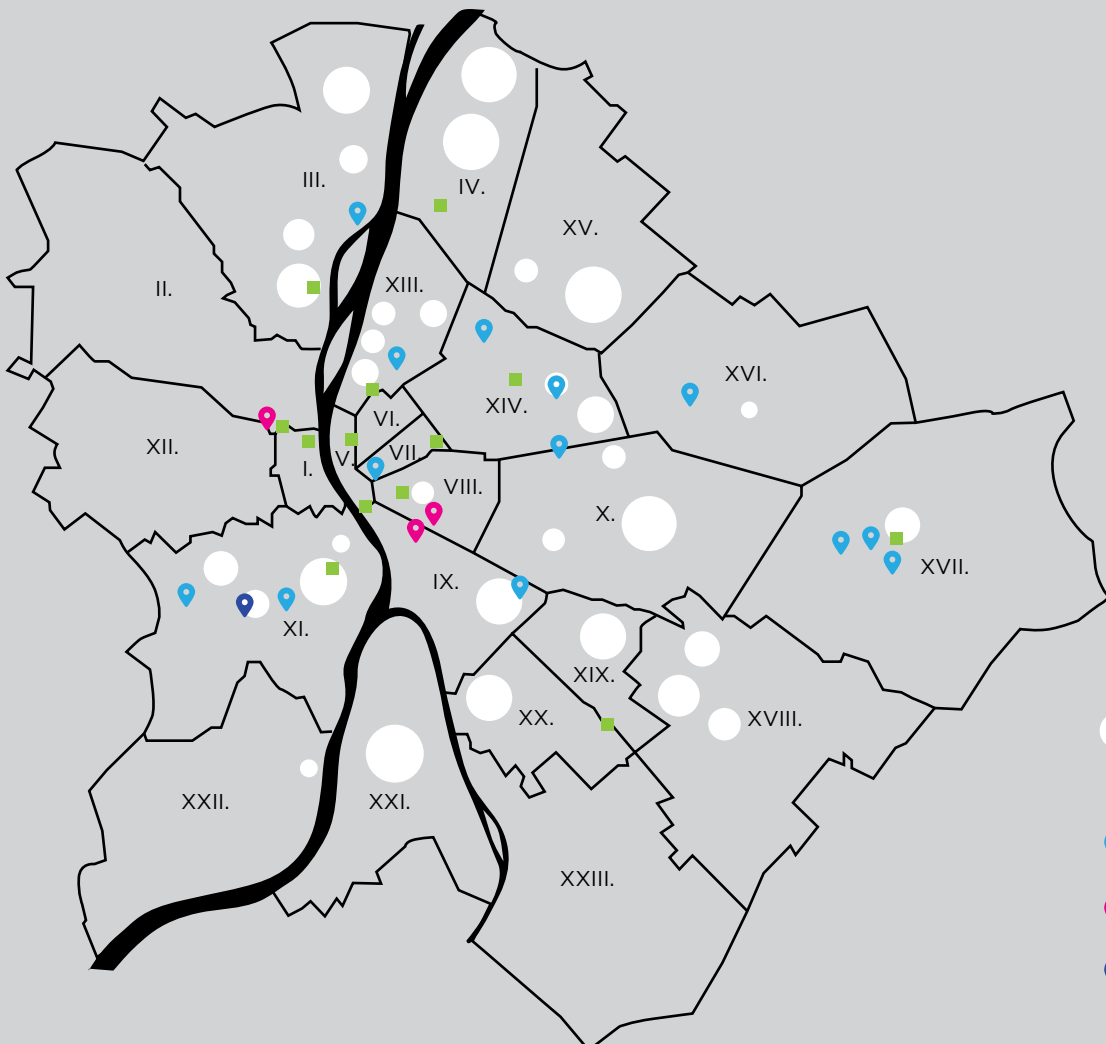
Every Sunday, local producers come to Szimpla to sell their various goods, moreover there is a donation-based 'communal cooking', a region specific brunch and of course the café/bar. The Szimpla Farmers Market might look like a temporarily cool idea, but indeed it is proved to be very serious and now it's highly recognized.

But both Szimpla and the Nagycsarnok is in the very center of the city, they are popular but have a limited availability. While the notion of 'food desert' does not exist in Hungarian terms, however, if we compare the locations of Budapest's markets or markets halls, it is noticeable that they are mostly positioned in the center and are less abundant around the peripheries, where most of the panel block areas are located.

Maybe this situation also contributed to the fact that Budapest's community gardeners want to spread the gardens around the outskirts, specifically aiming the panel block areas. All in all, an augmented interest and enthusiasm towards local cultivation is present and should be highly supported.



Sunday's Farmers Market at Szimpla



- panel blocks
- markets
- offered plots for community gardens
- working community gardens
- community gardens in progress

Distribution of markets, community gardens and panel block areas in Budapest

Local News

Some other local projects can present as well the attractive features of 'greening the city'; projects coming from both the corporate, the non-profit and the civil domain.

ARBORÉTUM (~ ARBORETO)

Arborétum is a coffee shop/bar and a florist but in a very unconventional way. They keep tropical plants in all shapes and sizes in the bar, where they are growing peacefully with the help of special growing lamps while providing a unique interior space. There are mostly fruit trees, all raised by the owner of the bar.

Besides the drink menu, there is a plant menu, the plants are all for sale except the giant banana tree that the owner is too much connected to.

PORZÓ KORZÓ (~ STAMEN SAUNTER)

Porzó Korzó is a temporary installation developed by the Klímanagykövetség (~ Climate Embassy), a non-profit organization supported by mostly the British Council. It is an interactive, educative route, leading through five mini gardens around the downtown of Budapest. (The installation was a co-operation between the Klímanagykövetség and the V. district).

The installation consists of a collection of local plants, hung up in an architectural composition, encouraging the citizens to touch, smell (and taste) the plants. They selected plants that are integrally connected to our everyday life - but we only meet them as end products; like teas,

creams, textile, bioplastics or biofuels.

The installations are like little islands around the downtown, people can take a rest at the bench while learning about these indispensable plants and their little stories.

This project is a success story but not with a happy ending. While the installations were set up from June to October and they were quite popular with many press performance, after the installation period, the Klímanagykövetség was searching for stores who would adopt the plants and continue the educative route, but as far as today, they couldn't find any.

VERTICAL WALL OF THE XI. DISTRICT

Local municipalities usually put some efforts into the general look of the public spaces, naturally in most cases it means tidying the parks or planting some trees.

Vertical walls are not common in the streets of Budapest, they can be found only in the interiors of corporate office buildings or in big store centers. But now the first public space related vertical wall was installed in the XI. district, ornamenting the wall of the mayor's office with big letters forming 'XI'. The selected plants can live outside, in their micro ecosystem and grow all year long.



Arborétum



Porzó Korzó installation in the V. district



Vertical wall of the major's office in the XI. district

Living with Plants

Quick interviews in specific or neutral context

Research method

short video-interview

Interview subjects

general people

Final aim

identify motivations

I took these short interviews at different stages of the research process in order to get a good understanding of the future users before the further concept development starts.

The aim of the interview was to get people to tell little stories. I guided them to talk about their plant-having practices and the relevant motives. It was a good starting point to express the green aspects of their lives and then we could move on to identify issues and potentialities with actually using the plants for farming purposes.

The interviews were carried in two sessions; first I asked ordinary people on the streets of New York, especially in big parks or around green areas, also I interviewed some friends of mine who I knew had nothing to do with green living or having any plants around them. Then I asked some people who got recently engaged in keeping plants around the flat.

My intentions were to find out if people who are not self-motivated about keeping plants around them could see the non-conventional attributes of plants more stimulating or entertaining.

This small qualitative research could not result in statistically significant data, but some of the respondents were definitely more excited about using household plants and (animals) for productive reasons, some of them of course were not interested at all.

“Do you live with plants?”

Yes.

In Germany it's quite usual.

No.

Noo... we don't.



@Manhattan, Central Park



@Manhattan, Central Park



@Brooklyn, Boerum Hill

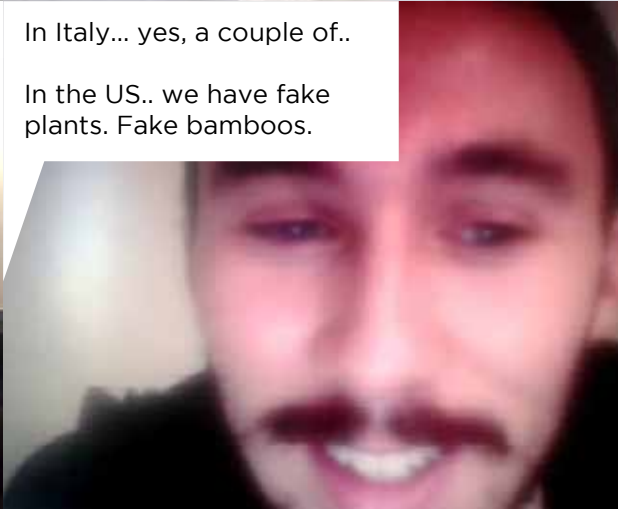
No.



@Brooklyn, Park Slope

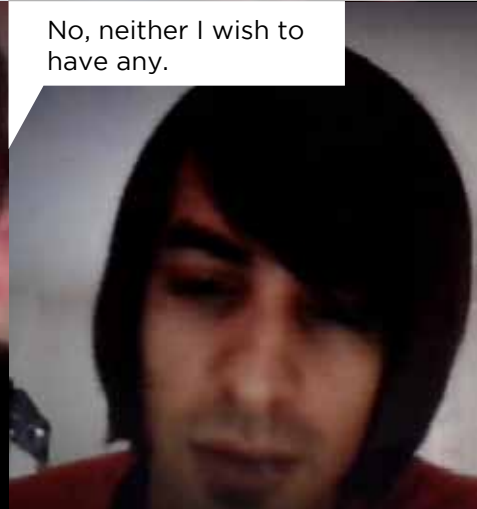
In Italy... yes, a couple of..

In the US.. we have fake plants. Fake bamboos.



@Milano

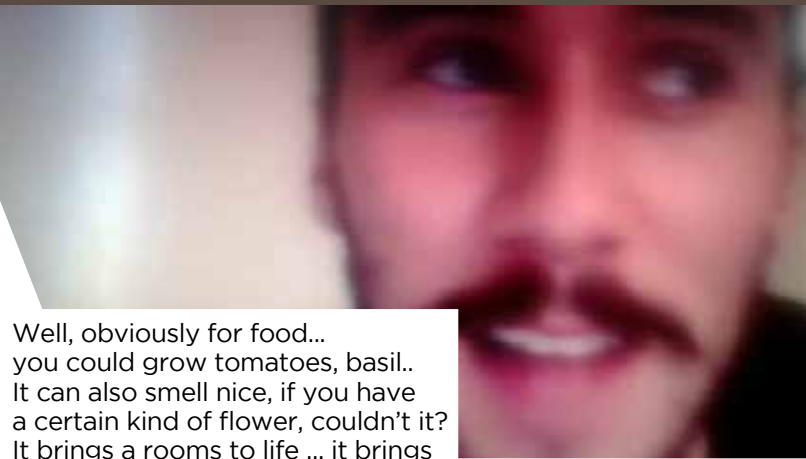
No, neither I wish to have any.



@Milano

“Any use of them...?”

Gives some kind of fresh air, because it's filtering the room. It's good to look at the fish, it's relaxing.



@Milano



@Milano

Well, obviously for food... you could grow tomatoes, basil.. It can also smell nice, if you have a certain kind of flower, couldn't it? It brings a rooms to life ... it brings nature into your life a little bit.

I am really trying to grow some basic kitchen herbs but they just keep dying... I haven't given up yet though..



@Budapest



@Budapest

I started to keep some herbs and tomatoes on the windowsill about a year ago and I got totally into it! I love using my own produces for cooking.. it just feels good.

Working with Plants

In depth interviews

Research method

in-person conversational interview

Interview subjects

Experts

Final aim

identify challenges and opportunities

The interviews (when possible) were conducted in the expert's actual workplace, in order to collect and record contextual information both on their experiences and on the technological settings.

Each interview has been conducted with a deliberate conversational and open structure, to better understand the several aspects of urban farming through the stories of people who are already in this business.

LEE MANDELL

loft farmer, hydroponic expert

background: former computer programmer and visual artist

Lee is a hydroponics expert, who expanded his personal loft farm that he already used to produce vegetables to sell at local markets into a hydroponics business, called Boswick farms, with several services: they run workshops and educational programs, work together with schools, design, test and build systems.

JONATHAN KADISH

aquaponic enthusiast, self-learner

background: architect

Jonathan is an aquaponics enthusiast who is most concerned about fish cultivation and consumption, that was his motivation to build a small system for testing aquaponics as a sustainable way for producing fish. Right now, learning from his trial experiences, he is planning to construct a big aquaponic farm in New Jersey in order to enter in the organic fish business.

RAEL CLARKE

owner of LOFT:LIC

background: former Abercrombie & Fitch model

Rael has a very interesting story; disillusioned from the fashion world, got enthusiastic about food activism and founded LOFT:LIC, an event space and studio in Long Island, dedicated to the advancement of sustainable urban agriculture. He built a small aquaponic system, almost entirely from components bought in Home Depot. A small community gathered around (mostly from his friends and acquaintances) artists, DJs and in fact, they want to be prepared for the end of the oil age, doing this by spreading the knowledge about urban farming. He is planning to turn the system into a business that sets up the designs on rooftops and vacant lots across the city.

// I wanted to show you could grow a high-density amount of food in a small carbon footprint. //



Lee in the loft farm



Jonathan and the crops



Rael and his aquaponic system

TAMÁS KOLTAI

*innovator in urban green area development
background: biologist*

Tamás is a multi-faceted young green entrepreneur. He is working at Green Fortune Hungary, where they focus on innovative solutions with many levels (biodiversity, urban farming, urban green corridors, etc) in forms vertical walls and urban cultivations. His goal is to spread a transition in thinking, using the latest techniques in research & development; he recently got engaged in aquaponics that he is highly enthusiastic about.

Also he is part of the Climate Embassy Association, a team that creates sustainability and climate protection projects. The mission of the association is to raise awareness on consciousness and on the problematic triad of indifference, waste and responsibility with a youthful style and without a radical tone. The designs include developing interactive projects regarding environmental education (previous referring ~ LOCAL NEWS / Porzó Korzó).

His third main activity is building institutional gardens, where the garden plays a community enhancing role; for example in prisons, penitentiaries or autism institute.

GÁBOR ROSTA

*communication and crisis manager
background: professor*

Gábor Rosta is a significant actor in Budapest's urban farming community. In 2009 he published his book, "A városi tanya - szemléletváltás a válság idején" (~ The urban farm - meaning shift at times of crisis) in which he is warning the Hungarian readers that our systems based on constant growth and consumption is false. In the book, he teaches about self-sufficiency, savings and eco-consciousness.

In the meantime, collaborating with KÉK (Kortárs Építészeti Központ) (~Hungarian Contemporary Architecture Center) he was working on the realization of the first community garden of Budapest (previous referring ~ URBAN COMMUNITIES / Első Kis-Pesti Kert), that came alive in the spring of 2012.

And after having learned from the experiences of this first example, now he is working on smoothing the legislative procedures of starting an urban farm, together with the local municipalities, being bureaucracy the main obstacle in the process. He believes in a future Budapest where citizens treat the environment and each other with more respect and for him, community gardening is the tool for achieving this goal.



Tamás building the garden of Bloodmountain Foundation



Local politicians and Gábor Rosta at the first community garden of Budapest

Products for Production

PRECEDENTS

Certainly I am not the first one who is interested in this topic, in fact there are several earlier and on-going projects addressing these same questions.

Philips Biosphere is a concept designed by Philips from 2009. It is a home farming idea, a fully closed loop, interdependent system that generates food and cooking gas, while filtering water. The concept supplements the nutritional needs of a family by generating fish, root vegetables, grasses, plants and algae. Unlike conventional hydroponic devices this system incorporates a methane digester than produces heat and gas to power the lights. Similarly, the algae produces hydrogen and the root plants produces oxygen, which is then fed back to fish.

Mathieu Lehanneur presented his **River plant aquarium** in 2008, a modernist design project with ecological purposes. This version of aquaponics uses a refrigerated aquarium for keeping freshwater fish, while vegetables grow on the top in glass pods.

I choose to mention these two projects here (my favourite ones) because they represent two main attributes of automated urban gardening systems that are really important in my point-of-view: the technological complexity and the beauty of nature.

The concept by Philips is one of the most ingenious and precise systems that I know of, and the other one by Mathieu Lehanneur (which

is more of an art project, not exactly adequate for food production) communicates the beauty of these systems, because after all having a system like this it's like adopting a piece of nature in your home.

But one is only a concept and the other is an art project, while they are perfect examples to show the possibilities that hydroponics or aquaponics offer, they cannot give the promise for an actual productive usage. What are the products that the small (but growing) community of urban farmers use in reality?

BUY FROM MANUFACTURER

Of course there is the option to buy manufactured products, either hydroponic or aquaponic devices, their price vary from the expensive to very expensive and (with some exception) they don't seem to be able to offer more than a DIY product could do.

DIY

Maybe this is the reason why in general urban farmers are just building these systems by themselves. The result is that each of the systems have their own beauty and inventiveness in the sense that they fit exactly to the space where there is the possibility to be fit in while using all available materials.

But the problem is that information is either shared or not, for this reason they are hard to be replicated and they also use different languages, modules or rules.



Philips Biosphere



River plant aquarium



The Urban Cultivator - 2200\$



Farm in a Box - 2995\$



Mini aqua kit

The diverse beauty of DIY projects comes from the fact that the makers and doers choose to complete the works independently, without the aid of experts or professionals. In this sense, DIY is related to the Arts and Crafts movement, "offering an alternative to modern consumer culture's emphasis on relying on others to satisfy needs"⁵⁸.

The philosopher Alan Watts reflected a growing sentiment, at the awakening of the DIY movement: // Our educational system, in its entirety, does nothing to give us any kind of material competence. In other words, we don't learn how to cook, how to make clothes, how to build houses, how to make love, or to do any of the absolutely fundamental things of life. //⁵⁹

The DIY movement is a re-introduction (often to urban and suburban dwellers) of the old pattern of personal involvement and use of skills in sustainment of a house or apartment, making clothes, maintenance of cars, computers etc. or any material aspect of living - also gardening.

In the early days of DIY, the ideas spread through magazines, catalogues and books, than tv-shows, today the most influential platform is the web. The univocal DIY website is **instructables.com**, a website specializing in user-created and uploaded projects, but there are other leading sites as well, like the **diynetwork.com** or **diy.org**.

Amongst the Hungarian pages **szinesotletek.blog.hu**, **napidiy.hu** and **tudatoslet.hu** are the most visited sites. These pages are not only for transmitting information, but also regroup the DIY community where people share their inspiring, entertaining, and useful projects, recipes, and hacks and where they can reflect on them, comment and rate on quality.

Naturally, the DIY movement has evolved from being narrowed down to magazines and books. Huge retail chains built business on the home improvement goods, e.g. **Home Depot** in the USA, **Mr Bricolage** in France, the ones accessible in Hungary are **Baumax**, **Bauhaus**, **Bricostore**, **OBI** and **Praktiker**.

58. http://en.wikipedia.org/wiki/Do_it_yourself

59. Alan Watts, "Houseboat Summit" in *The San Francisco Oracle*, issue #7



Gardening tools and supplies in Praktiker and Bricostore



Pot for kitchen herbs



Balcony kit



Elho balcony pots - at the shop and on the balcony

Synthesis

All the insights presented here are the result of a direct analysis and interpretation of the information collected during the research phase. Naturally, the people I have met, interviewed or worked with had an important influence on the experiments as well as on the results. This is also the reason why I reached out for people with diverse backgrounds and approaches. So while trying to get an overview on the whys and hows of urban farming, I had the chance to gain insights from the expert who is working with communities, teaching kids and trains people through workshops and I also met the individual who engages in local food production.

POTENTIALITIES

Urban farming has many beneficial attributes, but one of its greatest feature is the scalability. Not only in the physical sense of growth, urban farming shows us the possible extensions of the gained skills and competence.

Food production: *individuals -> households -> community*

Education: *self-learning -> teaching (schools/ academics/communities)*

Business: *products (local markets/pet shops/restaurants/buying clubs) -> services (consultation, trainings, workshops, support, follow-up)*

INSIGHTS

Practicing urban farming is a process - a self-learning process, that you have to be engaged with, that you will learn with trials-and-errors possibly, with the help of others or contributors, where connection and follow-up is a key element for success.

A right amount of skills and information are needed indeed, that has to be transmitted in a common language to have a shared understanding.

And most importantly, an appropriate solution space has to be defined that fits in the requirements that come from the technology and from the nature of the personal space, the home itself.

Process: *engagement*

Failures: *test & start in little*

Skills: *right level of information*

Connection: *common language*

Solution space: *rules of the system*

// Engaging in processes that regenerate rather than deplete, we become more alive. //

Sim Van der Ryn

DESIGN OPPORTUNITY

Translating the insights into design opportunities led me to form the concept of the “urban adaptive system”.

As an urban agricultural design project, that envisions ways to grow food in an anthropogenic landscape, first it needs to create a strong voice for increasing people’s awareness towards the relevance of urban farming for food production and secondly allows a possible shift in the meaning and in the way in which we see food in our lives.

In order to realize actual production, it needs a design that embodies the necessary information and diminishes the multiple points of failures. The design needs to show resemblance with the already existing production techniques, using them as a base so that allowing future combination with other techniques.

My proposal is a product-service-system that allows different scenarios of use - built around a set of products that can adapt to the specific needs of the local environments.

The successful development of such a strategy requires the involvement of a group of new partnerships along the service lines (bio architects and engineers, organic farmers, marketing and distribution experts, internet wizards, cooperative enterprises, local politicians and nutritionists...). The goal is to create such a product-service-system in the local settings of Budapest.

PART THREE

Adaptive System for Budapest

Inspirations

Gourmet Gardens

Product-Service-System

Touchpoints

Business Overview

Conclusions

// Observing nature and being aware of what and how we eat might make us more sensitive to food cycles in the world - of abundance, of famine - and allows us to be physically, intellectually and spiritually connected to a global reality. //

Mathilde Roussel



Lives of grass

An adaptive system for Budapest

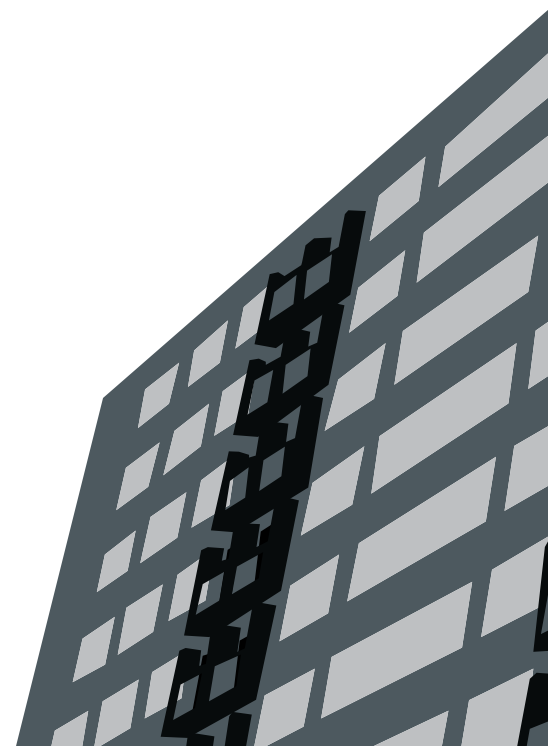
Implementing the findings of a research work that was mostly done in New York and creating an outcome in the other end of the world would seem contradictory, but luckily one of the most important aspects of urban farming is its sensibility to local conditions.

Moreover, as described in the first part of the thesis work, we are all experiencing a global connectedness that affects the social and economic circumstances, adapting to the challenges imposed by our ever-changing world.

The impact of the changes or the pace of the processes might be different in Budapest than in New York, but a new green urban lifestyle and attitude is indeed present and detectable both amongst the citizens and the local municipalities.

As Windowfarms (a New York-born idea) has the vision of greening the brownstone houses and the skyscrapers of New York City - Budapest could have a future with green and healthy panel block rows.

The enthusiastic alignment of this idea resulted in the formulation of Gourmet Garden.





THE PANEL BLOCK PLAN

Gourmet Gardens is a project that is driven to create values by addressing economic, environmental and societal concerns. In order to really make these values understandable and clear, Gourmet Gardens should be associated with a system that improves livability conditions and triggers a transition towards a sustainable lifestyle and consumption.

Panel block areas are indeed residency areas with immense and complex livability problems but in the same time present a good opportunity as a starting point for a net of urban micro farms. Panel blocks also have the advantage that they are normally constructed with small balconies, that would present suitable and convenient conditions for the instalment of small urban garden units.

Panel blocks are composed from a mix of private and public properties in terms of the composition of the buildings but also the flats themselves could be privately owned or by the municipality / government.

THE SUPERS⁶⁰

Panel blocks are managed by the panel block superintendent who is usually responsible for the repair of minor issues and report larger issues to the property manager (that is the municipality / government). The role of the superintendent is very important since they are the first point of contact for residents of the panel.

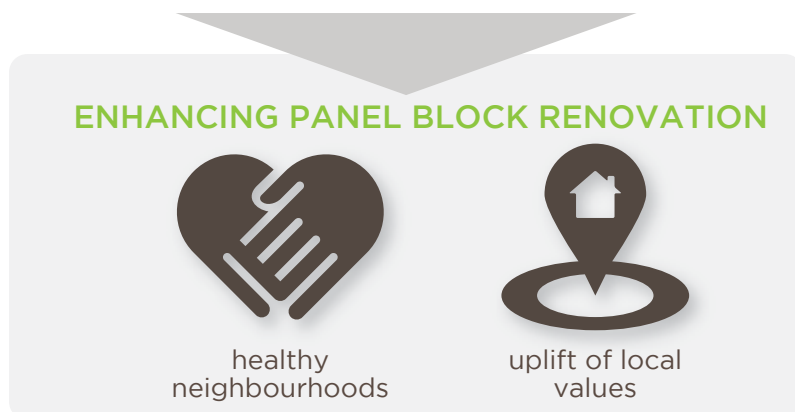
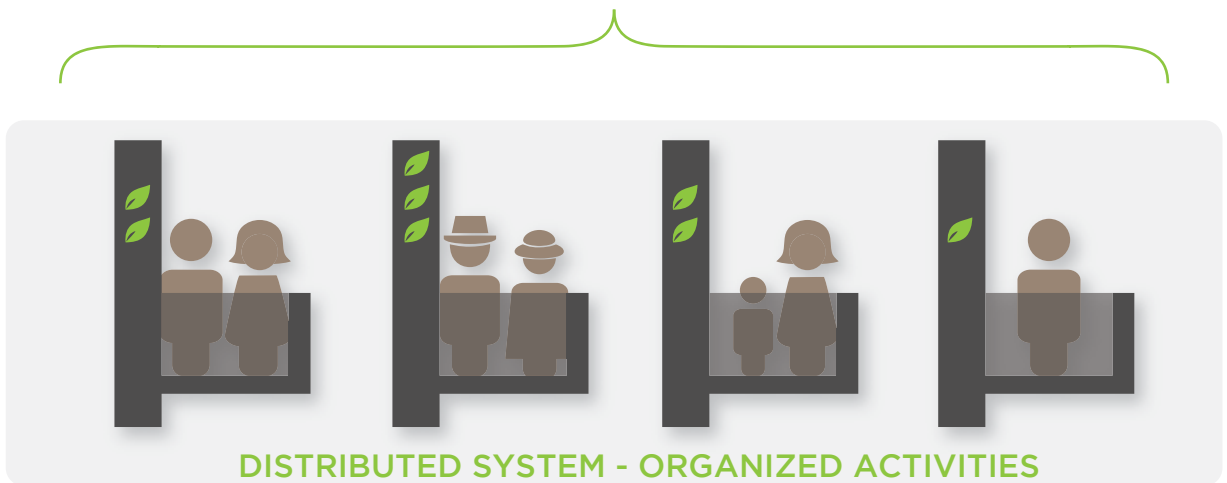
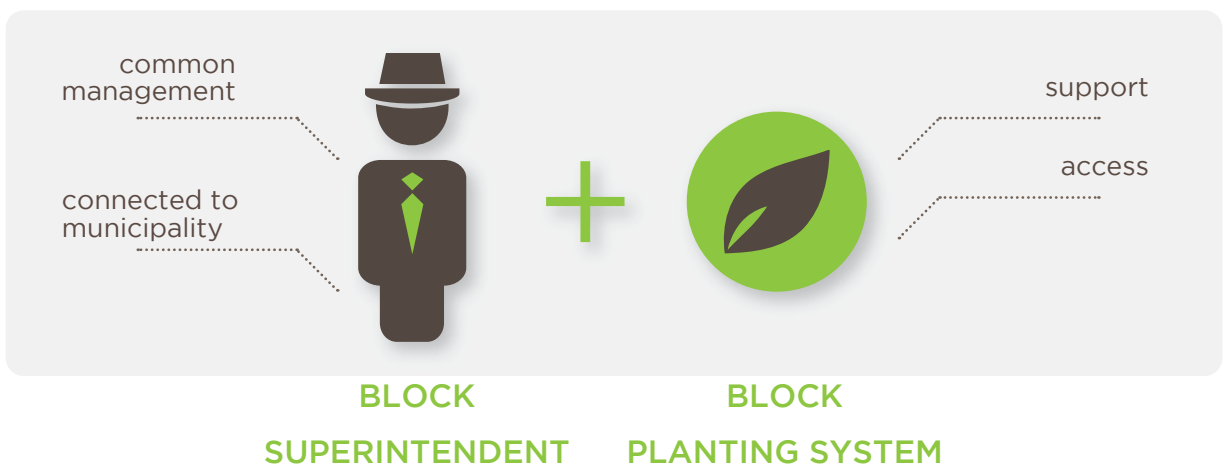
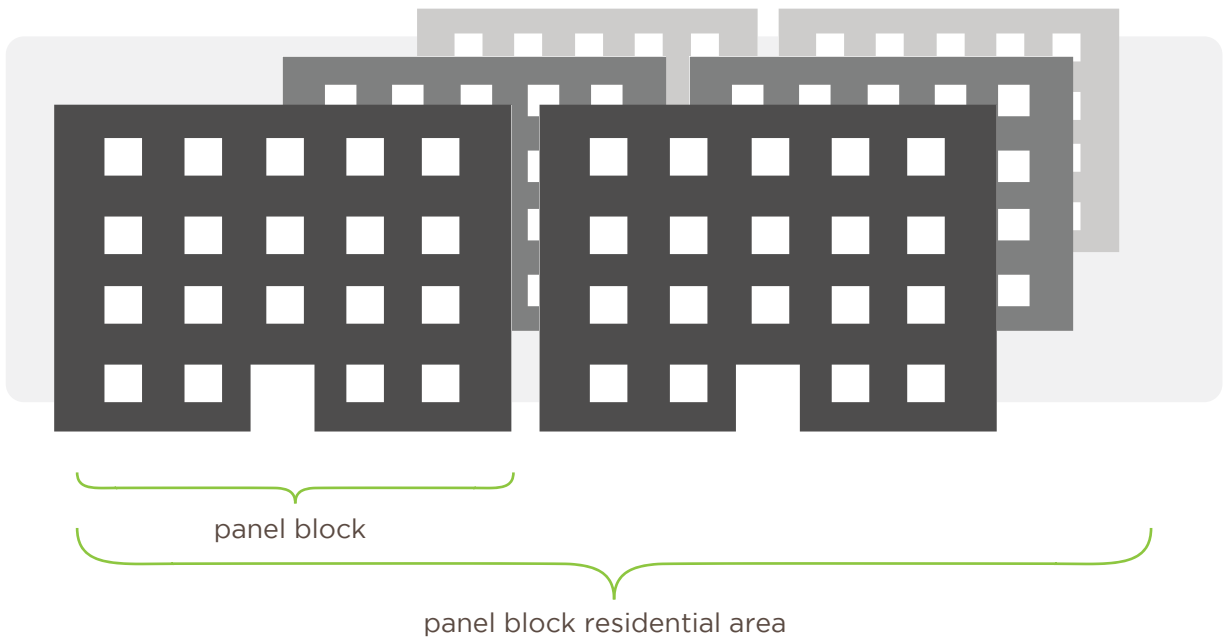
If Gourmet Gardens, as a system of urban gardens would be implemented in a panel block scenario, it would be accomplished with the involvement of the block superintendent. They are in direct contact with the municipality (and the residents) and can urge the application for the national renovation programs. They would be responsible for the management of the system per block so that the individual gardens act as one connected entity.

RENOVATION PROGRAMS

Connecting the set-up of a garden system with the renovation program would be favourable for many reasons. In this way, the government / municipality could cover part (or all) of the material and instalment costs and consider it as a pilot for an extended program, that covers not just the physical rehabilitation of the buildings but acts also as a recovering treatment for the health of the neighbourhood.

Starting it as a pilot program also has the advantage of trying it out small and safe - in order to evaluate feasibility, time, costs, adverse events and impact in an attempt to predict an appropriate system and improve upon the trial prior to performance of a full-scale project.

⁶⁰. *argo for superintendent*



STRATEGY

My interest is how incremental change can shift existing paradigms. Gourmet Gardens seeks to activate balcony spaces and the indoors households environments, shifting the passive consumer paradigm towards a multifunctional infrastructure designed with self-sustaining citizens benefits.

FEASIBILITY

To contextualize Gourmet Gardens , the project acknowledges existing efforts that work for the improvement of urban green areas by

non-profits, private interests, and government initiatives. In the meantime, through interviews and observational research, I have also learned about the many different aspects of urban gardens that has positive effects on businesses, communities and food culture that are not yet utilized in a comprehensive fashion.

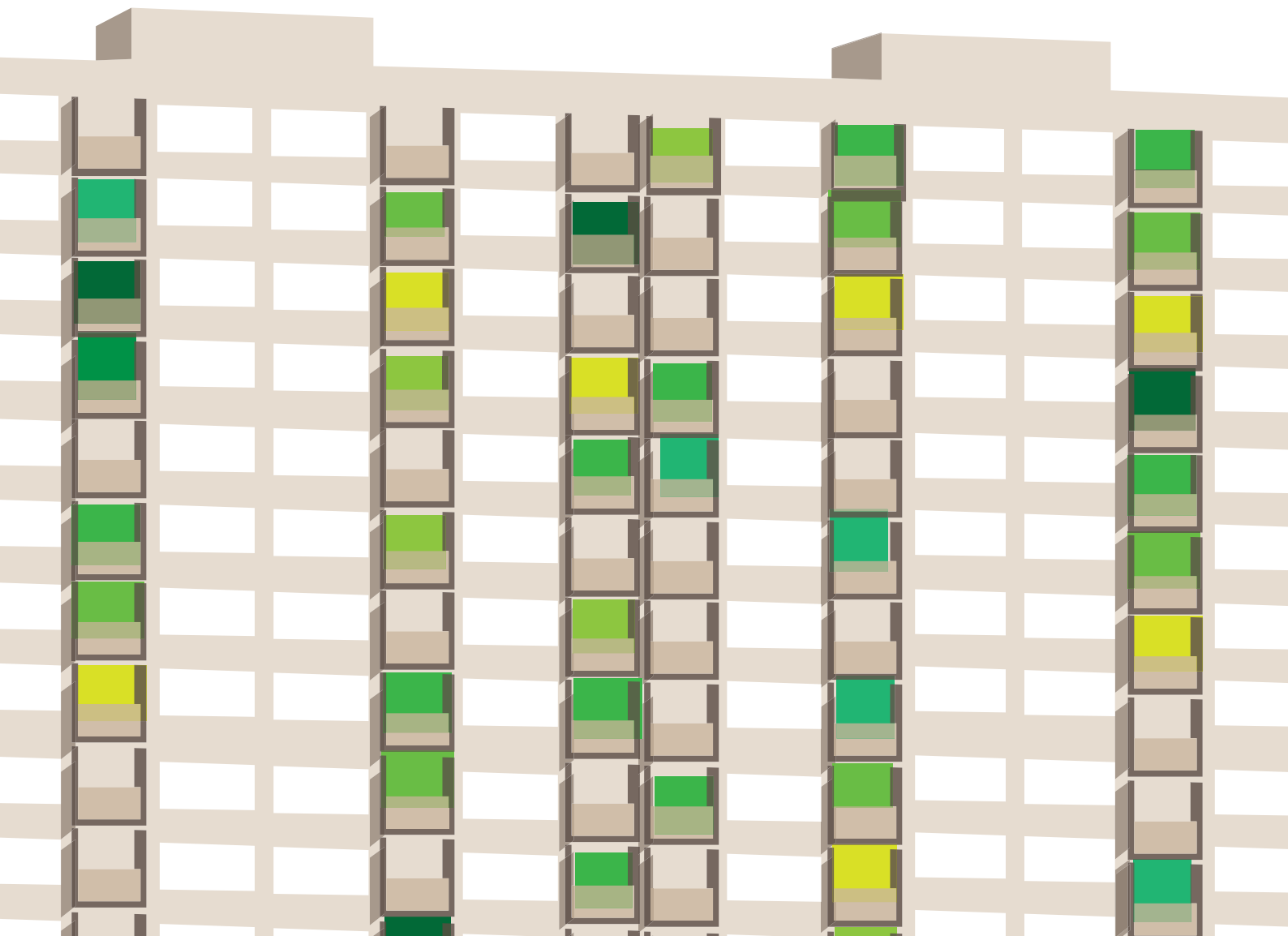
The reality and challenges of improving urban food production is significant and this is the reason why Gourmet Gardens is determined to bring it forward by building on the existing ecology of Budapest.



STARTING POINT

This project is about (re)-connecting the panel blocks; the buildings with its residents as well as the residents with each other, the people with nature through gardening and the perception of food with health. Cultivation is the core spirit of Gourmet Gardens and it is meant to nurture our plants, our food, our health and ourselves.

The panel block scenario acts as a starting point and inspiration for a product-service system that would make this plan possible but does not exclude other and more general implications of a gardening system that I am presenting throughout the following chapters.



Inspirations

For the design elements of Gourmet Gardens I took inspiration from diverse design examples, but the most important sources were the three presented below.

They provide (excellent) solutions for indoors and outdoors, designed for conscious consumption.

606 UNIVERSAL SHELVING SYSTEM, EDITION:VITSCØ

The 606 Universal Shelving System, created by Dieter Rams in 1960, is a design classic. It is a revolutionary way of building shelves - a modular system that can be used for one shelf or an entire library. It's adjustable and extendable without tools and is fabricated in metal with simple, clean lines. The parts can work independently or be used together in any number of configurations. It is called 'Lego for grown-ups' for a reason. For 50 years, it has been manufactured continuously and sold worldwide by Vitscø.

TERRA

Designed by Adital Ela, an Israeli designer who runs S-Sense Design, working to promote the professional and in-depth practice of sustainable design.

Terra stools are made from earth and natural fibers in a unique compression process that was developed based on a long term study of materials and of ancient building methods.

All materials were gathered from construction and agricultural waste and from the natural environment.

ÉTAGÈRE POTAGÈRE, EDITION: MILOMA

A vertical system design by Germain Bourré, a French designer who was trained in the studio of Jean Marie Massaud, and who has become a considerable voice in vegetation design and in food design.

It is a vegetation system where soil is the only substrate used, offering the possibility of sowing, planting and harvesting. Each level communicates with the following by sharing a common ground, allowing the free root development, and also the water flows from top to bottom without loss.



606 Universal Shelving System



Terra



Étagère Potagère

Gourmet Gardens

INTRODUCTION

Gourmet Gardens is a modular product family supporting the urban gardening lifestyle; enabling the production of vegetables, herbs, spices and sprouts in indoor and outdoor environments as well, arranged in a set of different configurations.

It helps to take up with the idea of producing food at home, allowing a constant progress through customizable, flexible system, through education and through the uplift of the personal motivation.

It can be useful for people with absolutely no gardening background and also for those who got already involved in gardening activities and have a basic know-how.

The goal is to improve and facilitate the everyday urban gardening experience in order to achieve a possible shift in the perception of food.

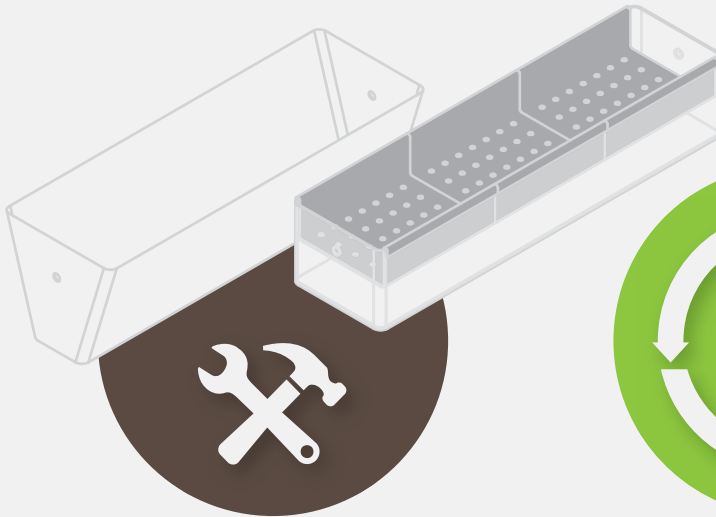
The Gourmet Garden products are made locally from environmentally sound materials, basically connecting the local producers with the end users; therefore emphasizing the importance of local (agricultural) production. The local producers provide the grains and seedlings, and assemble the products for delivery.

The manufacturing process also takes place in Hungary, aiming to give working opportunities for disadvantaged groups. Gourmet Gardens would operate as a for-profit company with high emphasis on CSR values.

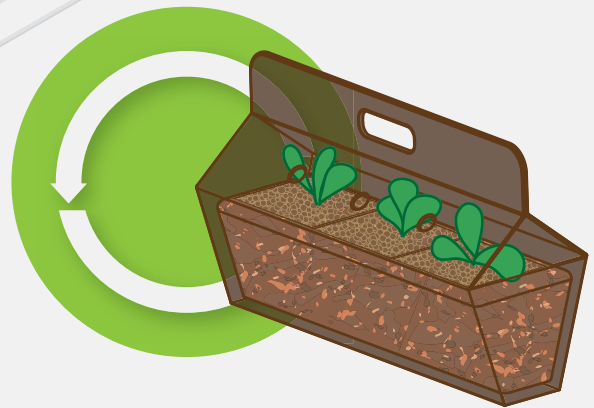
The brand offer consists of the marketed goods (plant packages, modular units), the related maintenance and support services, and the online platform that serves for the e-commerce, for (self)education and connection.



Gourmet Gardens



modular transformable
holder units



refillable plant
packages

HOME PRODUCTION

vegetables - fruits - herbs&spices - sprouts - fish



MAPPING THE POTENTIALITIES

The character of this project offers an extended map of potential partners, users and stakeholders, that I regrouped into 4 parallel 'actors section'.

It is a flat structure, not hierarchical, based on the research synthesis of Chris Piuggi's "user groups for urban farming in NYC"⁶¹.

During the further development of the project, I selected those people and stakeholders as

STAKEHOLDERS

PARTNERS

SECTION 1 *doers, makers & sharers* Gardening Communities
DIY Communities
Urban Agriculture B2C
Hydro Farms/Farmers
Technology Communities

doers, makers eaters & talkers Food & Tech bloggers
Hobbyist Communities
Engineers

SECTION 2 *education about system and technology* Schools
Prisons
Healthcare Institutions

education about system and technology Teachers
Administrators
Theraputists

SECTION 3 *groups integral to system application* Community Networks
Urban Planning Firms
Architecture Firms
Local Governments

groups integral to system application Community Members
Comm. Group Leaders
Urban Planners
Architects
Government Officials

SECTION 4 *distribution infrastructure* Farmers Markets
Bricolage Stores
Grocery Stores
Bars, Restaurants

consumer business decision makers Food buyers
Market Organizers
Market Sellers
Chefs
Restaurant Owners

actors of the system, who actually showed compliance for future involvement - highlighted in the map and detailed in the following pages.

61. <http://thesis.piuggi.com>

| SITES | | USERS | |
|---|--|---|---|
| <i>platforms for sharing</i> | Blogs Message Boards Youtube Instructables Newspapers | <i>growers, eaters & sharers</i> | Sustainability enthusiasts Foodies Hobbyists |
| <i>education about system and technology</i> | Schools Classrooms Prisons Sanitariums Universities Workshops | <i>educators & learners</i> | Students Teachers Prisoners Patients Biologists Bloggers |
| <i>locations integral to system application</i> | Apartments Businesses Households | <i>sites integral to system application</i> | Apartment Buildings Families Communities Individuals |
| <i>distribution sites</i> | Farmers Markets Grocery Stores Bars, Restaurants Grocery Delivery | <i>distribution members</i> | Farmers Restaurants |

Actors of the system / Personas

Johi (30), Péter (32) & Peti (7)

Description

They are living in a panel block at Tétényi road, in the XI. district. It is a small 53 m² flat that they also share with a cat and a dog.

Johi owns the flat, they bought it with her family after she graduated. They decided in favour of this one because the location is not bad, and it was relatively cheap, however they had to do long construction works. The location is close to one of the centers of the Buda side, it is more of a residential area, although crossed with a very busy main road (Tétényi road).

Benefits

They have a balcony that they don't really know what to do with, so far they put a canopy and a tool-shed there, but they are thinking of new ways how to utilize it more intentionally. They would want to have a herbs-veggie garden that they can easily take inside too, to improve the general atmosphere of the flat (both physical and psychological).

Apart from the practicality of having an indoor herb garden, Johi also feels the need to engage in more healthy cooking now that she is providing not just for herself, but for a new family (the boys moved in her life not long ago), for this reason, the possibility of having some fresh vegetables and herbs all year around is highly stimulating for her.

László Farkas (58) & Erzsébet Koncz (56)

Description

Mr. and Mrs. Farkas moved into Párkány street 20 around 30 years ago and they remained there ever since. When the kids were born (Dani 26, Laci 24) they bought the neighbouring apartment too so that they have more space for the family. Combining the two 52 m² panel flats this way, they got a ~100 m² living area, although right now only the two of them lives there.

They don't have any animals either, the flat is spacious and sunny. It is located on the first floor in one of Újlipót's panel blocks, in the XIII. district, one of the residential areas of the Pest side, quite close to the downtowns.

Benefits

The Farkas Family has quite a spacious balcony area where Ms Farkas currently grows pot flowers, mostly geraniums. She is a confident gardener, she would choose herself what to grow and since they don't have spatial constraints, she would benefit from the horizontally-vertically expandable version of Gourmet Garden grower units.



Johi and her family at Tétényi road XI. district



The balcony of the Farkas family XIII. district

HIVATAL BAR (~ OFFICE BAR)

András Krajnyik, co-owner

Description

Hivatal is a pretty small café and bar in the very middle of downtown Budapest at Madách square. This area has lately become a hub for downtown nightlife, so Hivatal is a preferred and busy spot, however, it's one of the cheaper ones. To create a certain kind of harmony between the name and the interiors, Hivatal is loaded with mysterious sheaves of paper, and as a guest you are always the boss.

Benefits

András is a former horticultural engineer (and talking to him, you might have the feeling that he likes plants better than humans) and he is open to adopt any vegetation into his business. He would use an easily movable system that he can keep close to the bar and during summertime he can put outside when the terrace is open, but then he would have to put it back inside for the night. He would use the herbs for teas and cocktails and for their home-made pastries and cookies.

KANDINSKY STUDIO

Viktor Merker, architect

Description

Kandinsky Studio is a design consultancy mostly involved in city planning projects. It is located in downtown Budapest, in Király street, VI. district. The studio is part of a the VAM Design Center, an exhibition and arts space that hosts offices as well. The studio has only practical objects inside, no decorations at all, that serves to reflect their function based and realistic working philosophy.

Benefits

They got recently engaged in several green area development city projects, working together with landscape architects. These works brought a more eco conscious attitude that they would like to express towards their clients too through innovative solutions. Moreover, the simple, clean and effective attributes of Gourmet Garden is attractive to them from a designer's point-of-view. They would use an automated unit, with embedded lighting and water control, used as a space separator as well.



András working at the Hivatal, Madách square VII. district



Kandinsky Studio at the VAM Design Center, VI. district

Actors of the system / Partnerships

PEST ESÉLY (~ BUDAPEST CHANCE)

The Budapest Chance is the innovation center and coordinator of the equal opportunity policy of Budapest. By founding Budapest Chance in 1996, the Municipality has tried to open a protective umbrella over the heads of unemployed people in Budapest who have dropped from the labyrinth of the institutional system. Annually 3000–4000 job-seekers are visiting the office for job opportunities and advise, and 800–1000 people of them get engaged in public employment by the Budapest Chance. In 2008, the European Commission selected Budapest Chance as one of the 9 best examples of active social inclusion, and therefore on the Community level Budapest has become of the cities with the best practices.

After talking to Mr. Márton Kulinyi, the director of Budapest Chance, it became clear that for the production and delivery workforce required by Gourmet Gardens, Budapest Chance could be a perfect provider.

There are several individual and grouped local producers in Pest county (surrounding Budapest and its suburbs) that produce divers agricultural goods; I choose to list those who in addition reinforce the social responsibility in the work process so that Gourmet Gardens can make a contribution as well.

CIVITÁN BUDAPEST HELP

Civitán Budapest Help is a boarding school for mentally retarded young people. In 2005 the institution engaged in building a garden and glasshouse for flowers and vegetables around the buildings and they started the gardening activities as a retreat therapy. The patients learnt how to plant, to use the gardening tools, to take care about the garden etc. They learnt about the plant species and soil types. Slowly, their environment discovered the garden as well (they are located in the II. district) and they got orders for other gardening works; they planted flowers in II. district's municipality building and they are responsible for all the greens of Marczibányi square.

According to Civitán's therapist, the young gardeners' healing progress was not only significant, but unexpectedly above average; now the young also take care of the customers on their own just as any other good host. And for last but not least, they have some income that otherwise would be very difficult for them to generate.

EXPERIMENTAL AND RESEARCH FARM / *Faculty Of Horticultural Science / Corvinus University*

Beside the practical education, research, breeding and variety conservation, the Farm produces goods for sale. This way, besides learning cultivation techniques, the students can acquire the requirements of the commodity production as well.



Mr. Kulinyi and the Budapest Chance headquarters at Ór street VIII. district



Corvinus Experimental and Research Farm

Product-Service-System

The Gourmet Gardens PSS has three main components: **the growing units** (composed of customizable plant holder elements), **the plant packages** (pre-designed or customized) and **the web platform**. The combination of the components gives access to different user groups - detailed in the map of "The 4 sections of potential actors in the system" - to take part in the various forms of home food production and food education.

The growing units can be chosen depending on the spatial/economic constraints and the plant packages can be assembled based on personal taste or health requirements. The detailed offering map is explained in the following pages.

CONNECTING TO THE CONTEXT

Collaborative Networks

Gourmet Gardens is basically a set of tools to create personal connections to the natural world, a very physical connection that is enhanced through the digital world.

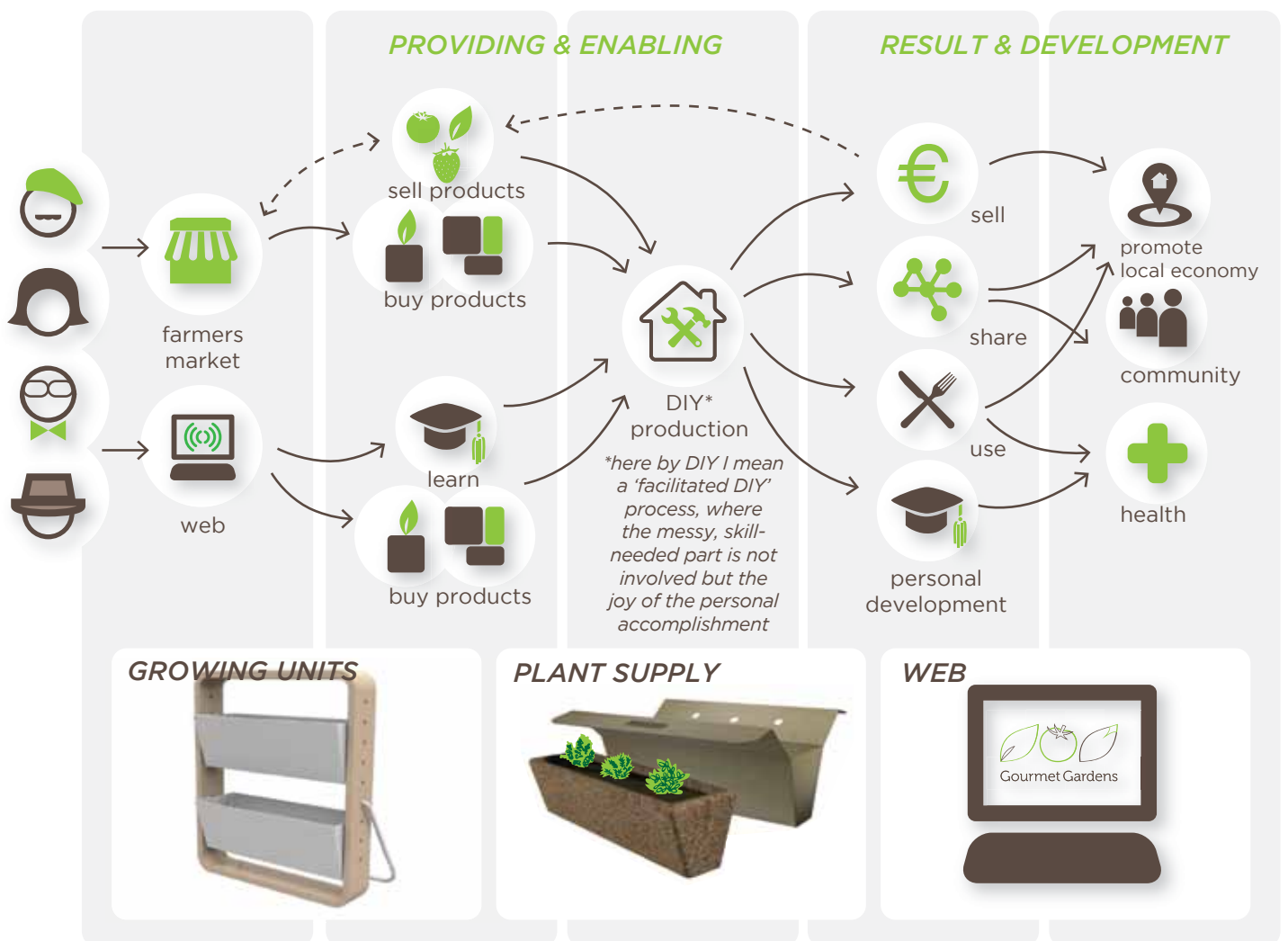
Collaborative Networks would be a result coming from the web platform - putting a diversity of people together and allowing exchange and interaction. The know-how and leading advices could come from an expert or from an enthusiast as well.

Distributed systems

Gourmet Gardens aims to offer easily manageable and effective home production solutions that leave the space for personal improvement. Distributed production would happen when the users enter in the creation process, in this case caring for the plants and growing food locally. Through the website, they also share information, give ideas to follow, improving the designs and the techniques, while having the possibility to exchange or sell values.

Slow movement and Prosumers

Gourmet Gardens blurs the distinction between a 'consumer' and a 'producer'. It is about introducing ideas about self-sufficiency in an instable environmental and economic atmosphere. It enforces conscious consumption and transparent economic relationships between the involved partners, producers, stakeholders and citizens.



Brand Offer

Gourmet Gardens offers solutions for people engaging in urban gardening activities, with many different basic solutions since there are no holistic options able to provide them everything they need at once. For the above-mentioned reason these concepts will be presented and visualized with a general level of detail, according to the need and relevance for the overall understanding.

From the user's perspective, the macro categories help them to identify the main areas in which they would use the products and can offer them entire kits and packages to be implemented in the daily life for an immediate radical improvement in self-supportive food production. While the products offer basic systems for plant holders the implementations of each can be different based on personal customization.

The gardening systems can be built from the modular growing parts combined with the plant packages. It is possible either to construct custom-designed systems but also to choose from the pre-designed 'Growing Gardens Kits'.

Basically there are two main categories for the planting systems; 'low-tech & low-cost' and 'high-tech & high-cost'. The purpose of the division is that they address different user groups; the low-tech systems are designed for household usage (for individuals or families) and the high-tech systems are targeting the institutional or office usage.



Gourmet Gardens



local producers



partnerships



local manufacturers



delivery

plant holder

sprout holder



modular grower parts



pre-designed



customizable



plant package supply

* small kit

* medium kit

0.5 m

0.5 m

1 m

* expandable kit

LOW TECH KITS
for classic gardening

* light & water regulation

* hydroponic system

* aquaponic system

HIGH TECH KITS
for automated gardening



individuals



families



offices



public institutions

Scenarios

One of the main purposes of Gourmet Gardens is to be applicable in different surroundings according to their specific conditions.

This is important for covering a wide range of users - from individuals to corporations, divide into two main programs; the low-tech and the high-tech.

These scenarios here present some possible arrangements and placements, and the detailed adaptation process for the two main programs is explained through the 'Scenario touchpoint maps' in the following pages.

HOUSEHOLDS

Balcony wall, Table set, Kitchen set

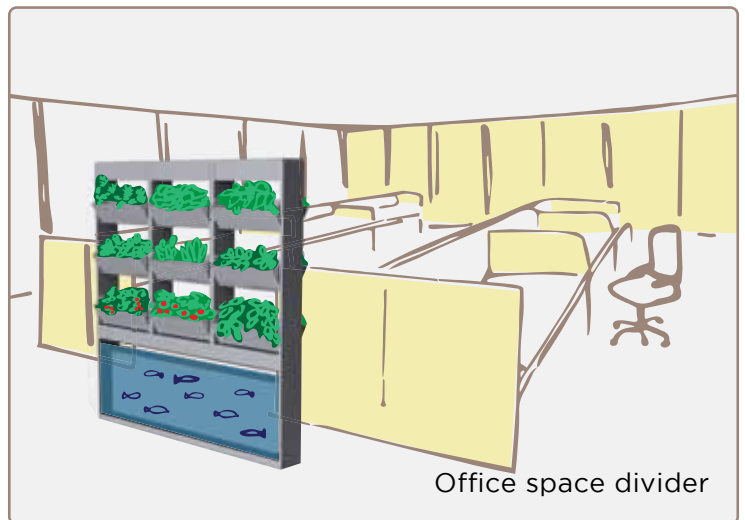
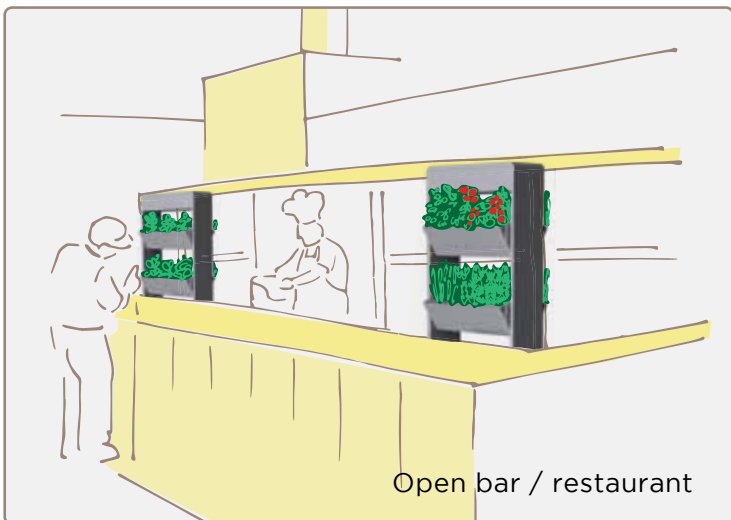
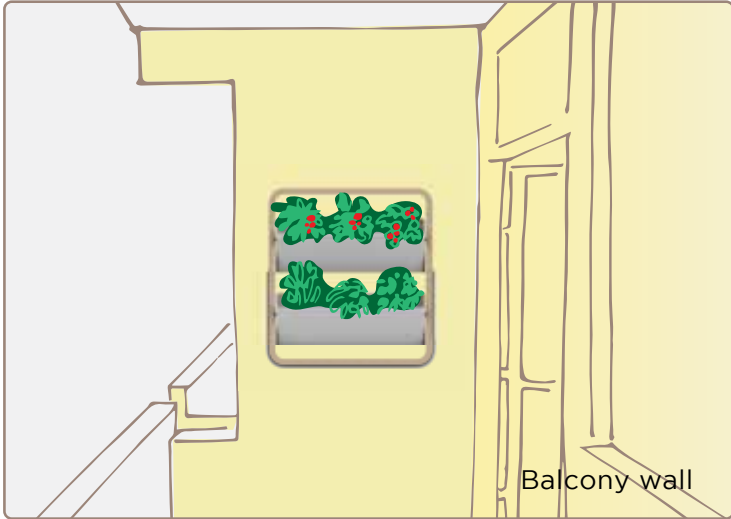
Small and medium kits are ordered online and delivered to the home of the users by bike couriers. The users assemble them by themselves and place them freely. Afterwards, if it's needed the kits are easily movable and transferable so that for example a wall set-up can be turned into a standing set-up or the other way around.

The gardening activities are assisted with the help of printed guides and through the online platform where also experiences are shared.

PUBLIC / CORPORATE

School canteen, Open bar / restaurant, Office space divider

The automated units are installed with the help of Gourmet Gardens services that afterwards follow the production activities offering support and maintenance. In these cases, it is usually not the owner of the system who consume the produced goods but the users of their services - for example the children at the school canteen, the workers in the office spaces or the customers of a restaurant.



LOW TECH SCENARIO TOUCHPOINTS

ATTRACT ATTENTION



urban ads



farmers market



social media /WOM

INFORM



farmers market



website

DELIVERY



bike couriers

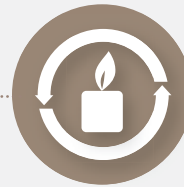
USE



DIY assembly
& care



DIY gardening
activities



plant supply
service

SUPPORT



smartphone
app



printed
instructions



plant care
cards



tips&tricks



call center

MAINTAIN / RESULTS



eat / food



fresh, clean,
healthy products



generate
values



personal
improvement



social
improvement

HIGH TECH SCENARIO TOUCHPOINTS

ATTRACT ATTENTION



contacting



government competitions/calls

INFORM



personal compliance



website

DELIVERY



bike couriers



trucks

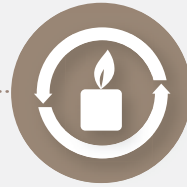
USE



DIY production activities



maintenance service



plant supply service

SUPPORT



smartphone app



printed instructions



plant care cards



personal assistance



call center

MAINTAIN / RESULTS



eat / food



enhanced work env. & improvement



generate values



personal values



CSR values

Core addressees & the products

The modules are configured based on productive and ecological needs and are able to suit for most of their requirements.

I explain the different Gourmet Garden Kits through examples of my personas' applications; as each of them represents a significant user group.

CONFIGURATIONS

1. Small balcony kit - Small standing kit

This unit can support 2 plant packages; it is the smallest configuration. A handle can be added to the frame, adjustable for a standing position so that it can be moved easily and placed on a table, kitchen bar.

where/who: For small apartments/households, where home-grown goods are used additionally or occasionally. For sustainability enthusiasts, foodies and hobbyists.

2. Medium balcony kit - medium standing kit

Capable of holding 3-4 plant packages, it is the double of the small unit. It can be reconfigured into a standing unit by adding a leg part (and an optional storage).

where/who: Still fitting for a balcony use, for more engaged home gardeners. For growers, eaters and sharers.

3. Expendable kit

The parts of the wall units can be used in a free configuration, that is expendable both vertically and horizontally.

where/who: For doers and makers. For advanced gardeners.

4. Automated - water and lighting

The plant holders are inserted in a housing that supports the water and lighting supplies, so that it can be set up anywhere. Customized planning is needed, with support and maintenance.

where/who: As an office space divider, for kindergartens, schools, universities or big indoor spaces, public institutions. For educators and learners.

(5. Automated - hydroponics / aquaponics)

The ultimate solution; an almost self-sufficient ecosystem. An investment with a high rate of return. Customized planning is needed, with support and maintenance.

where/who: People integral to system application. For farmers, restaurants.

MATERIALS

The pieces are made from wood and/or thermo lacquered aluminium profiles, raw or coloured in white/grass green. The personalization of the units is available through the web platform.



Johi



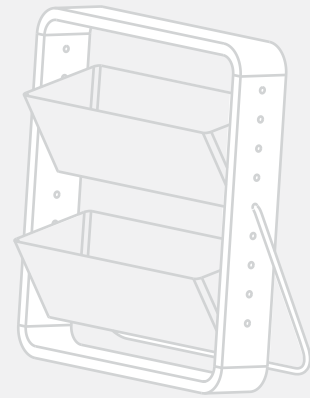
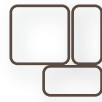
small panel balcony



beginner



herbs & sprouts for cooking



SMALL BALCONY KIT



Mr&Ms
Farkas



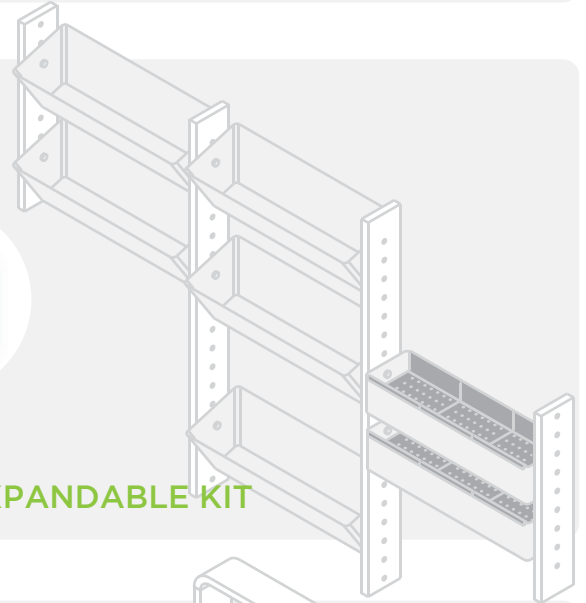
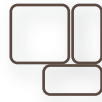
spacious panel balcony



confident gardeners



veggies & fruits



EXPANDABLE KIT



Hivatal
Bar



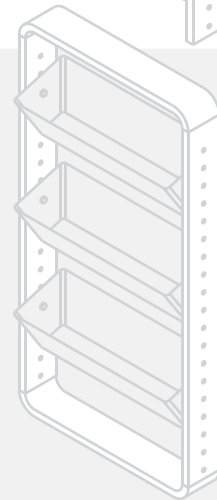
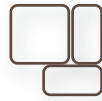
downtown café / bar



wants to please the costumers



herbs for teas & cocktails



MEDIUM KIT



Kandinsky
Studio



downtown office



wants to impress the clients



good looking plants



AUTOMATED KIT

Development of the Touchpoints

The service period is divided into five parts⁶². The first part is about how to attract attention, mostly about making the first flashing inputs. The second part is to inform the potential customer about the product offers and the service system. The third part marks the touchpoints used during the active usage of the PSS. The Support part serves more for secondary needs, whereas the Maintain part can be used for feedback and post-service period.

62. The Touchpoint diagram is based on the online toolkit available at www.servicedesigntoolkit.org
© Namahn and Yellow Window, Service Design



| INFORM | USE | SUPPORT | MAINTAIN |
|--|---|--|--|
| <i>How do you stimulate the customer to take action?</i> | <i>How do you respond to customer needs with regard to service provision?</i> | <i>How do you handle problems or questions during service provision?</i> | <i>How do you enter into a relationship with the customer?</i> |
| ✘ | | | |
| ✘ | ✘ | ✘ | ✘ |
| ✘ | ✘ | | ✘ |
| | ✘ | ✘ | |
| | ✘ | | |
| ✘ | | ✘ | ✘ |

Brand elements

NAMING AND BRAND MARK

The Gourmet Gardens term refers to the diffused net of urban gardens taking part in the system. The plural sense indicates the connection between them and the emphasis on the formed community.

The tonality of word 'Gourmet' expresses the quality of the Gardens' produces, as well refers to the quality-time a person would spend on taking care of it, growing the plants, preparing food for them and then consuming it.

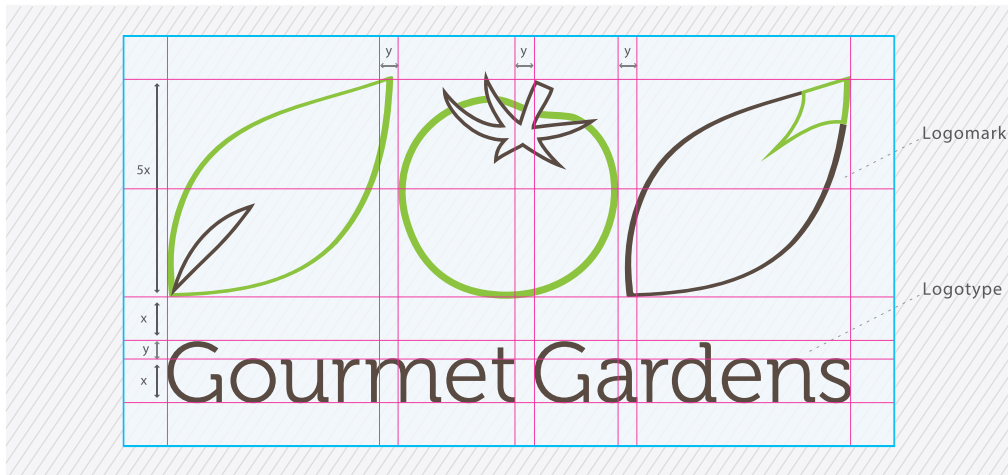
The visual elements represent the possible outcomes the Gardens allow to produce; a leaf (for herbs and plants in general), a seed (for sprouts) and a tomato (for vegetables). The colour scheme is chosen to communicate the natural aspects of the project.

LOGO VARIATIONS

Considering the structure of the logo, it is important to define limits and constraints for the usage, in order to assure the proper understanding of the brandmark in any circumstances. The logo always needs some breadth to make the typeface readable and has to be used a horizontal version.

The secondary typeface is used for additional appearances, like in the case of urban ads (see *page 116*) or for stencil applications.

PRIMARY LOGO



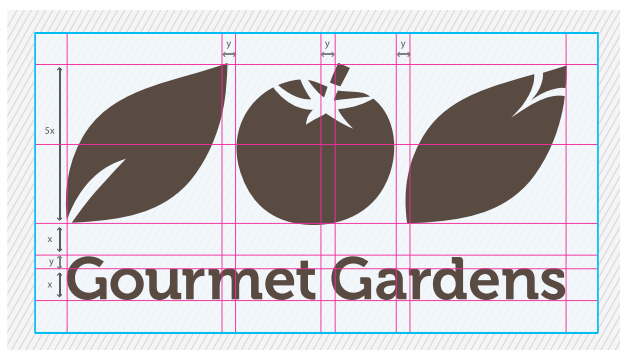
Blue indicates Clear Space. The blue area must be kept free of other elements. Grey padding indicates Safe Zone.

Magenta indicates type and element alignment and boundaries.

The minimum required Clear Space is defined by the measurement 'X' (equal to the height of the lowercase letters, known as the 'x-height').

ALTERNATIVE LOGO VERSIONS

Secondary Logo Style



Blue indicates Clear Space. The blue area must be kept free of other elements. Grey padding indicates Safe Zone.

Magenta indicates type and element alignment and boundaries.

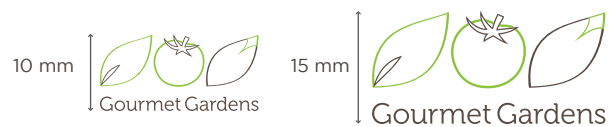
The minimum required Clear Space is defined by the measurement 'X' (equal to the height of the lowercase letters, known as the 'x-height').

FONTS USED IN LOGOTYPE

Museo 300

1234567890 !@£\$%^&*()-=+
 ABCDEFGHIJKLMNOPQRSTUVWXYZ
 abcdefghijklmanopqrstuvwxyz

Minimum Logo Width



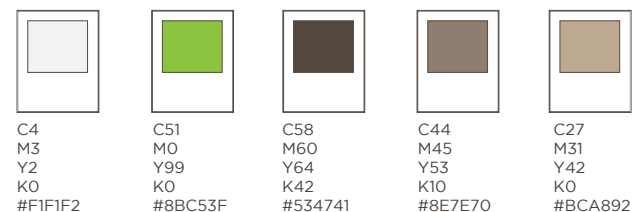
Social Profile images



Website Favicon



Colours



Museo 700

1234567890 !@£\$%^&*()-=+
 ABCDEFGHIJKLMNOPQRSTUVWXYZ
 abcdefghijklmanopqrstuvwxyz

NON APPLICABLE VERSIONS



Attract Attention

GREEN GRAFFITI / REVERSE GRAFFITI

Graffiti is one of the most controversial art forms since it damages public property – but there is an unconventionally restorative form of it; the reverse graffiti. It is also called ‘scrubbing’, that refers to the technique of etching the sketches into the grime that already exists on them, this way “cleaning up” the walls. One of the earliest advocates of the reverse graffiti movement was the British street art artist Paul Curtis (aka Moose). Recently different organisations and activists started to use this technique for leaving urban ‘messages’, followed by commercial parties too, for urban advertisement; e.g. Leves (a soup bar in Budapest).

Another green graffiti form is the moss graffiti, that is sprayed on the walls, leaving a breathing moss piece of art - like the guerilla graffitis of Edina Töködi, who is working in Brooklyn, New York.

Gourmet Gardens would use the scrubbing technique on the walls of the panel block buildings, that are dark grey from the smog. A reverse graffiti right at the spot would leave a strong and startling message.

GG CORNER AT SZIMPLA SUNDAY FARMERS’ MARKET

I introduced the Sunday Farmers Market earlier, in the *Chapter: The Budapest Green Tour / Budapest Markets, page 66*. Szimpla made a call for everybody who would like to take part in selling-vending and broadening their supply of homegrown and homemade goods. Therefore, it is an excellent and convenient possibility for Gourmet Gardens to establish a ‘GG corner’ and set-up some stands that can be used for marketing the GG products and could be used for the most active GG users to sell their own grown produces.

It is a good opportunity for two reasons; for one, Szimpla Market is known for tasty and good quality products coming from family gardens and small farms, and selling the products there would make a clear value positioning for Gourmet Gardens.

The other puller reason is the popularity of this market; the inhabitants of the surroundings and the visiting tourists provide a constant crowd and demand for good quality aliments, for the contentment of both sellers and buyers.



Reverse graffiti by 'Moose'



'Leves' advertisement at Deák sqr. VI. district



Gourmet Gardens reverse graffiti ads in the XI. district



GG corner at Szimpla Sunday Farmer's Market

The Plant Packs

The Gourmet Garden consists of modular units with refillable plant packages. The greens for the packages are sorted based on functional and kitchen style guidelines and are arranged into different assortments. Besides the pre-designed packages, users can so create packages based on the personal need too. The packages can be accessed through the online service and through selected Farmers Markets.

THE PRE-DESIGNED PACKAGES

Vegetables

SALAD: Baby Spinach, Rocket, Corn Salad
PROTEIN: Bean, Pea, Chick Pea
TOMATO: Cocktail Tomato, Balcony Tomato, Yellow Cherry Tomato
PAPRIKA: Chili, White Paprika, Cherry Pepper
ONIONS: Garlic, Spring Onion, Chives

Fruit

STRAWBERRY: Strawberry (3 Seedlings)

Herbs & Spices

SOUP: Parsley, Celery, Lovage
FRENCH: Chervil, Tarragon, Marjoram
ITALIAN: Basil, (Prostrate) Rosemary, Oregano
TEA: Mint, Lemongrass, Anise
MED: Marigold, Peppermint, Hyssop

Sprouts

Radish, Wheat, Cress, Medick, Broccoli, Mustard, Lentil, Oat, Barley

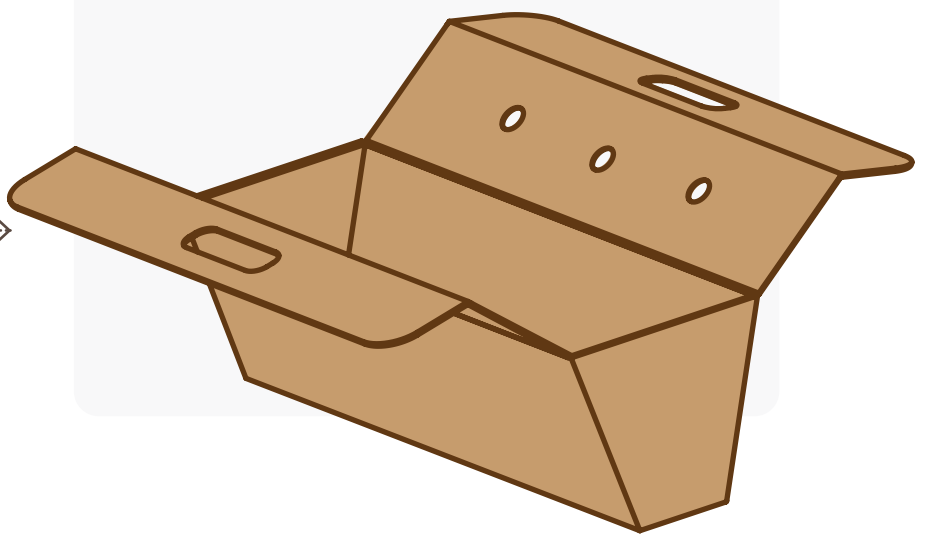
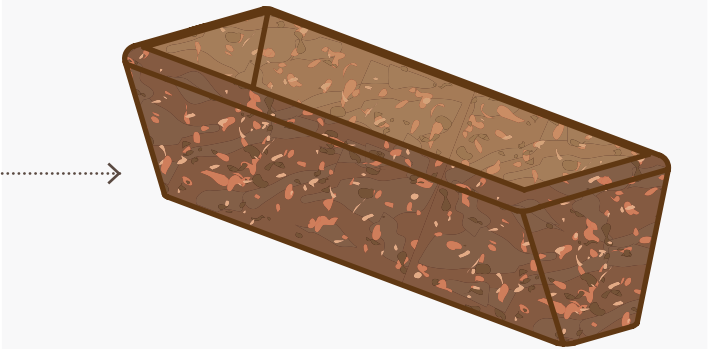
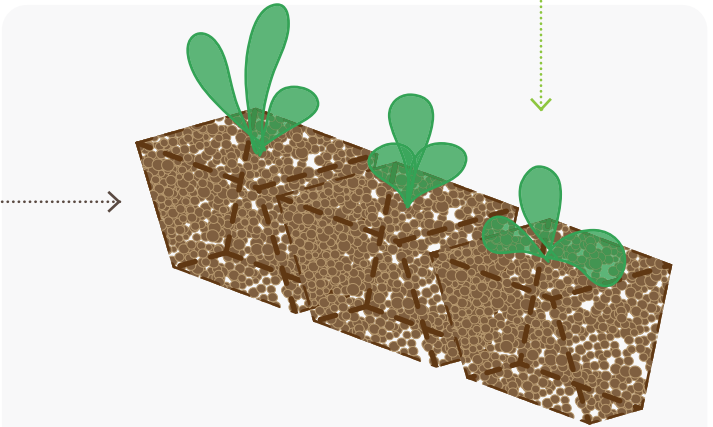
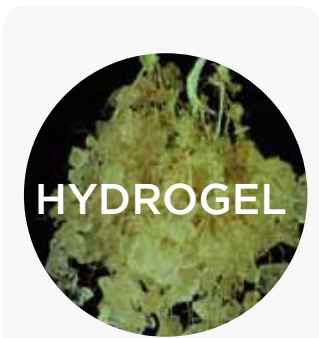
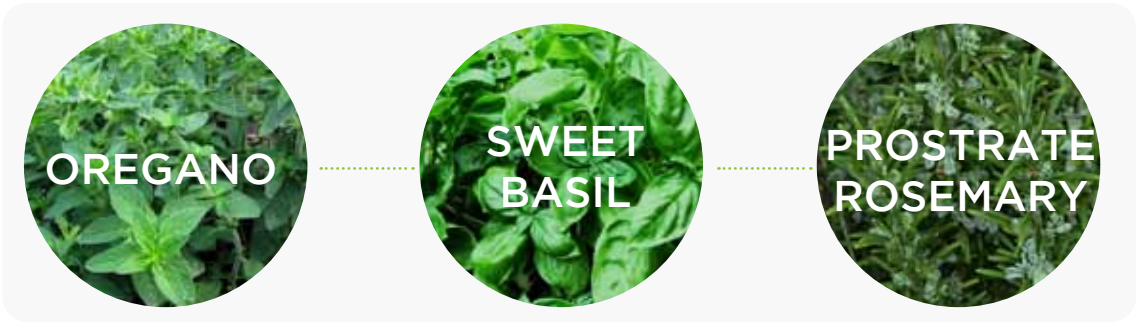
MATERIALS

Terra. The 'pots' holding the seedlings are made the same way as the Terra products (*presented in the Chapter: Inspiration, page 90*), soil and natural fibers compressed together. The Terra pots are solid to hold the seedlings during transportation, but once they are installed (in the modular holders), over time the consistency gets dissolved and the Terra pots are transformed into soil.

Hydrogel (also called aquagel) is a network of polymer chains that are hydrophilic. Hydrogels are highly absorbent (they can contain over 99.9% water) natural or synthetic polymers. One of the common uses for hydrogels is in agriculture; in forms of granules the hydrogel is mixed in the soil for holding soil moisture (also the substrates). When dryness comes, the hydrogel consistently releases the water. In agriculture, hydrogel granules are mostly used for the cultivation of mushrooms, flowers, lawns, nursery gardens etc. In the Gourmet Gardens packs, hydrogel would give a safer environment for the plants and less risk for the users. In addition, it helps to differentiate the product, being distinctively different from the other planting products that are now available on the Budapest markets.

PACKAGING

The plant packs are packaged in cardboard boxes, in a way that they can only be carried / transported with the plants standing. This is important for the protection of the seedlings.



Example: The Italian Pack

I chose to present in detail one of the pre-designed plant packages in order to give a sense of understanding about the function of the plant-supply service.

The packages are assembled based on the production demand - the information coming from the e-commerce feature of the website, and in the same time, also providing supply for the weekly farmers markets.

The packages are delivered by bike delivery and can be instantly placed in the grower units. They arrive in cardboard boxes, with description cards for the transported plants.

DESCRIPTION CARDS

The packages contain 3 plants so that 3 description cards belong to them. They sum up the most important gardening and maintenance features, small tips and tricks and interesting info bits. Also they give a general guide for culinary, medicinal and other usages, with warnings for side effects.

For example, in the Italian pack, the selected plants are: oregano, sweet basil, prostrate rosemary (a special small balcony type). They are amongst of the most important herbs in Italian cooking, where fresh herbs are used (almost exclusively).



The plant package



Gourmet Gardens

Sweet basil


(Ocimum basilicum)





-  **Full sun**
-  **Rich light well-drained to dry soil**
-  **Tender Minimum 10 C°**


Sweet basil is a good companion plant for tomatoes but it grows badly with rue and sage.

Don't plant it next to raspberries since basil can retard their fruiting.

 Use the leaves and flowers - raw or cooked. The leaves are normally used fresh but can also be dried for winter use. Used as a flavouring; especially with tomato dishes, pasta sauces, beans, peppers and aubergines, also used as a very pleasant addition to salads. Use the leaves sparingly in cooking because the heat concentrates the flavour. A refreshing tea is made from the leaves. The seed can be eaten on its own or added to bread dough as a flavouring.

 Its keyword is 'Clearing'. They are taken internally in the treatment of feverish illnesses (especially colds and influenza), poor digestion, nausea, abdominal cramps, gastro-enteritis, migraine, insomnia, depression and exhaustion. Externally, they are used to treat acne, loss of smell, insect stings, snake bites and skin infections. ***Gourmet Gardens can not take any responsibility for any adverse effects from the use of plants. Always seek advice from a professional before using a plant medicinally!***

 The growing or dried plant is an effective insect repellent - applied to the skin it works against mosquito, in the home it repels flies, or in the greenhouse it can keep all manner of insect pests away from nearby plants.

 Basil contains estragole a potentially carcinogenic and mutagenic essential oil. Do not take during pregnancy or give basil oil to small infants/children.

The Grower Kits

The Grower Kits can be assembled freely from the modular parts, and they can be rearranged or expanded over time, or be transformed from a wall unit into a standing unit for example (see *the The Gourmet Gardens Offering map on page 105*).

Users can choose the parts and build personalized systems depending on their taste. But the main characteristic of the Gourmet Gardens' product offer is the pre-composed grower kits, that are designed based on the needs and requirements of the targeted main user groups.

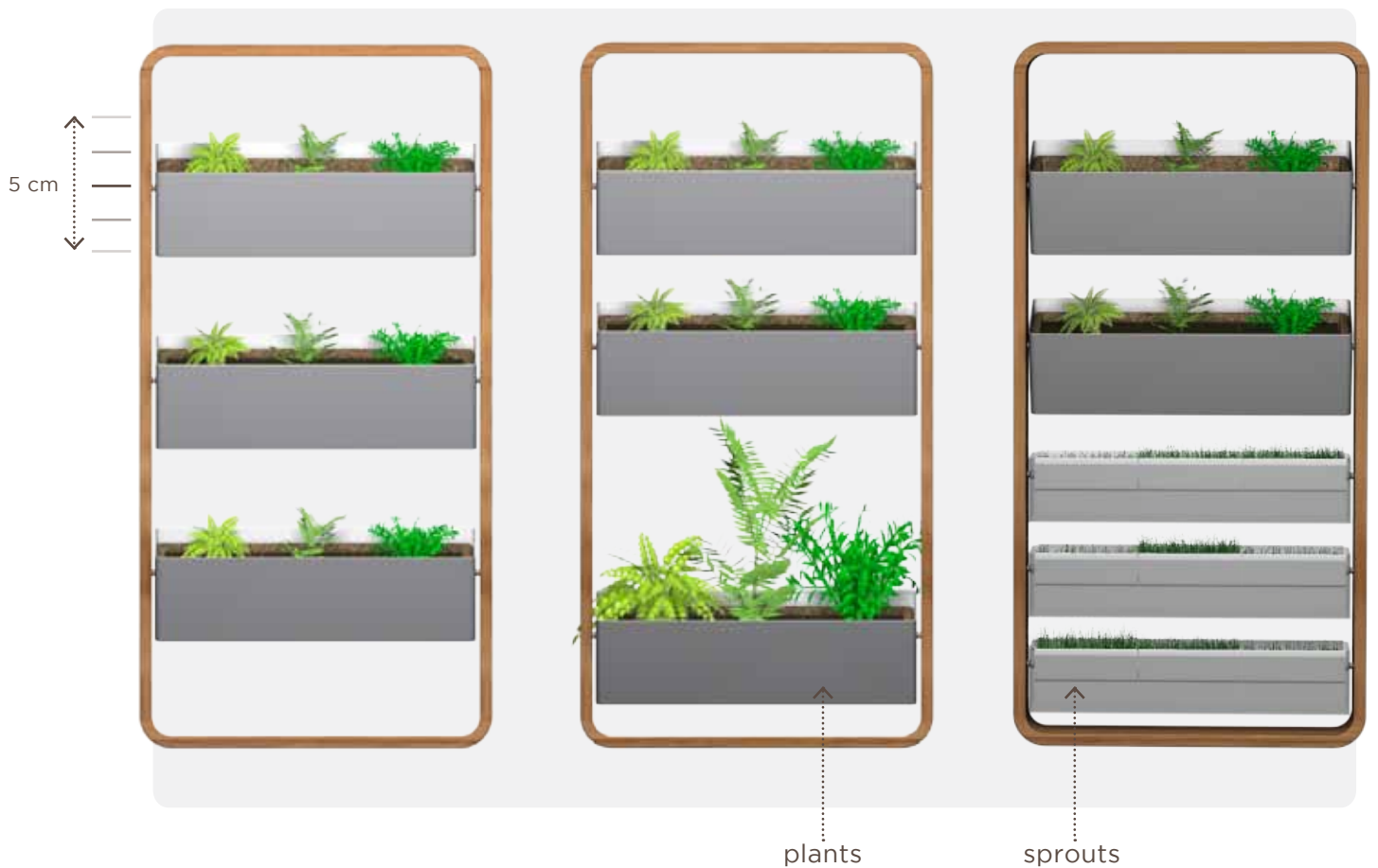
They are differentiated based on size (small, medium and expandable) and the technology and cost involvement (low - high tech).

For example the smallest arrangement is the small balcony kit or the starter kit that fits for the requirements of a small household - that is illustrated on next page, but I explain in details the composition of the low tech and high tech kits through the next pages.

Once the grower units are set, the plant packages can be inserted in a way to suit for smaller or larger plants as well. The distance between each plant holder can be fixed in every 5 cm.



The small balcony kit or the 'Starter Kit'



Various arrangements

Low-tech & Low-cost

Gourmet Gardens' aims to be accessible and affordable in the first place and for this reason having a low-cost & low-tech version is appropriate and advantageous.

The low-tech units are composed from the classic plant packages and the regular modular parts. Their size can be small or medium - vertical wall or standing positions - or they can be assembled in a free, expandable way.

They can be ordered online - and assembled by the users themselves.

These systems require access for sunlight and regular watering (still less frequent thanks to the hydrogel mixed in the soil). For providing a complete environmental control and significant amplification, the high-tech units were needed to get introduced in the system, presented on the next page.



WALL



STANDING



Small Balcony Kit

WALL



STANDING



Medium Balcony Kit

High-tech & High-cost

Light - water control

There is one step in between the low and high tech units, which is the system composed from the classic soil-based plant packages but with water and lighting supply. A drip irrigation system provides the needed watering actions and special LEDs give the required lighting volume for growing the plants.

Hydroponics

In the hydroponic system, the centered water tank provides the water needed for the plants. The water mixed with a nutrient-rich solution circulates from the top and is pumped up from the bottom so that it creates a cycle.

Aquaponics

The aquaponic version functions basically the same way as the hydroponic one, just the water tank is filled with fish, that creates the nutrients so that no added components are needed in the water cycle.

Both of these high-tech versions are installed after personal agreements and are custom designed for the specific needs of the customers, and suiting the spatial requirements of the indoors environment.





Automated units / hydroponics



Automated units / aquaponics

Web structure & contents

The Gourmet Gardens website is structured with particular care for 4 aspects: Education - Connection - Communication and E-commerce.

The main menu consists of 6 sections, regrouping thematically the needed features and information.

The **SHOP** section offers the user the possibility to browse through the product catalogue and gives suggestions depending on the items the user is considering for the purchase, in order to inform them which other products or services could be synchronized with the ones already selected.

The **LEARN** section is a showcase of guiding and troubleshooting videos and step-by-step instructions, concerning the assembly and maintenance of the products and general gardening know-how. There is a conversion between the LEARN and the COMMUNITY part; the gardening tips&tricks, recipes and other magic tricks come from the users' activity. Besides, the **COMMUNITY** part regroups the gardeners and the suppliers as well.

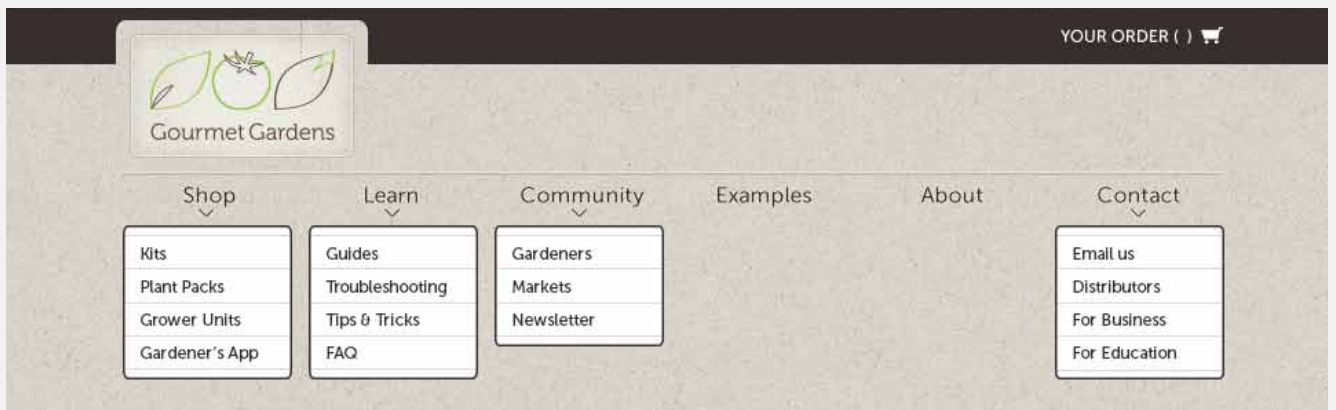
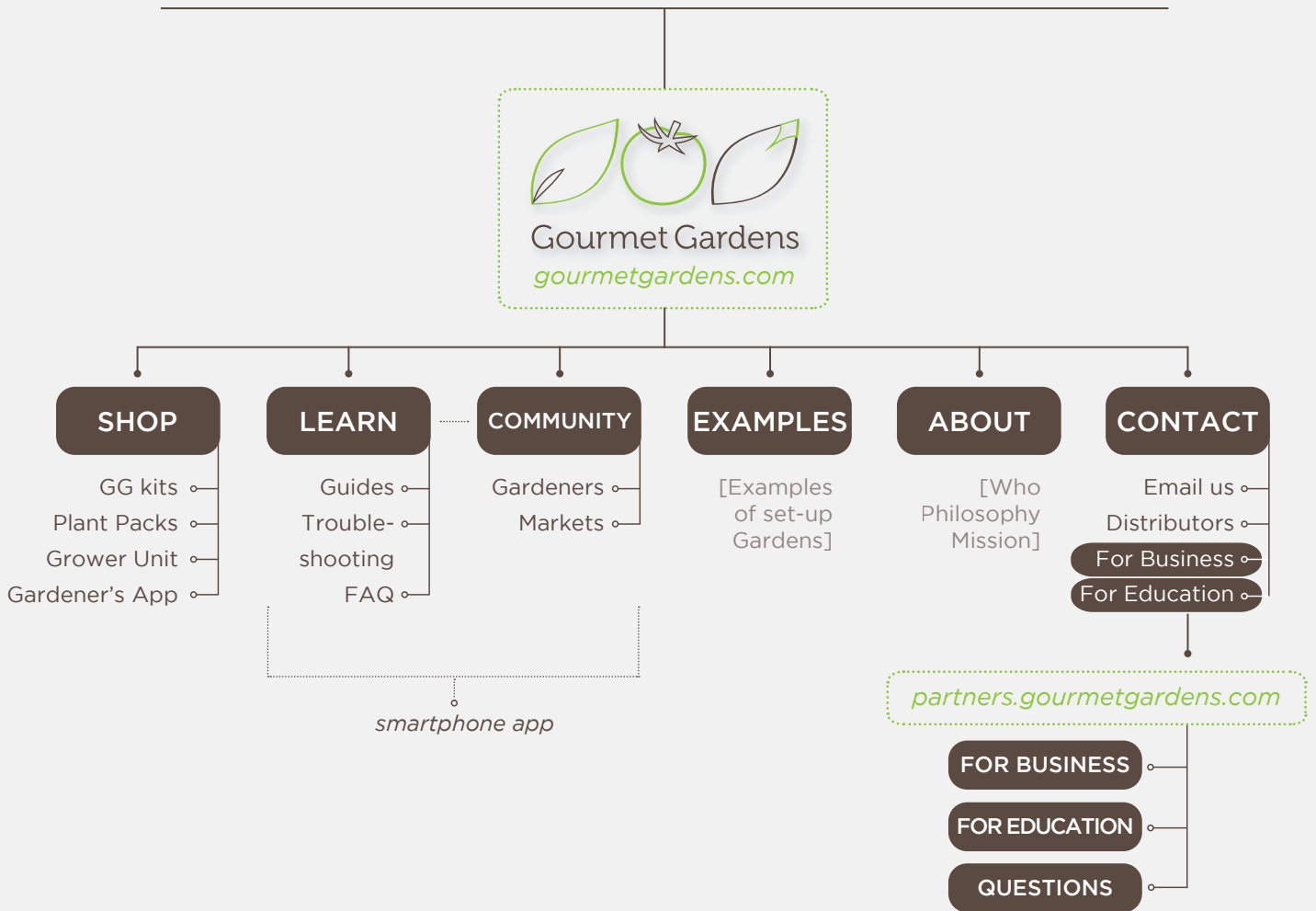
An application version would be available that is based on these two sections; used as a direct info channel towards GG users to let them know about the new materials posted or send them personalized recipes and growing tips (based on products and plants they have at home).

The **EXAMPLES** section serves for presenting selected projects of Gourmet Gardens; mainly the more complex, automated setups (for educational or business use); in order to present the extended use cases of Gourmet Gardens products.

In the **ABOUT** section users can get familiar with the background of Gourmet Gardens, the philosophy and mission. The importance of supporting local agriculture is explained here, also the related possibilities and responsibilities of the individuals and the health benefits.

The **CONTACT** section is for general connection and also gives the possibility to establish direct contact with business responsibilities to develop new B2B relations for the setup of Gourmet Gardens systems or for future retail sales. Educational parties can also connect here for academic or research activities. The **BUSINESS/EDUCATION** section opens up a new partner's micro site, where specific info is available for the future partners.

INFORMATION ARCHITECTURE



HOME

Front page - the principal screen of the website. This intro page informs the visitor about the main attributes of the Gourmet Gardens products and guides them towards the more detailed information.



Shop

Learn

Community

Examples

About

Contact

Integral urban gardens.



Modular product family supporting the urban gardening lifestyle; enabling the production of vegetables, herbs, spices and sprouts in indoor and outdoor environments as well, allowing a set of different configurations. [> Learn more](#)



Gourmet Gardens is for people with absolutely no gardening background and also for those who got already involved in gardening activities and have a basic know-how. [> See more examples](#)

ON FACEBOOK

51,556 people like Gourmet Gardens.



Ashton, Kate, Lin Yin, Sammy, Brita, Eszter, Marlin, Bobek

ON PINTEREST



@ GOURMETGARDENS

RT @ [kim](#) : We have @ [kitchensurfing](#) chefs out in Normafa & more on their way with fresh food. If you'd like to join, [hello@kitchensurfing](#)

about 5 hours ago

Softwalks @ [GG](#) : #scaffolding art by [Ben Long](#), demonstrating the 'infinitely adaptable' characteristics of construction equipment. <http://www.benlong.co.uk/scaffolding-sculptures/43>

about 8 hours ago

Copyright © 2012. Gourmet Gardens

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Example

THE GG KITS

Gourmet Gardens' low-cost product offer - divided based on the pre-composed and the personalized categories. The page gives a glimpse on the possible selections with basic information.

The Gourmet Gardens Growing Kits



Starter Kit

40 € [ORDER NOW](#)

This unit can support 2 plant packages; it is the smallest configuration.

A handle can be added to the frame, adjustable for a standing position so that it can be moved easily and placed on a table, kitchen bar.

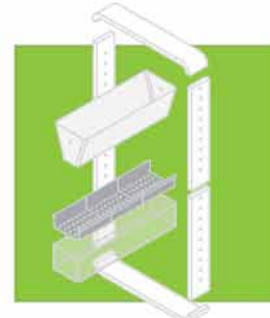


Urban Kit

60 € [ORDER NOW](#)

Capable of holding 3-4 plant packages, it is the double of the small unit.

It can be reconfigured into a standing unit by adding a leg part (and an optional storage).



Build-your-own Kit

from 30 € [ORDER NOW](#)

The parts of the wall units can be used in a free configuration, that is expendable both vertically and horizontally.



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Example

STARTER KIT

Detailed description of one specific kit - on this page the users can choose the colours, materials of the grower parts and the desired plant packages.

Starter Kit



40 €

CHOOSE COLOURS

CHOOSE PLANTS

[ORDER NOW](#)

The starter kits includes the Small Balcony Grower and two plant packages with instructions. An attachable leg part is available, so that it is easily transformable into a standing position. Dimensions: 50*50*7 Plant Pack dimensions: 50*15*17



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Examples

About

Contact

- Kits
- Plant Packs
- Grower Units
- Gardener's App

- Guides
- Troubleshooting
- Tips & Tricks
- FAQ

- Gardeners
- Markets
- Newsletter

- Email us
- Distributors
- For Business
- For Education



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Examples

PLANT PACKS

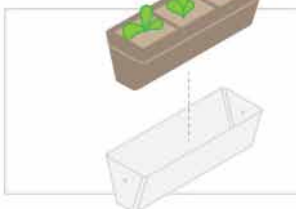
This page explains the functions of the plant packages and directs the users to the plant pack categories; they can choose between the pre-designed packs or create a personalized selection for their taste.

Plant Packs



The Plant Package contains 3 carefully selected seedlings, planted in Terra holders. Terra is a special material, composed from organic fibers and soil, that has the special ability to transform into planting soil over time, once it placed in the Gourmet Gardens growers.

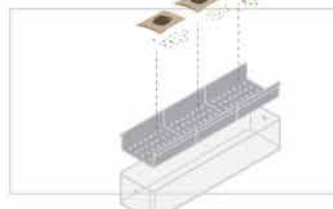
Grow plants



Select the plant packages to build your own Gourmet Garden for your taste.

CHOOSE PLANTS

Grow sprouts



You can also choose to grow sprouts in the special sprout grower kit.

CHOOSE SPROUTS

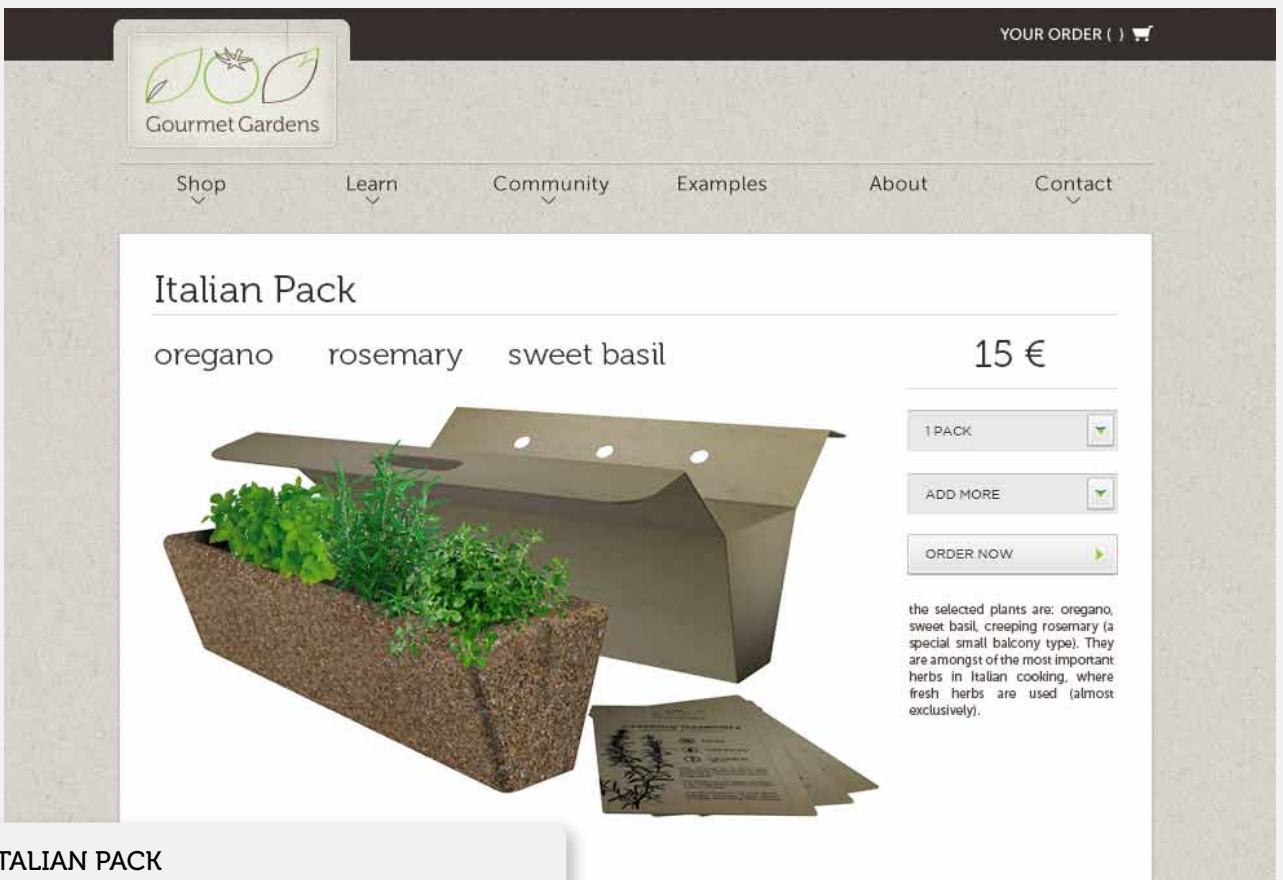
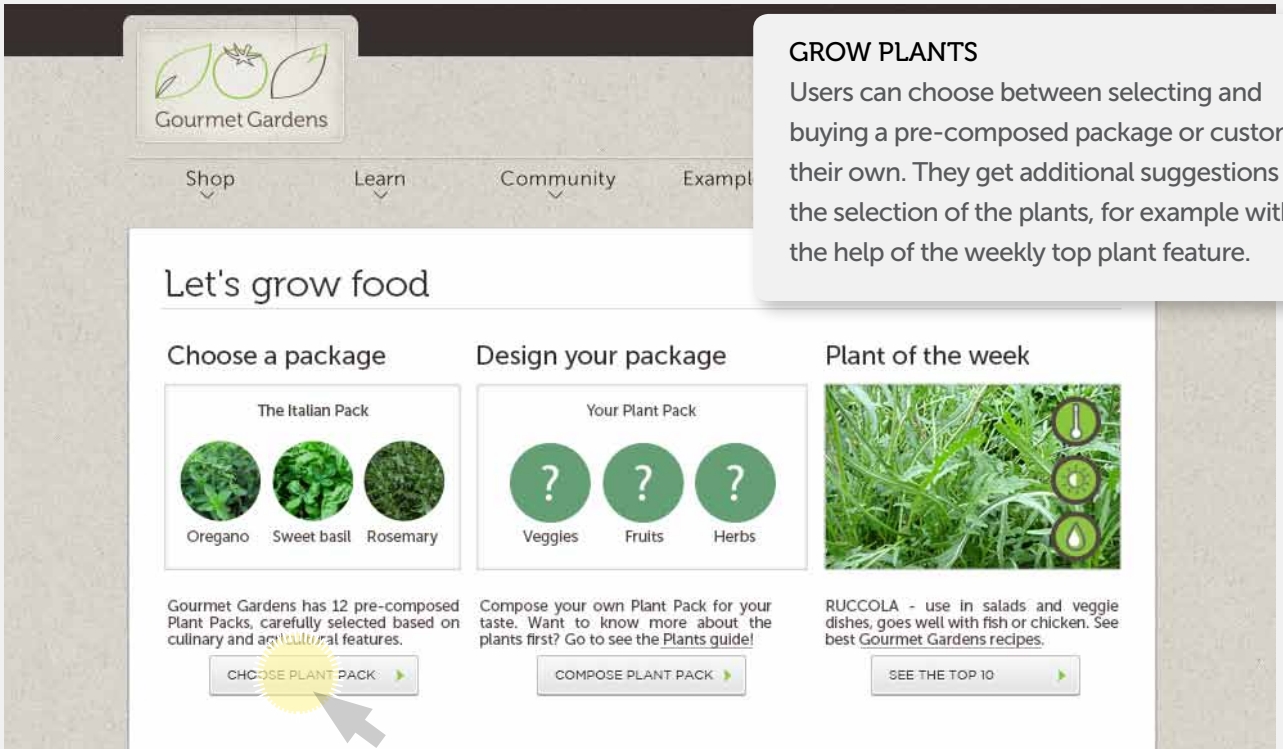
Change packs



Change the packages whenever there is a need for it - or choose the regular plant supply service!

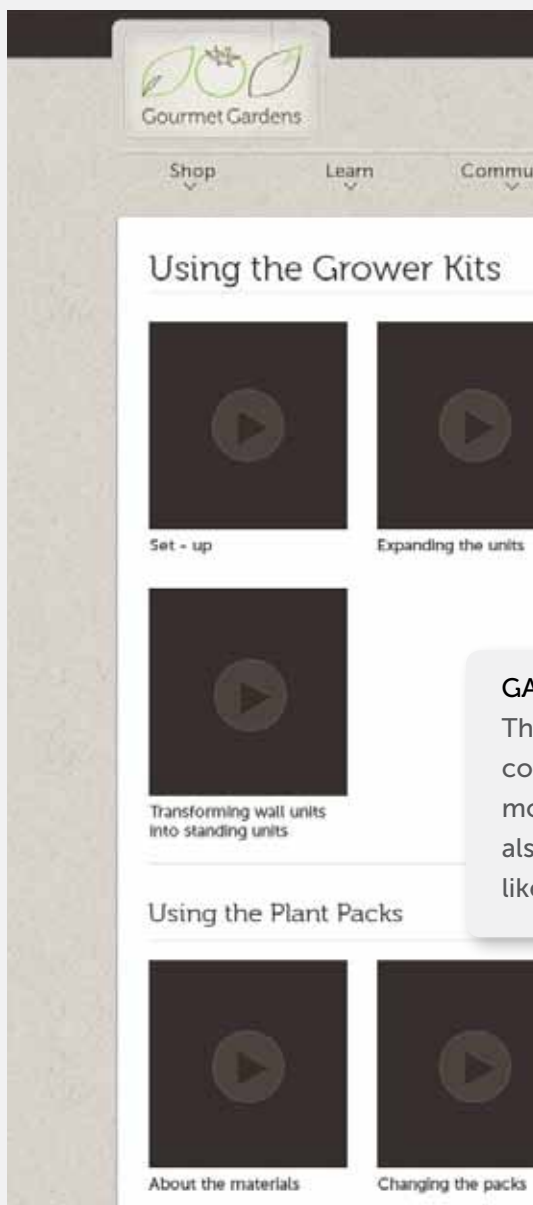
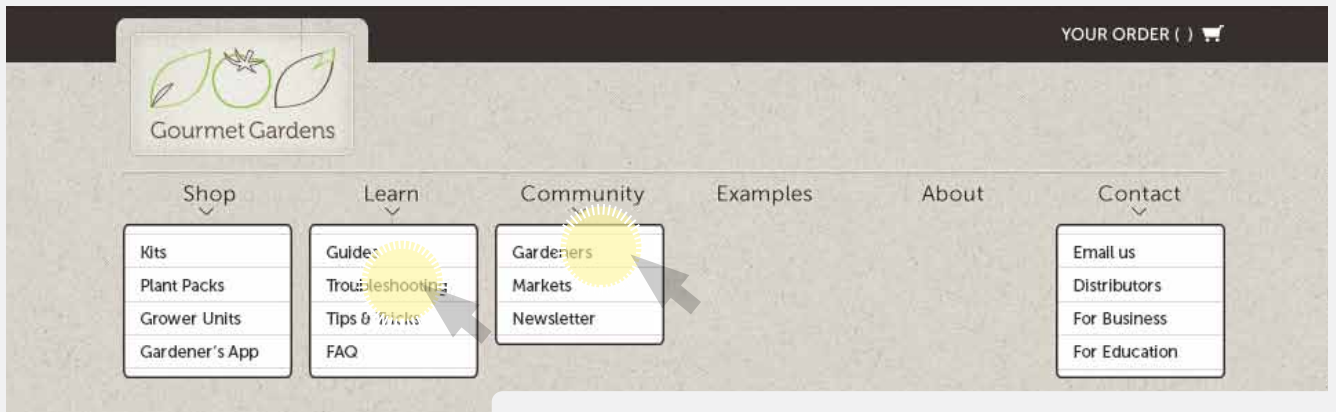
GO TO YOUR ORDERS





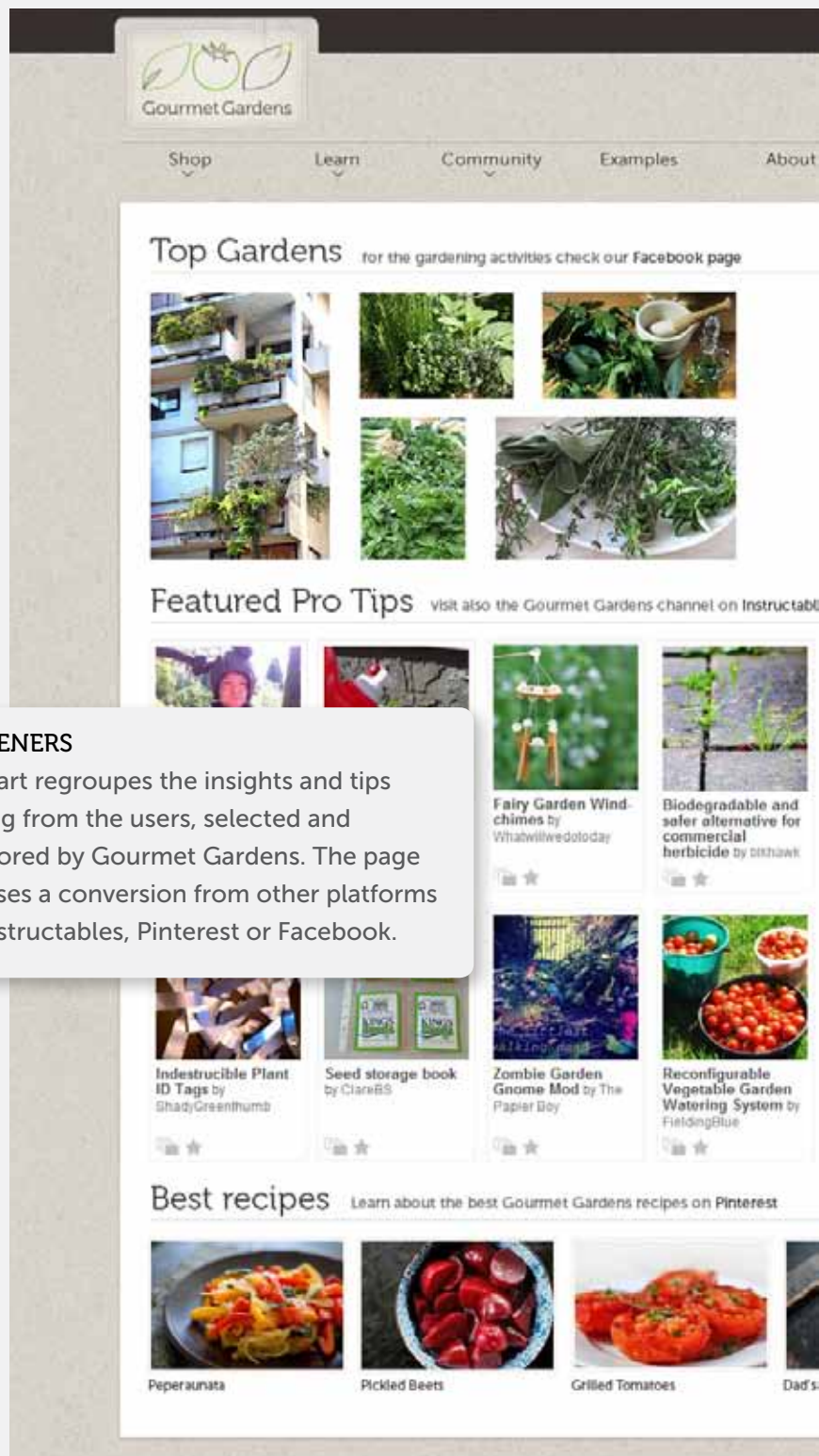
ITALIAN PACK

Selecting one of the pre-composed packages: users can see in detail the contents and the description of the plants. After selecting the quantity and the additional choices, the order is ready.



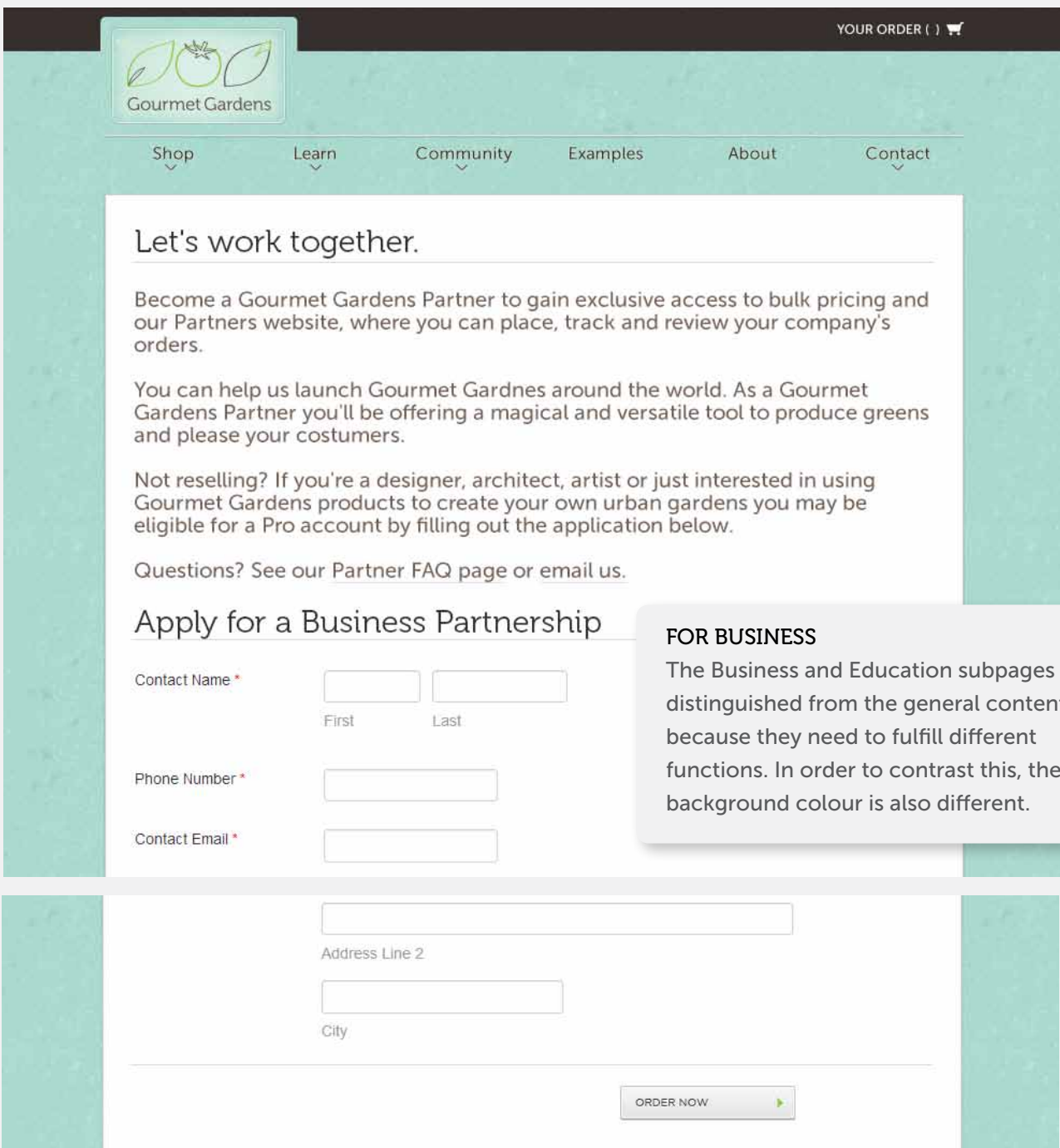
GARDENERS

This part regroupes the insights and tips coming from the users, selected and monitored by Gourmet Gardens. The page also uses a conversion from other platforms like Instructables, Pinterest or Facebook.



GUIDES & TROUBLESHOOTING

These two menus leads to the repository of the guiding videos produced by the Gourmet Gardens, for supporting the assembly and the maintenance of the products.



FOR BUSINESS
 The Business and Education subpages are distinguished from the general contents because they need to fulfill different functions. In order to contrast this, the background colour is also different.

Business overview

BUSINESS MODEL CANVAS

I used the Business Model Canvas⁶³, licensed as creative commons on *businessmodelgeneration.com* so that it is free to use. The Business Model Canvas is a strategic tool to describe the business model of a project or venture.

I use it to give a general overview on Gourmet Gardens' value proposition, infrastructure, customers, and finances.

Income in the system

Gourmet Gardens basically operates as an agency model: manages the values and outsources the activities. The Gourmet Gardens Product Service System generates income in two main levels; by selling the products online (or through distributor partners, the farmers markets) and by renting the more complex, high-tech & high-cost devices, with maintenance services included.

SWOT ANALYSIS

It is a structured planning method used to evaluate the Strengths, Weaknesses, Opportunities, and Threats involved in a project or in a business venture. It involves specifying the objective of the business venture or project and identifying the internal and external factors that are favourable and unfavourable to achieve that objective⁶⁴.

I used the SWOT analysis to generate meaningful information for each category in order to maximize the benefits of this evaluation and find competitive advantage for Gourmet Gardens.

Maintaining the strengths

- * Reach out to a variety of health professionals, nutritionists, chefs, etc. to involve them in Gourmet Gardens marketing and PR activities
- * Continuous product development
- * Captivate further user groups by trying to reach out as much as possible

Change weaknesses

- * Intensifying and stabilizing Gourmet Gardens' image and the UI of the website.
- * Encourage user activities and assist them throughout the processes in order to assure them that Gourmet Gardens really cares of them

Take advantages of the opportunities

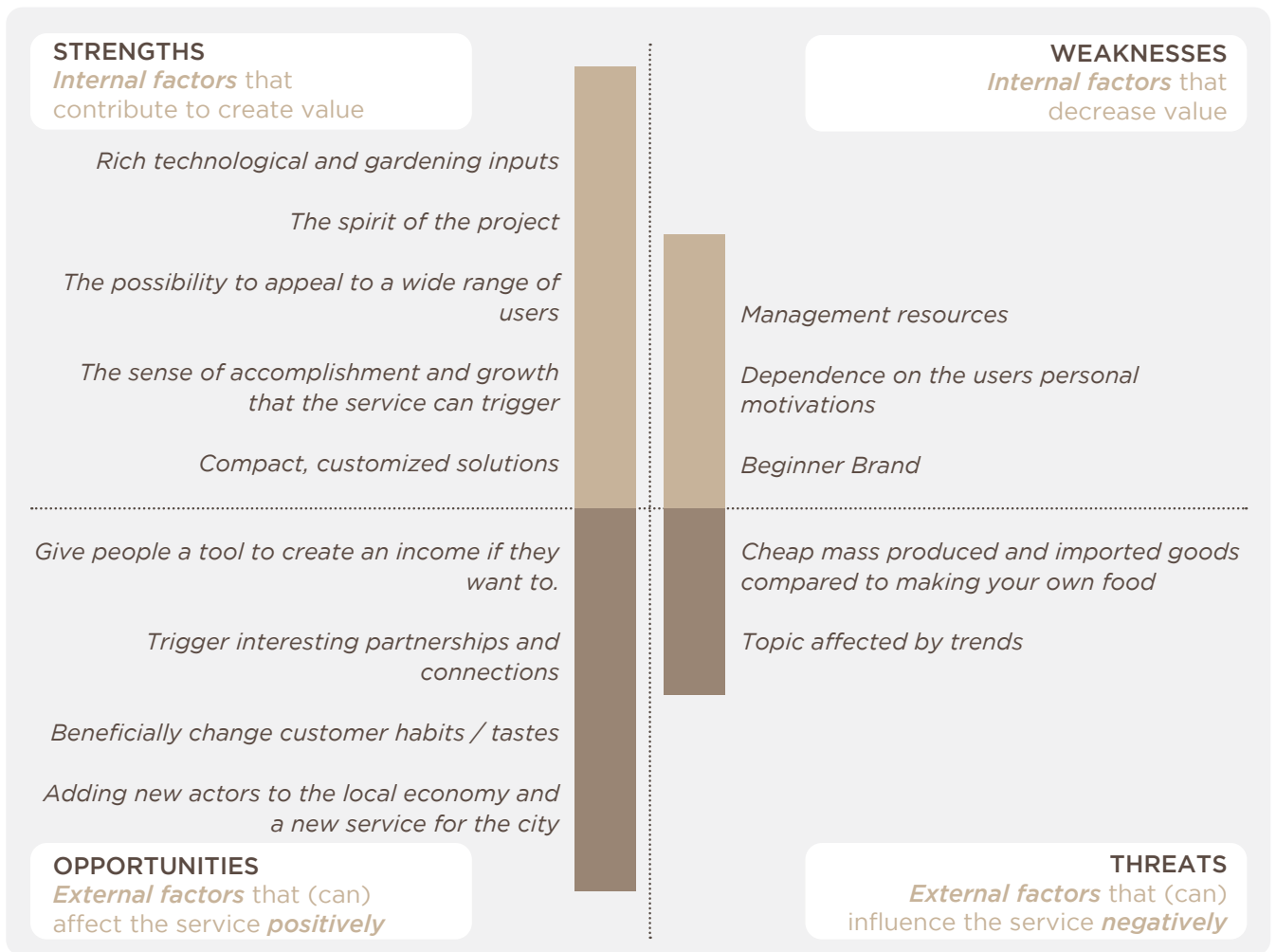
- * Widen Gourmet Gardens profile by launching special projects or pilots that regroup beginner and advanced gardeners, professionals and amateurs
- * Widen the advertisement strategy for more awareness, e.g. collaboration with local TV channels and newspapers
- * Educate people about opportunities the government offers to help sustainable farming projects that may be due to Gourmet Gardens activities

Minimize threats

- * Encourage responsible consumption and sustainable lifestyle
- * Extend partnerships and educational relationships

63. <http://www.businessmodelgeneration.com/canvas>

64. http://en.wikipedia.org/wiki/SWOT_analysis



Gourmet Gardens' SWOT analysis



source: businessmodelgeneration.com



Conclusions

LIVING IN THE CITY

Urban Agriculture as agricultural activities in cities and their outskirts is an important field of research worldwide. It assumes a key role in two global challenges: that are the acceleration of urban development and health and food safety issues. Whilst small-scale and localised food production has a long history, it is the integration of such farming practices within the economic and ecological system of towns and cities that is a newer development. For food production to become part of the urban landscape - walls, balconies and roofs across Europe's cities should take the premise for a greener complexion.

In pursuing the challenges of producing food in a more environmentally-friendly way, agriculture becomes a feature of urban life, lowering energy consumption, carbon emissions and resource use in food production. Agriculture in urban spaces results in valuable achievements through the care of the cultural landscape and the positive effects on the city climate, but also stands for developing new business models, featuring close proximity to the urban population, such as farm shops, trainings for locals or educational events for children.

TIME FOR CHANGE

We are living in transition times. We experience first hand that our climate is changing, together with the economy, cultures... It is also understood that in order to reduce our impact on the

environment we have to change our behaviours first. It seems that we don't have other choice (for a sustainable future) than to return to the processes functioning in accordance with nature; producing and consuming things that are good for us, for the others and for the environment, things making us feel proud and in balance.

CULTIVATE

This project is about the route to self-sufficiency, about being able to adapt to the different conditions in order to still lead a healthy, sustainable lifestyle. Simple solutions - with innovative approach can help us to carry through change and be effective, to focus on what really matters. Cultivation is in the core spirit and it is meant to nurture our plants, our food, our health and ourselves.

Gourmet Gardens is a good starting point that not only increases the level of awareness towards the topic but also gives the opportunity to implement effective solutions that help us to learn and change in order to improve the quality of life and guides us towards a healthier future. It addresses an implicit need (to self-produce fresh, clean, secure food) and forecasts the answer to a demand that will naturally occur in a short time.

Thank you!

I would like to thank first of all my supervisors; to Alessandro Confalonieri for guiding me all along the thesis process even from the distance, to Christian Schneider for his thoughtful and straightforward advices in New York, to Tamás Koltai and Viktor Merker for their mentorship in Budapest.

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