



# **Integrating Food Systems Into Existing Historic Urban Environments**

Dr Mark Gorgolewski





# Global population

*“By the year 2025, 83 per cent of the expected global population will be living in developing countries.... Agriculture has to meet this challenge.... Major adjustments are needed in agriculture, environmental and macro-economic policy, at both national and inter-national levels, in developed as well as developing countries, to create conditions for sustainable agriculture and rural development.”*

United Nations, 1992

# Energy return on investment

*“The 20th-century industrialization of agriculture has increased the amount of greenhouse gases emitted by the food system by an order of magnitude; chemical fertilizers (made from natural gas), pesticides (made from petroleum), farm machinery, modern food processing and packaging and transportation have together transformed a system that in 1940 produced 2.3 calories of food energy for every calorie of fossil fuel energy it used into one that now takes 10 calories of fossil-fuel energy to produce a single calorie of modern supermarket food”*

Michael Pollan

<http://www.michaelpollan.com/article.php?id=97>

# Relevance to urban sustainability

- The World Wildlife Fund estimates that the food chain contributes about **30% of the total UK greenhouse gas emissions**
  - In the UK it has been suggested that carbon dioxide emissions could be reduced by about 22% if food were produced organically, consumed locally, and only when in season
- A total of **50 million Americans are food-insecure** (US Dept of Ag.)
- **Global obesity** is a world health epidemic
- Peak oil – our food is now grown with fossil fuels
- **Food Miles** - food in southern Ontario travels on average 4,500 km to arrive on your plate
- Social equity - urban dwellers have little control of their food supply
- Climate change will affect the productivity of some agricultural areas





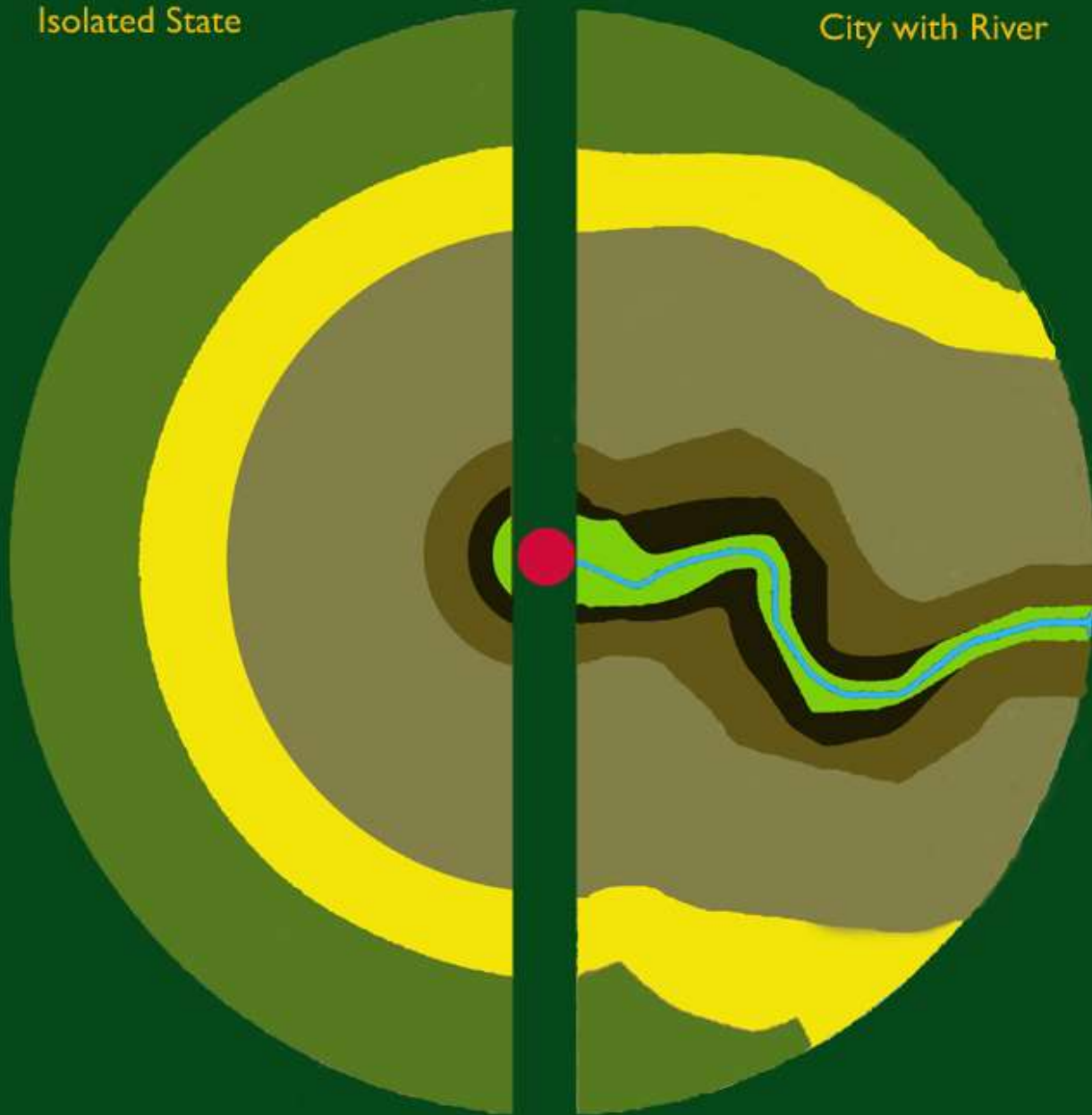
Growth of London 1840-1929

*“The symbiotic relationship between a productive landscape and the human settlement system is as old as civilization. During the past 200 years, that millennium-old positive relationship deteriorated into a further and further separation of town and landscape.”*

(Continuous Productive Urban Landscapes: Bohn & Viljoen 2005)

Isolated State

City with River



City



River



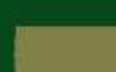
Market gardens + dairy



Firewood



Intense crops



Crops and pasture



Three-field system



Livestock

Hungry City - Carolyn Steel



Philadelphia, 1776



# City Built for Animals



Philadelphia circa 1908. "Delaware Avenue, foot of Market Street."



# Commons

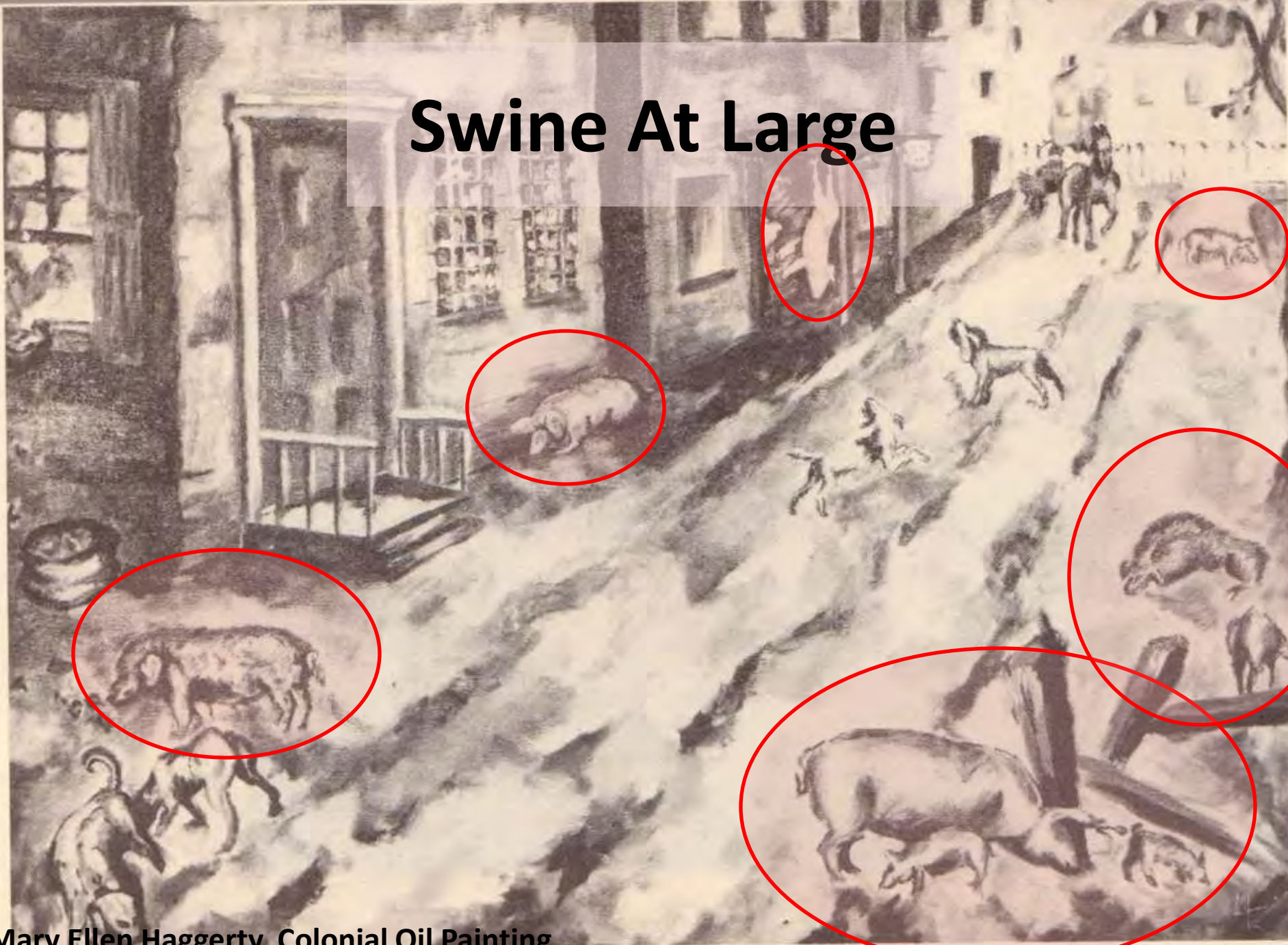


*"A Prospective View of part of the Commons."*  
From a watercolor drawing by Christian Hevelius in 1766, now in the possession of the Concord Antiquarian Society.  
Published by Charles C. Flood, Boston, 1912. Engraved by Sidney S. Smith.

1768 Sidney L. Smith



# Swine At Large



Mary Ellen Haggerty, Colonial Oil Painting





*“I cannot conceive how the swine running at large through our streets can be considered detrimental to comfort and cleanliness. –Can they be considered as a nuisance in cleansing our streets ...? ...Their appearance in our streets, particularly in the summer season, would not only add greatly to the purity and salubrity of the air, but infinitely to the convenience and accommodation of the inhabitants.”*

Poulson's American Daily Advertiser. (1817, December 5).



A TYPICAL "ESTABLISHMENT"  
IN SILANTYTOWN.

Half of NYC's tenement families relied on urban animal agriculture for food (*New York Times*. 1867, July 19)

*Lights and Shadows of New York Life*. (1892)  
Helen Campbell

# Outcome: Board of Health

Empowered to regulate nuisances, issue permits for animal keeping, and monitor disease.



New York, 1905

1793: Philadelphia, Baltimore

1799: Boston

1805: New York





W. Birch & Son, 1800 *W. BIRCH & SON, 1800* in *Spencer Street PHILADELPHIA*

Bans failed without ordinances about waste management  
Ordinances to remove “nuisances” removed food supply  
necessitating federal food subsistence programs

# Timeline

**1700-1850**  
**At Large Ordinances**  
-> Boards of Health

**1860-1890**  
**Driving Ordinances**  
-> Land Use and  
Market Regulation

**1880-1890**  
Piggery Ordinances  
Enforced ->  
breakdown of  
organic waste  
management

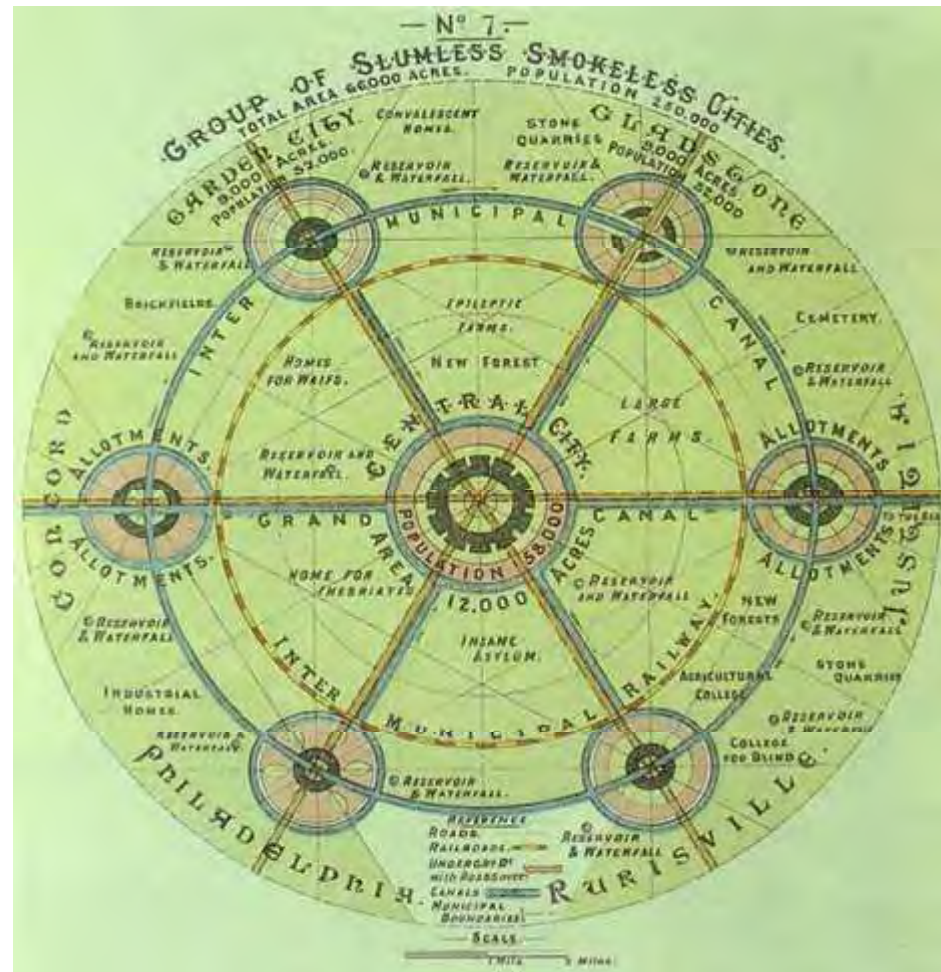
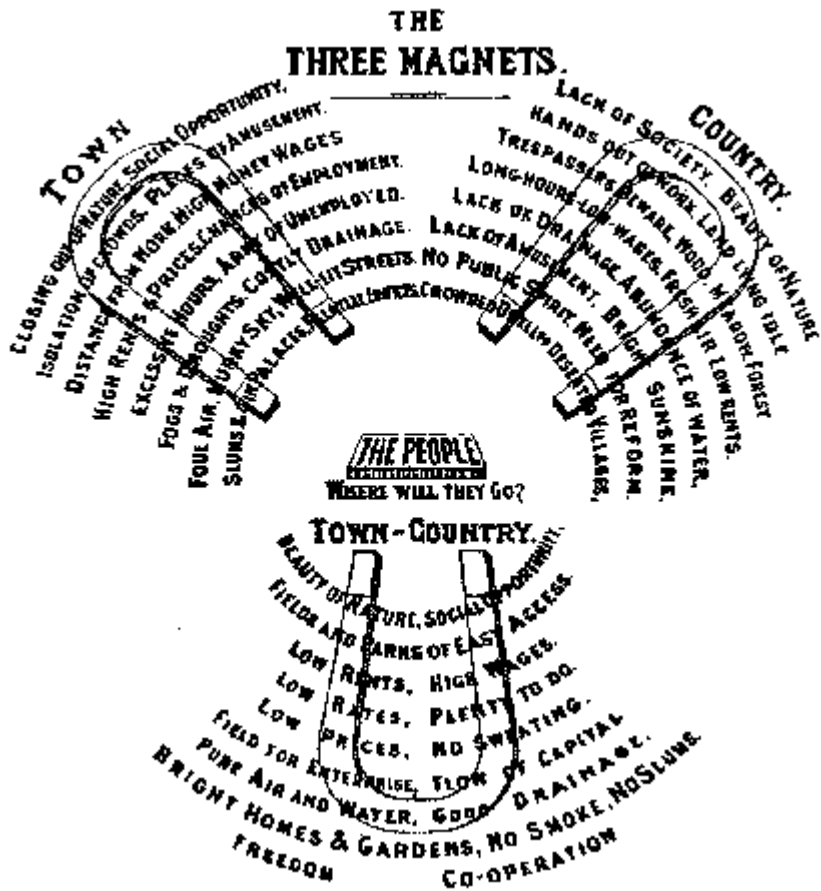
**1890-1920**  
City Dairies  
Banned ->  
End of urban  
food supply

**ZONING**  
**1920s**

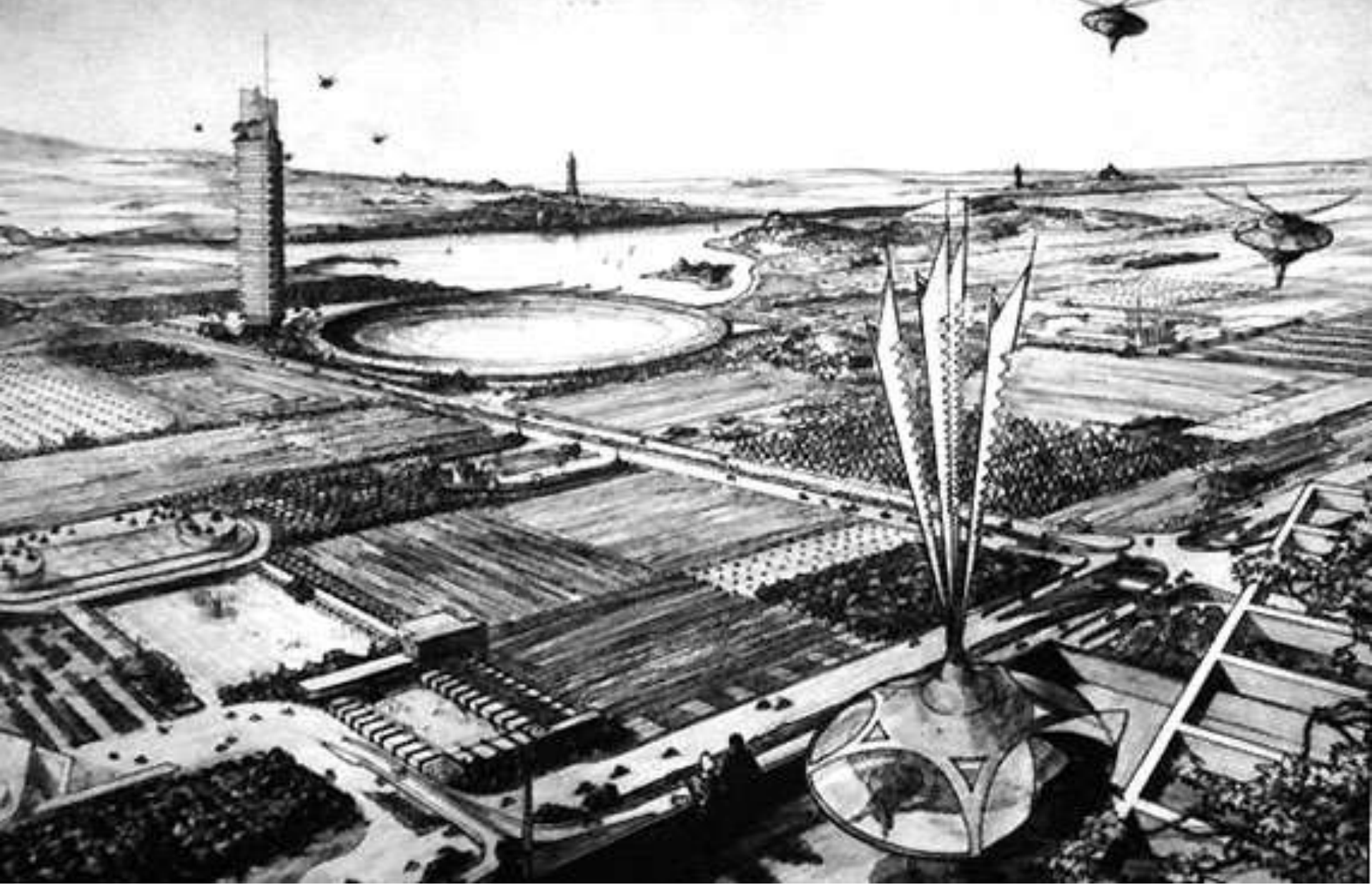
# Outcome: Separation of Uses



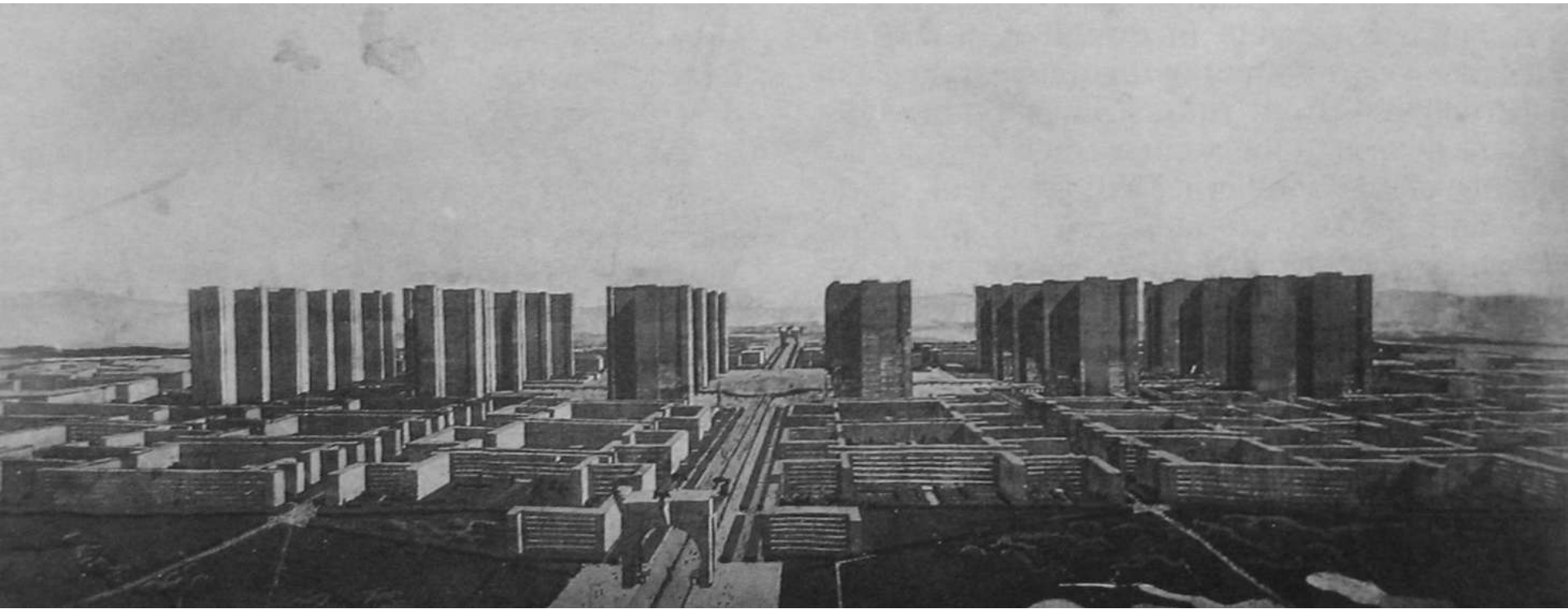




Garden Cities of Tomorrow - Ebenezer Howard



Broadacre City – Frank Lloyd Wright



Ville Radieuse – Le Corbusier



# Uncle Sam Expects You To Keep Hens and Raise Chickens



## Two Hens in the Back Yard for Each Person in the House Will Keep a Family In Fresh Eggs

**E**VEN the smallest back yard has room for a flock large enough to supply the house with eggs. The cost of maintaining such a flock is small. Table and kitchen waste provide much of the feed for the hens. They require little attention—only a few minutes a day.

An interested child, old enough to take a little responsibility, can care for a few fowls as well as a grown person.

Every back yard in the United States should contribute its share to a bumper crop of poultry and eggs in 1918.

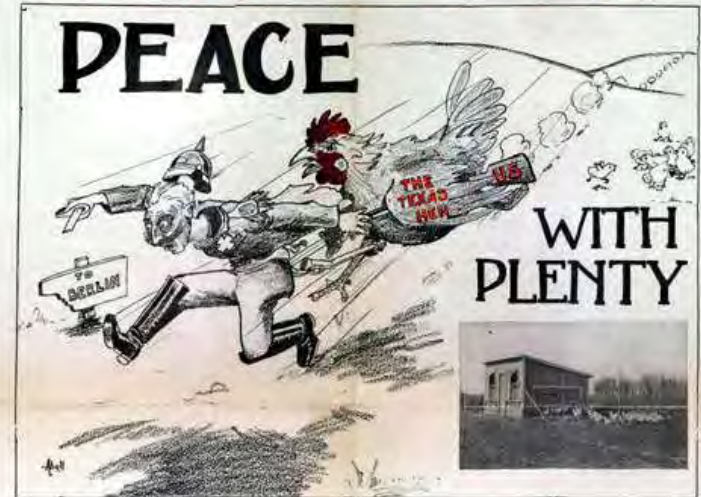
**In Time of Peace a Profitable Recreation  
In Time of War a Patriotic Duty**

*For information about methods of Back-Yard Poultry Keeping suited to your location and conditions, write*

**Your State Agricultural College  
or  
The United States Department of Agriculture  
Washington, D. C.**

This Space Donated by the Publisher

**Let the Hen Whip the Kaiser!**  
BY INCREASING THE FOOD SUPPLY



The best opinion is that the European contest will be won by the side that can feed its people and its soldiers the longest. The poultry product of the United States can be doubled in one year.

**Let the Hen Pay Your War Tax**  
\$33.00 per Capita

**The Normal Profit of 25 Good Hens**  
Poultry is the most profitable human food.  
To do her share in the war Texas must produce four million additional pounds of poultry meat.  
The profitable hen is the comfortable hen. Good care of poultry brings big returns.

**A Dozen Eggs for a Family of Six**  
with Normal Appetites

**Is Better Food than a Pound of Meat**  
Poultry is the most economical producer of human food.  
Eggs are the cheapest meat food in the market today. Eat more eggs and be healthier, wealthier and wiser. Feed the clean table scraps to the chickens and get good food for what is now waste.

**No man is too poor to invest in a few hens. No investment will yield larger profits.**

For further information write for "War Time Poultry Raising." Address

**EXTENSION SERVICE**  
COLLEGE STATION, TEXAS

Wartime "Victory Gardens"





# PIG FOOD

## WASTE FOOD FOR THE FEEDING OF PIGS

Put IN Bin.	Do NOT put in Bin.
Potato and Apple Peelings	Rhubarb or Potato Tops
Pea Shells	Tea Leaves
Scraps of Meat	Coffee Grounds
Waste Bread	Skins of Oranges, Lemons, Grape Trash or Bananas
Cabbage, Lettuce Leaves etc., etc.	Salt, Soap or Soda

PLEASE KEEP AS DRY AS POSSIBLE  
AND REPLACE LID OF BIN

Is it feasible for a city to produce a significant amount  
of its food?

What will be the impact of the design of urban and  
historic spaces and buildings in cities?

?



# Havana Cuba

An aerial photograph of a large urban agriculture site in Havana, Cuba. The image shows a vast area of raised garden beds, organized into long, parallel rows that stretch across the landscape. The beds are filled with soil and some green plants are visible. In the background, there are several multi-story apartment buildings, indicating the site's location within a dense urban environment. The sky is clear and blue.

In 1995 it was estimated that there were 26,600 urban agriculture sites in Havana including:

- Private gardens (huertos privados)
- State-owned research gardens (organicponicos)
- Community gardens (huertos populares).

80% of state-owned land to was dedicated to community gardens

They have had a visible impact on the food security of the city and in improving the Cuban diet

Some are producing 27 kilograms of vegetables per square metre

Urban farmers can be in the top 10% of earners in Havana

In Havana, the urban farms and gardens produce 90% of the city food demands

About 200,000 Cubans worked in urban agriculture sectors in 2003



# Toronto green spaces

- About 22% of the land area, about 15,000 hectares, of the city could be used for food production
- These are vacant sites, underused waste land, roof tops, and yards.
- Also, Toronto's ravines offer possible agricultural land that could be put to productive use.
- This land could be used to grow several million tonnes of food
- This could provide fruit and veg for over half of the city population,
- This could create a several billion dollar industry.





most continuous open space corridor CPUL  
 thereby connecting the city with the rural, the wild  
 \*\* benefits from this new landscape productivity in a  
 variety of ways:

**02 movement**  
 \* improve the city's accessibility and access by  
 foot or bike throughout the urban town  
 \*\* locate traffic

**03 energy (economics)**  
 \* use the ground town effectively in economic  
 use through use types of urban farming that  
 \*\* provide employment but improve climate  
 through producing products of growing tomatoes

**04 school**  
 \* offer the building directly with large open  
 space to provide children with healthy and well  
 sufficient activity systems  
 \*\* improve safety for children with play area  
 running through this town

**05 health**  
 \* offset industrial-scale pollution with a decreasing  
 calming and oxygenating open space  
 \*\* improve air flow in and out of the city through  
 open corridors

**06 food**  
 \* provide a continuous corridor to the health of the  
 surrounding & urban landscape  
 \*\* provide the opportunity to grow and supply  
 continuous urban green spaces and produce  
 vegetables

**07 An urban lifestyle**  
 \* provide the residents by walking through an the  
 urban districts (within a CPUL)  
 \*\* enhance people's relationship with and  
 enjoyment of nature, the year's seasons and weather

**The DOT07 Urban Farming Project  
 in  
 Middlesbrough**  
 represents the first practical example of a concept for continuous  
 productive urban landscapes (CPUL) to be implemented and organisations  
 participated by growing fruit and vegetables in small, medium  
 and large containers. Over 300 containers were distributed across  
 the city. There was also a positive response and enthusiasm  
 for urban farming, evidenced by the number of participants who  
 wish to continue growing fruit and vegetables next year and  
 several who wish to expand the area under cultivation. People  
 enjoy being close to edible landscapes.

When imagining how Middlesbrough may develop the CPUL  
 concept in the future, it is important to realise that it does not  
 require everyone to grow their own food. In other projects, but  
 container city yields market produce could form part of the city's  
 network of open urban spaces. In this way the city could  
 significantly reduce its ecological footprint while at the same time  
 enhancing its urban environment. CPUL provides more opportunities  
 with less consumption.



Continuous Productive Urban Landscapes  
 Bohn and Viljoen Architects, UK





Middlesbrough, UK (DOTT 07)



The institutional  
land as resource



Edible Campus at McGill University, Montreal



















# HART HOUSE FARM GARDENS

The Hart House Farm is situated on the Niagara Escarpment in the Caledon Hills, about 60km northwest of Toronto. In 1949, Warden Nicholas Ignatieff arranged for the purchase of the farm as a place where students can gain the valuable education of rural experience. Today, the Hart House Farm Committee promotes this experience and undertakes sustainability initiatives such as these urban agriculture plots. The organic, heirloom varieties planted here will be donated to local charitable causes.

If you would like to volunteer in these gardens or get involved with the Farm Committee, please speak to the staff at the Hart House HUB, or email [farm.committee@harthouse.ca](mailto:farm.committee@harthouse.ca)

# GARDEN PLOTS



For gardening hours, farm events, and other committee initiatives, please visit [www.hhfarmcommittee.wordpress.com](http://www.hhfarmcommittee.wordpress.com)

**HART HOUSE**  
[www.harthouse.ca](http://www.harthouse.ca)







The master plan for the Black Creek Urban Farm incorporates many permaculture design elements such as orchard polyculture and edible borders planted with herbs, nut-bearing shrubs, and dwarf fruit trees.











City of Strasbourg has begun an effort to plant freely accessible fruit trees throughout the municipality





Prinzessingarten, Berlin



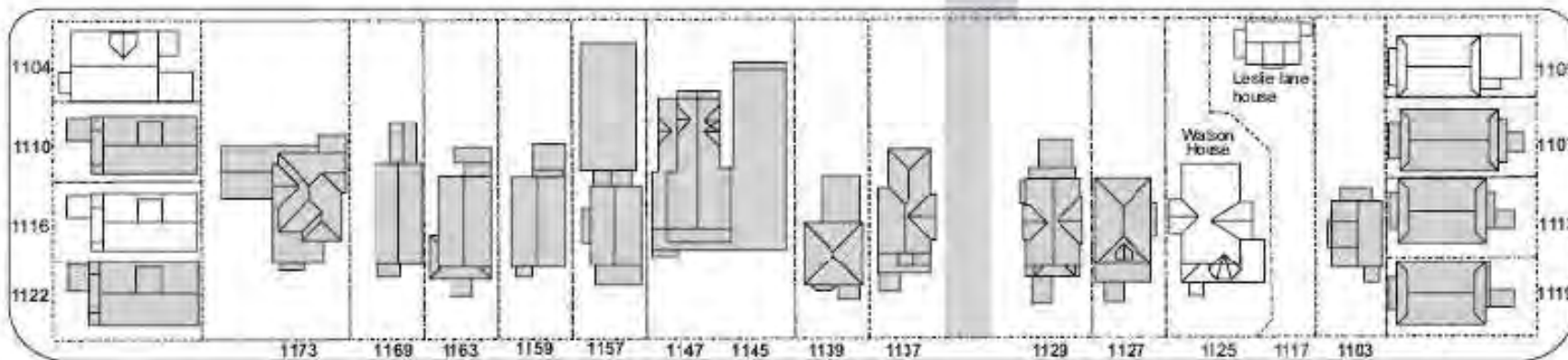
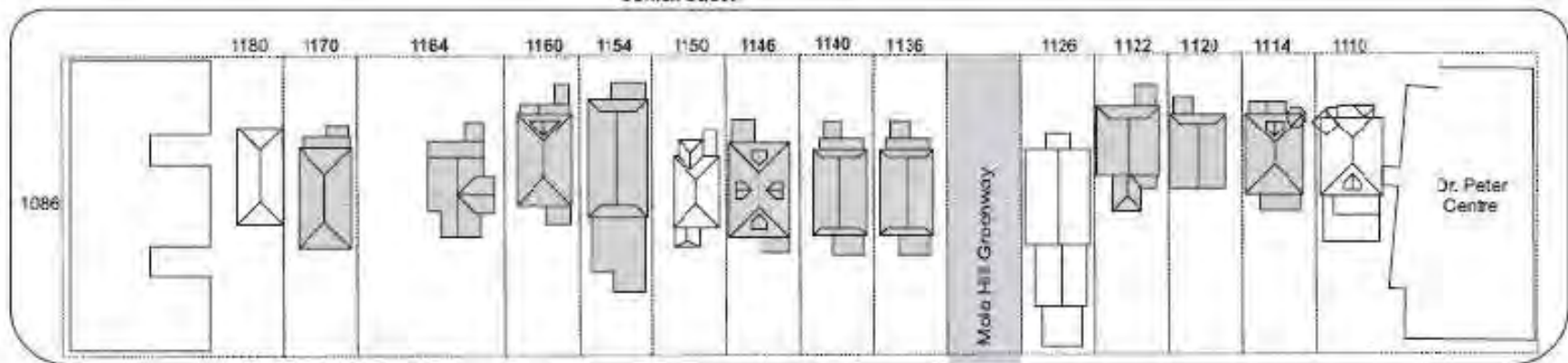


Mole Hill  
DIALOG, Sean R. McEwen, Durante Kreuk, Landscape Arch.



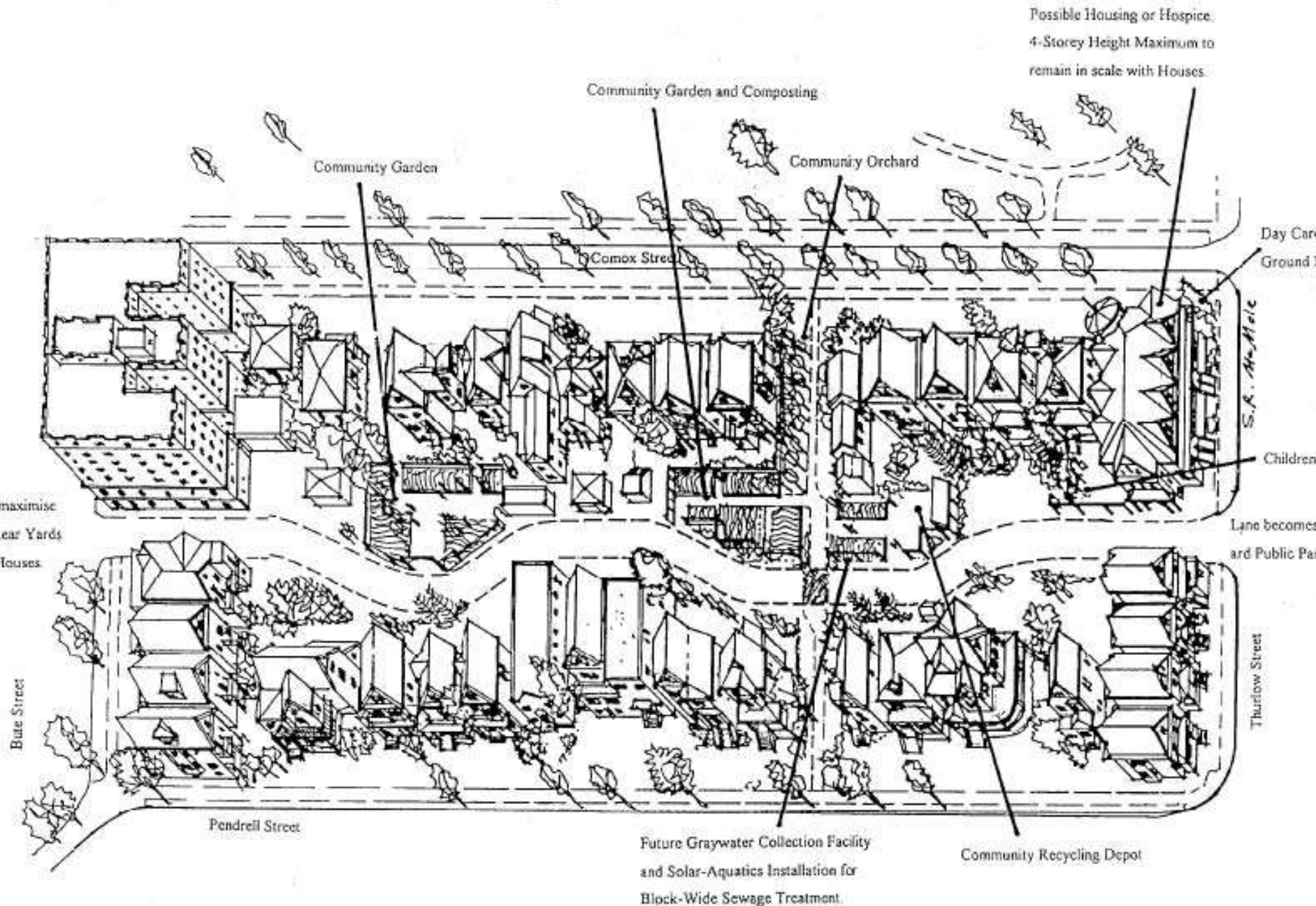


Butt Street



Pendrell Street

Thurlow Street



Possible Housing or Hospice:  
4-Storey Height Maximum to  
remain in scale with Houses.

Community Garden and Composting

Community Garden

Community Orchard

Comox Street

Day Care and  
Ground Level

S.A. McMeik

Children's

Lane becomes Park  
and Public Park

maximise  
Rear Yards  
Houses

Bate Street

Thurston Street

Pendrell Street

Future Graywater Collection Facility  
and Solar-Aquatics Installation for  
Block-Wide Sewage Treatment.

Community Recycling Depot





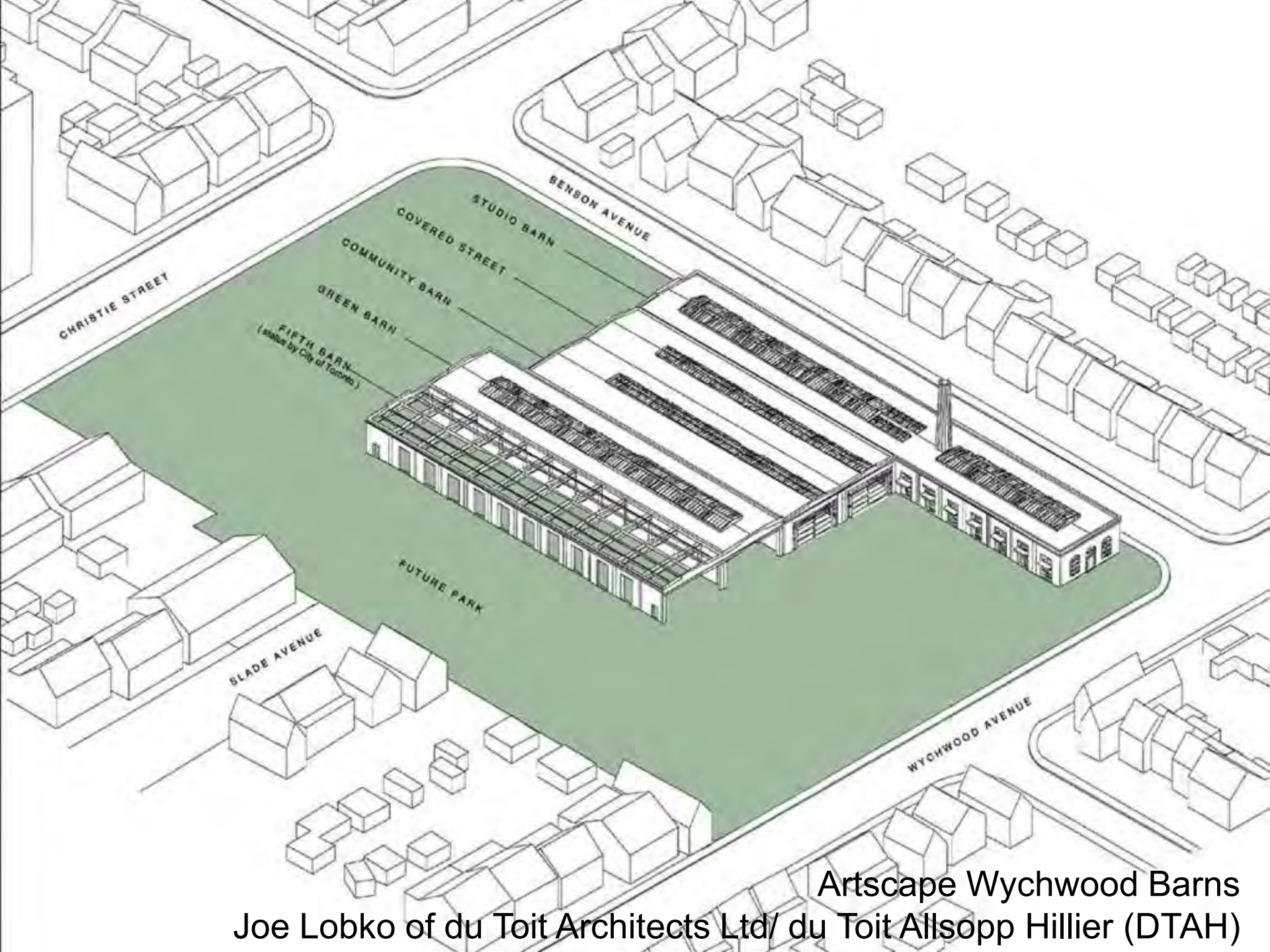












Artscape Wychwood Barns  
Joe Lobko of du Toit Architects Ltd/ du Toit Allsopp Hillier (DTAH)



1

STUDIO BARN

2

COVERED  
STREET



3

COMMUNITY  
BARN



4

THE STOP  
COMMUNITY FOOD CENTRE'S

GREEN BARN



5

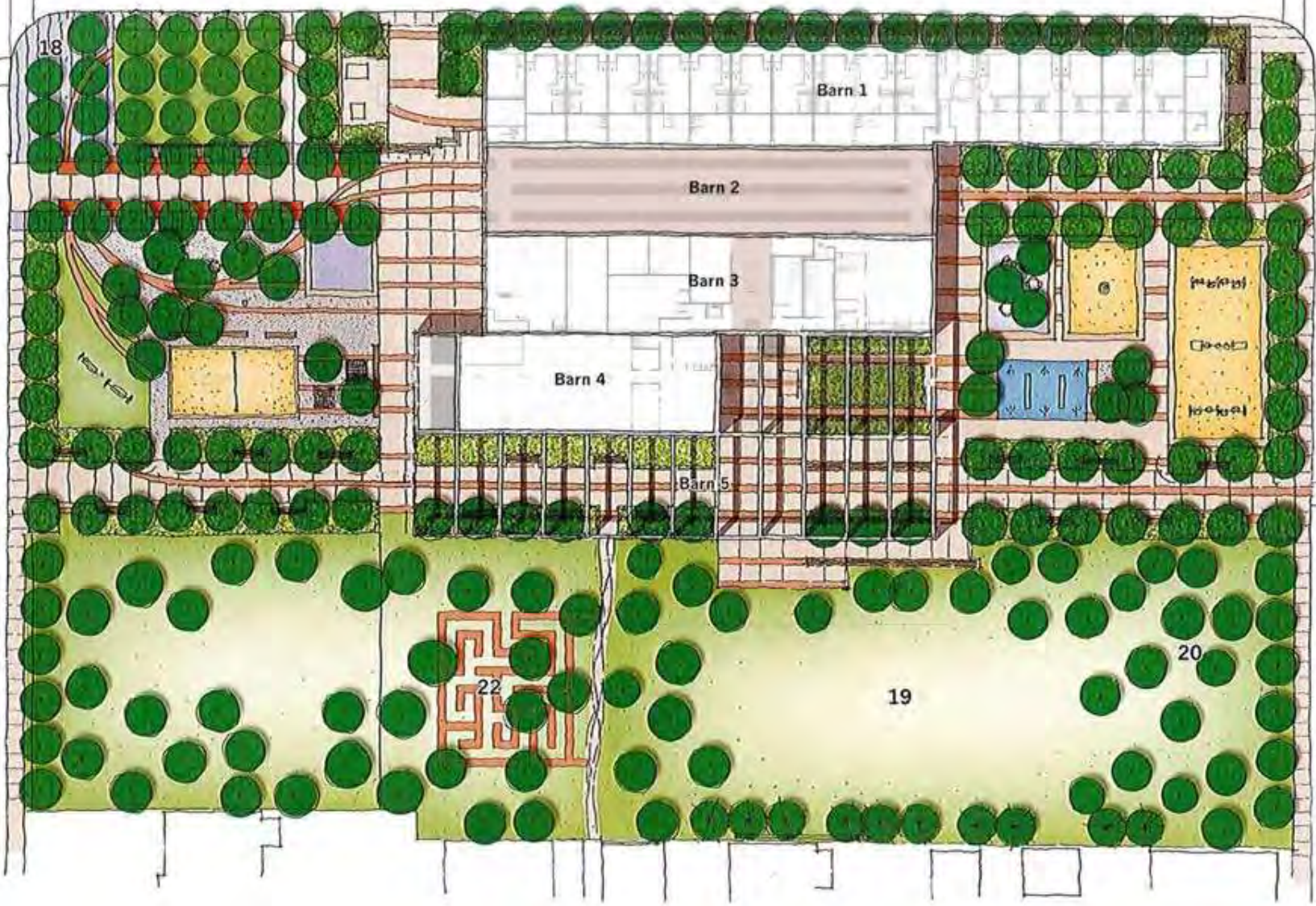
FIFTH BARN



Christie Street

Benson Avenue

Wychwood Avenue























Evergreen Brickworks  
Joe Lobko of du Toit Architects Ltd/ du Toit Allsopp Hillier (DTAH)  
Claude Cormier Architectes Paysagistes  
Diamond + Schmitt Architects Inc. (Centre for Urban Sustainability)  
E.R.A. Architects (Adaptive Reuse)











# Aiming for LEED Platinum















Community Greenhouse, Inuvik









Brooklyn Grange - NY

























Reading  
International  
Solidarity Centre,  
UK













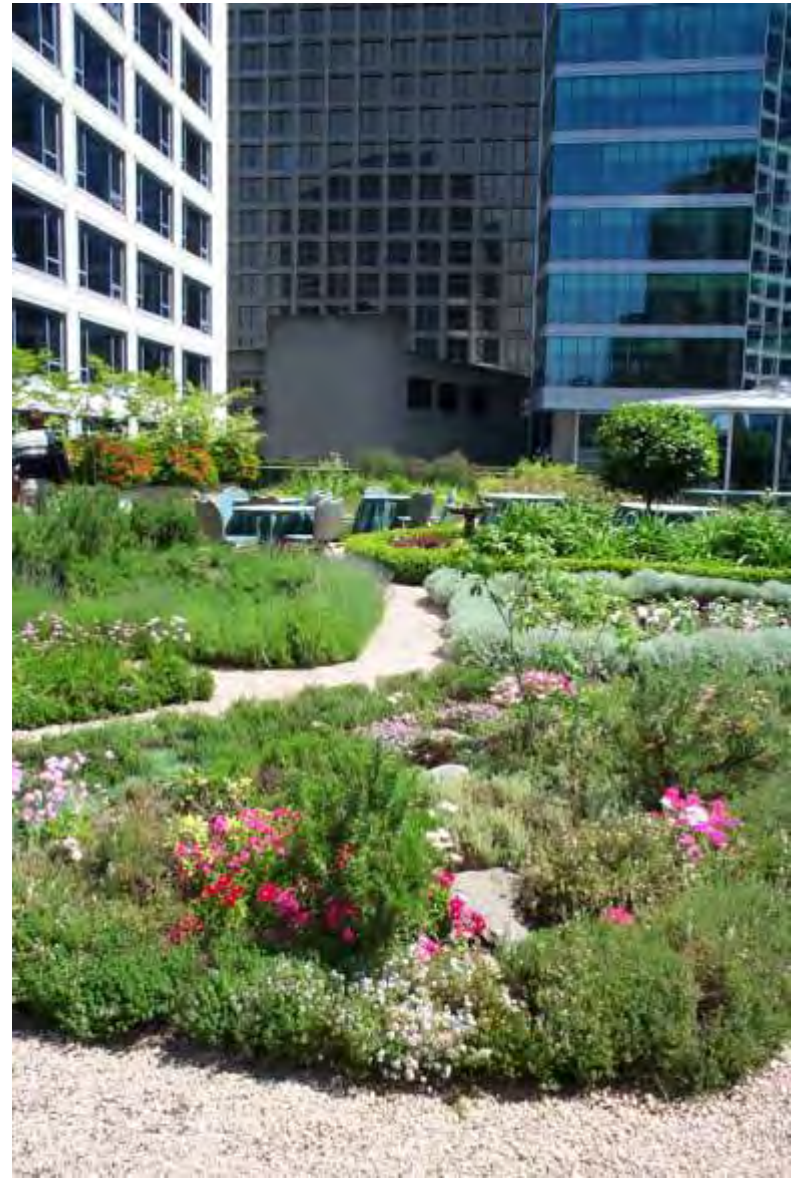












Fairmont Hotels, Toronto and Vancouver  
Courtesy of Fairmont Hotel





The original architectural concept of the Lufa Farms Greenhouse.

Lufa Farms, Montreal  
<https://lufa.com/en>









Eli Zabar's Vinegar Factory, Manhattan, NY





Eli Zabar's Vinegar Factory, Manhattan, NY





Eli Zabar's Vinegar Factory, Manhattan, NY







# Challenges & Lessons

- Many opportunities for creative solutions that enhance existing environments
- Build on connections with existing infrastructure
- Integrated systems approach
  - Links to energy and water systems
  - Links to other community initiatives
- Interdisciplinary approach
  - Bringing people and expertise together
- Understanding process
- Community support & municipal support
- Design opportunities for unique spaces - perceptions
- The role of designers as problem solvers
- Benefits extend far beyond food



[www.carrotcity.org](http://www.carrotcity.org)



## CARROT CITY

CREATING PLACES FOR URBAN AGRICULTURE

Mark Gorgolewski, June Komisar, and Joe Nasr



## Carrot City: Creating places for Urban Agriculture

Mark Gorgolewski,  
June Komisar &  
Joe Nasr

Monacelli Press, 2011