Negative Space Positive Environment

Mapping Opportunities for Urban Resilience

M. Kowalik    Dr. M. Guaralda

Queensland University of Technology
Outline

- Background
- Understanding Cities
  - Approaches to Urban Environment
  - Urban Sustainability
  - Cities as Ecosystems
- Mapping Negative Space
- Case Study – Brisbane, Australia
- Conclusion
Cities are fascinating melting pots of cultures, lifestyles and opportunities

Each iteration has been more complex – new technology, faster pace of life, social changes and now, environmental awareness of the cost of Western lifestyles

Complexity is vital to urban centers and a main characteristic of consolidated urban environments

Mixed uses, social heterogeneity, sensory stimulation, economic transactions and cultural exchanges all provide ‘life’ in cities
Cities have changed throughout their history to adapt to changes in lifestyle, economy and production.

Historic elements have given way in order to advance the growth of the city – Vienna is an example with the removal of city walls to create the Ringstrasse.

Iconic elements built then removed.

Activities keeping town centers vibrant and alive have been removed, isolated or segregated to the outskirts.
Changing Cities

Three traditional methods of introducing wide-scale urban change:

- Razing the city to start again
- Annexing new areas beyond city boundaries
- Changing cities from within
- Third option most likely in majority of cases
Approaches to Urban Environment
Cities as organisms
- Defined centre of control
- Green lungs
- Veins for movement
- Co-operative effort of all elements
- Diseases

Main driver – improving efficiency and streamlining processes

Now – urban sustainability
Urban Sustainability

- Developing concept growing in importance to both government and industry
- Cities (and built environment) significant factor contributing to environmental concerns
- Inherent complexity of cities – layering meaning, history and cultural memory - does not allow ‘tabula rasa’ blanket approaches to sustainability
Currently sustainability is concerned with containing damage, nor repairing.

Positive Development theory argues that the built environment needs to have an overall net positive impact – it must reverse past environmental damage.

Ecological remediation, restoration and regeneration are insufficient – development must ‘pay its own way’.
New construction/retrofitting must increase carrying capacity as well as natural and social capital – net expansion of ecological base and public estate.

Buildings are proposed as agents to modify context in order to provide multi-layered benefits in line with urban complexity addressing social, cultural, economic and environmental elements.

Approach offers a new and different way to look at cities.
Cities as Ecosystems

Urban Utopias – Vincent Callebaut (source: Allianz.com accessed 11/5/12)
Cities as Ecosystems

- Cities are fluid – functions move, areas grow and shrink, shared memories morph
- Current ecosystem views are fragmented and focused on singular elements – eg. green space
- Ecosystems allow dynamic relationships between components in response to element interactions and context
- Using this understanding, new development can be considered as clusters which contribute to the performance of the city as a whole
- Buildings are not isolated elements, rather ‘cells’ providing particular functions to the wider ecosystem – the city
- Negative space is the connective tissue joining different cells
- Allowing elements to ‘spread the load’ and simultaneously ‘share the gain’ of various environmental solutions
- Environmental functions can be retrofitted to existing cities making best use of individual building position as appropriate

- Cities become ‘living’ systems allowing a non-linear shift to sustainability through interaction of ‘cells’
Mapping

- Initial step is to locate and identify opportunities in the urban environment
- Not limited to publicly accessible areas, also considers open spaces within blocks to gain connections
- Merging functional and typological mapping with ecological studies, the city becomes an urban system operating as a ecosystem
Based on typologies of open space, ecological systems and urban planning, identifies following elements as a framework:

- Public parks
- Gardens
- Pedestrian areas
- Street planting
- Laneways
- Accessory spaces
- Car parks
- Infrastructure and lost space
Public Parks

- Central to social space and environmental relief
- Accommodate leisure facilities
- Important to city identity – festivals, etc.
Gardens

- Part of urban ecological network
- Not necessarily publicly accessible
- Role of sanctuaries in urban environments
Pedestrian Areas

- Gathering areas, plazas, forecourts
- Walkable networks
- Significant social importance
Street Planting

- Important for air quality and climate control
- Support biodiversity and variety of life forms
Laneways

- Opportunities for building pedestrian networks and vibrant social places
- Informal connections between more structured elements (private gardens, main streets)
Accessory Spaces

- Driveways, access ways, internal manoeuvre spaces, commercial courtyards
- Used temporarily during the day or week
- Opportunity for different social uses and different kinds of urban networks
Carparks

- Large areas devoted to the provision of parking spaces – parking lots, on-street parking, parking structures

- Again, temporal type use during weekday daytime, empty and desolate at night and weekends

- Opportunity for locating temporally driven societal functions
Infrastructure and Lost Space

- Railway networks, motorways, road viaducts, remnant space
- Inaccessible or socially dangerous areas
- Could provide ecological corridors or other environmental services for positive development of urban environments
Vacant / Redevelopment Sites

- Areas underdeveloped, under redevelopment or due for refurbishment
- Can set up ecological systems which extend beyond unbuilt lots
- Connect environmental technological elements (during construction / refurbishment) with negative space to implement city ecosystem
Potential

- Environmental functions to be distributed in the urban fabric and interconnected by designed negative space
  - Energy generation
  - Air and water filtration
  - Carbon sequestration
  - Food production

- Cities could evolve into ‘corporate entities’ – complementary component parts working together
Over time the entire city could generate surplus environmental services as buildings are retrofitted or replaced.

Actively using negative space to connect discreet environmental cells may result in the city as a self-sustaining unit.

Using negative space in a systemic manner can drive sustainable functioning through urban infill development or redevelopment to meet environmental goals.
Temporal activation of negative space can:
- Support and enhance social interaction (increasingly 24/7)
- Meet evolving cultural changes
- Approach allows the city to continue to evolve and change to respond to cultural and social developments
- Able to take advantage of developing technological advancements
Case Study – Brisbane, Australia

- Australia’s 3rd largest city
- Capital of Queensland
- Sprawling, car-centric city
- Light and mid-grain urban fabric
- Increasing city centre population
Figure Ground

- Dense core thins out towards river
- Connection between city and river broken by motorway on South-West side (purple)
- Different settling rule on North-East side blocks river views
- Articulated system of open spaces
Green Space

- Parks, gardens and street planting
- Preliminary ecological network in negative space
- Pattern is discontinuous
- Missing green links are identified
Pedestrian Space

- Actual and potential pedestrian areas (purple) suggest system densification.
- Opportunities through accessory spaces (orange, yellow).
- Refurbishment of public spaces with positive technologies.
- System radiates deep into built fabric.
Redevelopment Space

- Areas under redevelopment and refurbishment
  - Vacant sites – apricot
  - Development sites – red
  - Lost space – dark blue

- Opportunities for new connections

- Even distribution of sustainable elements in urban fabric
Map of Brisbane CBD locating all opportunity spaces
Mapping Refinement

- Recognition of fixed elements in the development of cities – heritage listed buildings
- Time based mapping of uses and functions usage variations of facilities, spaces and infrastructure
- Identifying opportunities for retrofitting specific environmental functions – locating condition dependant technology appropriately
Cities always have and always will, morph – they must change or they die

Using redevelopment of dilapidated areas helps to redefine the urban environment offers opportunities for sustainable nodes to be inserted into the urban fabric

Mapping allows us to see and understand the existing connecting web of negative space

Offers a structure that positively directs progress of the urban environment
Oversimplification of cities has made the built environment a collection of separated functional clusters.

To counter this, the city should be understood as an integrated technological and ecological network.

Planning needs to consider existing opportunities to create a complex ecological system staged in time which follows the pace of urban change.

Actively designing negative space can start to create a sustainable connective web.
Thank you
Questions?

Contact details

M Kowalik  m.kowalik@qut.edu.au
Dr. M Guaralda  m.guaralda@qut.edu.au
School of Design
Creative Industries Faculty
Queensland University of Technology