urban environment:
imbalance between
input/outputs =
more infrastructure

single family utopia:
scale: urban land
area used by
  single family
  multi family
footprint of city/energy consumption
social segregation

urban sprawl

architecture as infrastructure

site specifics:
Vancouver, BC, Canada

50%
11%
300 times its size

high poverty levels
in North America
(Van downtown
Eastside)

urban fabric is considered homogeneous under current zoning
(RS-1 single family)

hierarchical infrastructure
self organizing infrastructure
urban sprawl or eco-density?

Single Family Utopia

'There is a criticism of the house which repels the single family dwelling for its avid consumption of land and energy, presenting it as the most voracious threat against the scarce resources of the planet; and there is also an ominous view of the isolated residence as the archetypical statement of the extreme individualism of our times, which has transformed its initial liberating virtue into dysfunctional antisocial fragmentation…'

AV Monographs 90 (2001), La casa de alta costura, pp2 & 3.

Typical lot size: 360m2

Average price single family home: $545,000

Family income required for mortgage (50% of income)

Financial synergies can enable social heterogeneity

Urban fabric provide opportunities for improving environment;

Redesign systems where conflicts help frame design solutions at urban scale;

Architecture becomes enabler working as/with urban infrastructure

Intelligence of system relies on feedback loops that enable individual input

Urban conflicts stress infrastructure

Scenarios of single family financial in terms of unit type area (m2)/income required approx.

1 single family

Unit 1: 365m2/ $115,000 yr

2/duplex

Unit 1: 182.5m2/ $90,000 yr

Unit 2: 182.5m2/ $90,000 yr
3 units
- unit 1: 143 m² / $80,000 yr
- unit 2: 143 m² / $80,000 yr
- unit 2: 78 m² / $60,000 yr

4 units
- unit 1: 126.5 m² / $75,000 yr
- unit 2: 126.5 m² / $75,000 yr
- unit 3: 42 m² / $50,000 yr
- unit 4: 70 m² / $35,000 yr

5 units
- unit 1: 138 m² / $75,000 yr
- unit 2: 73 m² / $60,000 yr
- unit 3: 42 m² / $35,000 yr
- unit 4: 70 m² / $55,000 yr
- unit 4: 42 m² / $35,000 yr

Legend
- Stormwater reduction
- Electrical consumption / reduction / production (KWh net)
- Pollution (air particle content, decibels reduction)
- Urban agriculture/amenity spaces

Municipal network feedback loop monitors performance. Assessment will be reflected on yearly property taxes.
sun/light catcher
photovoltaic, shading device, envelope captures light/heat (Photosynthesis)
performance: 45m² surface/unit
self: 14.5m² photovoltaic supports 10 persons consumption
out to urban infrastructure: 66%

skin pure
skin purifier: pollution, noise blanket, habitat, cooling
performance: 90m² surface/unit
benefit measured: airborne particles, db reduction, cooling energy
social scenario

operational model

water.cube
wet store: water captation, retention, reuse, performance: 50m2 of roof area per person with optimized consumption patterns benefit: lot can support 7 people; water recycling

field.carpet
green carpet - agricarpet, ecosurface; performance: 250m2 surface/unit with 12″ deep growing medium self: 67% reduction flow year out to urban infrastructure: 33% benefit measured: water run off/lot, urban agriculture
_phenotypes / infrastructure populations

sun/light catcher

skin pure
Urban symbiosis

Interface new/old construction with e.fields

e_fields
suncatchers experimentation/ formal opportunities
strategies

project workflow

- new construction
- existing construction

zoning requirements
- fsr (conditional) 0.6, 0.7, 0.8, 0.9, 1.0
- fees $
- property tax $

zoning environmental

parameters
- area green wall
- water storage m3
- area green carpet
- solar angle + area shading devices
- north windows

building performance evaluation protocols

project statistics

lifetime loop

future directions

urban landscapes
re-conceptualization of architecture as fundamental urban infrastructure
architectural expression of buildings able to facilitate exchanges with environment; building integration as dynamic organism interacting with environment residential/commercial/industrial buildings inform cumulative synergies enable/contribute/facilitate energy conservation strategies