the art of sustainable living: making urban-eco the norm

Eco-Village Seminar
Prof. Cheng – Winter 2005

Chris Chatto, Timothy Fouch, Joy Rackley
the art of sustainability

Problems of (sub)Urban
Goals of an Eco-village
Precedent Survey
  Bellingham Coho
  Cambridge Coho
  Commons on the Alameda
  Nomad Coho
  Takoma Village Coho
  N Street
  Seminary Square
  LA Eco-village
  Nakamura Coop

Marketing to the Mainstream
Lessons from BedZed
Parameters for Success
Strategies for Survival
  The Culture of Art: Art at the Vanguard
  The Art of Culture: Art & the Eco-Village
(sub)urban problems

Traffic
Pollution
Resource Consumption
Commuting times
Lack of Community
Inconvenient Lifestyles
Sustainable Living
Community Building
Closing the Loop

Responsible use of Resources
Innovative Governing

Dispelling Myths
<table>
<thead>
<tr>
<th>precedents</th>
</tr>
</thead>
<tbody>
<tr>
<td>How can eco-villages be sustainably designed within an urban setting and attract the mainstream consumer?</td>
</tr>
<tr>
<td>How can art be used as a self-sustaining income generator, communication tool, and educator for eco-villages?</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>survey</th>
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<tr>
<td>Bellingham Coho</td>
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<td>LA Eco-village</td>
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<td>Nakamura Coop</td>
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Bellingham Coho
Open Space access
Vernacular style housing

Cambridge Coho
Condo Style
Urban Access
Democratic process
survey

precedents

Commons on the Alameda
Urban Access
Density
Sustainable materials

Nomad Coho
Designed to abate sprawl stricken Boulder area
11 du / Ac
Takoma Village Coho
Urban Access
Density
Community Meals

N Street Community
Retrofit of Suburban neighborhood
Builds stronger community relations
LA Eco-village
Urban Access
Low Income
Urban Restoration

Nakamura Co-op
Hip, Fun, Cool
Specific target market
Urban Access

survey precedents
Using the positive qualities of each precedent as a guideline for urban integration of eco-villages

**mainstream marketing**

Being ‘eco’ is a comfortable and desirable lifestyle choice for anyone...

- **Convenient:** little or no commuting, accessible childcare, community dinners
- **Community:** support for those without families, sense of working for the greater good
- **Sustainable:** materials and techniques, food supply & consumption resource use
The ZED Lifestyle

- Don’t spend two hours a day commuting – walk to work
- Don’t worry about young children – walk to the nursery, and pop them home for lunch
- Don’t live in dark gloomy houses with poor ventilation
- Don’t live in flats without gardens – everybody needs to be outdoors sometimes
- Don’t need to go out of your way to stay fit
- Don’t worry about un-tried technology.
- You don’t need to live in a spaceship
- Don’t have to worry about resale
- Don’t worry about finding a mortgage
BedZED

- Focus on most significant impacts that can be designed for.

Respond to enviro impacts

- Food miles: 33%
- Home Power: 34%
- Transportation: 33%
BedZED

- Easy transit access to London
- Walking distance to many amenities
- 1.02 parking spots/dwelling unit - 2-3 secure bike spots / person
- Car sharing on site

Transportation

- 0.34 miles to railway station
- 2 bus routes within 300 feet
- A healthy living center and cafe / bar / organic food shop incorporated onsite
- Schools from 0.3 miles to 1.2 miles
- Onsite access to BedZED telecommuting centre.
- Covered bike spaces: 1 space per flat, 2 spaces per maisonette and 3 spaces per house – current mix gives 117 spaces.
- Opportunity to grow vegetables onsite
- 20 non-allocated electric vehicle charge points enabling residents to consider changing to electric cars and vans
BedZED

- Provide 300 SF private garden space/d.u.
- Promote internet shopping for groceries
- Reduce transportation needs by reducing sprawl

Food miles
BedZED

- Passive solar heating and cooling
- Daylighting
- Superinsulation & thermal mass
- Combined Heat and Power (CHP) cogeneration plant

Home Power

The combination of energy efficiency measures reduces the need for both electricity and heat to the point where a 130 kw wood fuelled chp station can meet most of the energy requirements for a community of around 240 residents and 200 workers.
BedZED

- Oriented to sun, not to street

Solar Orientation

01 - A flat, brownfield site: Close to bus routes and a main line railway station

02 - Site sold with outline planning permission for the following residential use:
64 homes @ 3.5 hab rooms per home proposed on a 0.64 ha plot. Three storey housing @ 100 homes / ha, a car pool, and parking shared between workspace and commercial uses.

03 - ZEDfactory team propose an additional 1,500m² net workspace on the same 0.64 ha plot. Density is 203 workspaces / ha @ 12m² / workspace, with car pool shared with housing.

04 - Integrated live / work community: 100 homes and 203 workspaces / ha. With a shared car pool, parking and skygardens placed on workspace roofs enabling the densification of suburbia around public transport nodes without net loss of amenity.
<table>
<thead>
<tr>
<th><strong>Total area</strong></th>
<th>4.1 acres</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>178,080 SF</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Number of dwellings</strong></td>
<td>82</td>
</tr>
<tr>
<td><strong>D.U./acre</strong></td>
<td>20.1</td>
</tr>
<tr>
<td><strong>Habitable rooms/acre</strong></td>
<td>80.2</td>
</tr>
<tr>
<td><strong>Total loor area</strong></td>
<td>111,816 SF</td>
</tr>
<tr>
<td><strong>Average dwelling FA</strong></td>
<td>1,364 SF</td>
</tr>
<tr>
<td><strong>Sports area</strong></td>
<td>46,673 SF</td>
</tr>
<tr>
<td><strong>Village square</strong></td>
<td>5,791 SF</td>
</tr>
<tr>
<td><strong>Sports club and CHP plant</strong></td>
<td>5,350 SF</td>
</tr>
<tr>
<td><strong>Private garden area</strong></td>
<td>22,152 SF</td>
</tr>
<tr>
<td><strong>Primary circulation area</strong></td>
<td>34,520 SF</td>
</tr>
<tr>
<td><strong>Vehicle and pedestrian mews</strong></td>
<td>5,813 SF</td>
</tr>
<tr>
<td><strong>Car-parking</strong></td>
<td>10,613 SF</td>
</tr>
<tr>
<td><strong># of residents</strong></td>
<td>244</td>
</tr>
<tr>
<td><strong># of habitable rooms</strong></td>
<td>271</td>
</tr>
<tr>
<td><strong># of workers</strong></td>
<td>196</td>
</tr>
<tr>
<td><strong># of car parking spaces</strong></td>
<td>84</td>
</tr>
<tr>
<td><strong>Parking spaces/d.u.</strong></td>
<td>1.0</td>
</tr>
<tr>
<td><strong>Work space area</strong></td>
<td>18,245 SF</td>
</tr>
<tr>
<td><strong>Commercial space</strong></td>
<td>8,407 SF</td>
</tr>
<tr>
<td><strong>Jobs/acre</strong></td>
<td>80.9</td>
</tr>
</tbody>
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BedZED

- Combined Heat & Power (CHP / co-generation) Plant
- Parking
- Sports green
- Village square
- Access mews
BedZED

- Terrace with front gardens
- Vehicle mews with sky gardens
- Pedestrian mews with sky gardens
## Typical Flat

<table>
<thead>
<tr>
<th>Unit Type D1</th>
<th>Floor</th>
<th>Room Type</th>
<th>Area</th>
<th>ft²</th>
<th>Width</th>
<th>Height</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ground Floor Flat</td>
<td>Ground</td>
<td>Living</td>
<td>135</td>
<td>12'-4&quot;</td>
<td>11'-1&quot;</td>
<td></td>
</tr>
<tr>
<td>1 Bed</td>
<td>Ground</td>
<td>Bathroom</td>
<td>58</td>
<td>6'-6&quot;</td>
<td>8'-9&quot;</td>
<td></td>
</tr>
<tr>
<td>2 Person</td>
<td>Ground</td>
<td>Kitchen/Dining</td>
<td>125</td>
<td>9'-5&quot;</td>
<td>11'-1&quot;</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Ground</td>
<td>Double Bedroom</td>
<td>124</td>
<td>10'-1&quot;</td>
<td>12'-11&quot;</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Ground</td>
<td>Sunspace</td>
<td>108</td>
<td>19'-11&quot;</td>
<td>5'-2&quot;</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Ground</td>
<td>Store</td>
<td>10</td>
<td>2'-3&quot;</td>
<td>5'-5&quot;</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Ground</td>
<td>Garden</td>
<td>306</td>
<td>15'-9&quot;</td>
<td>19'-5&quot;</td>
<td></td>
</tr>
<tr>
<td>Net Internal Area (inc. sunspace)</td>
<td></td>
<td></td>
<td>603</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Net Internal Area (without sunspace)</td>
<td></td>
<td></td>
<td>495</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gross External Area</td>
<td></td>
<td></td>
<td>689</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
BedZED

- Environmental, aesthetic & economic criteria
- All heavy or bulky materials locally sourced (w/i within a 35 mile radius if possible)
- Local labour is used wherever possible
- Specialist components are minimised wherever possible, and prefabricated in offsite factory conditions.
- All components must have a manufacturers stated embodied energy rating
- Cladding materials are local to the site, allowing each development to adopt regionally distinctive local materials

ZED Products

ZED Product B: Precast concrete floors and stairs

“ZED Product B combines the heavyweight properties of concrete, giving thermal mass to act as a heat sink for solar gain from the south facing windows with the cost effective use of prefabricated floor slabs that can be directly painted with emulsion paint and give a robust, honest finish. They use a fraction of the concrete and steel reinforcement compared with in-situ slabs, and reduce erection time. This allows flexible internal planning using non-load bearing, relocatable timber stud partitions without compromising the thermal mass of the dwelling.”
BedZED

- Relies on buyer self-interest
- Organized through web and BedZED
- "Critical mass" determines the "go-ahead"

Marketing the revolution

From A to ZED
Realising Zero (Fossil) Energy Developments
Bill Dunster architects ZEDfactory Ltd.

180 pages
BedZED

- Relies on buyer self-interest
- Organized through web and BedZED
- “Critical mass” determines the “go-ahead”

ZED process

1. Choose or suggest a site
2. Register with ZEDfactory (£120 annually). An electronic bulletin board will show clusters emerging.
3. Choose one of our standard house types that suits your needs.
4. Choose a self-build mortgage - all homes and workplaces are built to NHBC standards.
5. ZEDfactory will arrange a cluster group meeting of all potential residents within each area. Once enough critical mass has been achieved, ZEDfactory will coordinate the cluster to purchase a site, setting up a local ZED company owned by the cluster group investors.
6. ZEDfactory sets up a business plan, all cluster group members must agree to the proposals before proceeding. Land is purchased, and ZEDfactory submits a detailed planning submission.
7. About four months later, construction starts.
8. About eight months later, your home should be ready to occupy.
9. You sell your existing home on the open market when you wish, and move into your new ZED property.
New model of development

1. The consultants act as the developer, and the normal developers profit is re-invested in the carbon neutral specification. The overall profit from the development goes to the landowner - often a local authority.

2. As development land becomes increasingly scarce, local authorities will find themselves keepers of one of the most important landbanks. They will increasingly favor carbon-neutral developments.

3. The developer and the landowner act as a partnership or joint venture, avoiding bank loans charges for land purchase.

4. A proven range of standard housetypes – called ‘ZED in a box’ based on value engineered versions of BedZED are available for most sites.

5. ZEDfactory will market and pre-sell all new homes and workplaces using both conventional techniques and the web.

6. With presales achieved – ZEDfactory will negotiate loans to fund construction from the wide range of ethical investment companies.

7. The ZEDproducts supply chain ensures that the innovative component costs are fixed, and construction costs can be accurately predicted.

8. The homes and workplaces will be completed, contracts exchanged, and profits returned to the landowner.

9. ZEDfactory must achieve enough consultancy income to fund the entire process and survive long enough to set up the next development project.
BedZED

- Bill Dunster Architects (aka ZEDFactory)
- Peabody Trust
- Sutton Council

Financing Partners

- Worked with Michael Hopkins
- Experimental Hope House (own residence)

- One of London’s largest housing associations
- Focuses on social, economic, and community renewal
BedZED

- Environmental (initial results)
- Economic

Signs of Success

- Water heating 43% less
- Electricity consumption: 60% less
- Water consumption: 56% less

- The last home at BedZED was sold on the day the first resident moved in, demonstrating healthy public demand for the concept
- Sales achieved between 10 and 30% premiums over the products of conventional volume house-builders up the road.
The ZED Lifestyle Part 2

- Don’t spend a fortune on expensive cars – simply borrow what you need when you need.
- Don’t spend a fortune on utilities bills – they can only get larger as carbon taxes bite.
- You don’t have to live in a completely new house.
- You don’t have to live in a dormitory with little sense of community.
- Don’t have to eat organic veggies flown in from the other side of the world.
Sources

- BedZED website: http://www.bedzed.org.uk/

- Bill Dunster Architects Zedfactory:
  http://www.zedfactory.com/


- Sommerhoof, Emilie W. Architecture, vol. 92, no. 4, April 2003 pp. 87-89.

Strategies for Survival
The Overview

The Future?
Overrun, Overwhelmed, Underutilized

An Urban Solution is Fundamental
Strategies for Survival
The Overview

We’ve Seen the Successes.

Are these A Drop in the Ocean?

The Butterfly and The Tornado

A Will and a Way

Idea and Action

Cause and Effect

Part and Whole
Strategies for Survival
The Overview

Powers Needed to move a ‘Death Culture’ to Life Sustaining One?

Hope
Optimism
Inspiration
Love of Life
Consciousness

How can and does the eco village then bring these values to the world in an inclusive way?

What is the Vehicle For Change…?

Culture of Death:
Status Quo

Culture of Life:
Eco-Village
Strategies for Survival

The Arts

Vehicle for Change

• At the Vanguard of Emerging Truths

• Art and Eco-Village in Synergy

Emerging Truths

Synergy: Connections
Life Sustains Life

The Culture of Art | The Art of Culture
Strategies for Survival
Art at the Vanguard

The Philosophical Groundwork

Primitive and Modern Reconnect:

Petroglyphs/Cave Art
Art Is Not Separate

Duchamp’s notion of the Readymade

Art Should Not Be Separate

The Everyday is Beautiful

One’s Very life Is the Ultimate Work of Art

Life and Art Not Separate

What is Art? What is Everyday

The Culture of Art  |  The Art of Culture
Strategies for Survival
Art and Eco-Village in Synergy

The Philosophical Groundwork:
Use of Materials and Aesthetics Change
Collage Assemblage
Strategies for Survival
Art and Eco-Village in Synergy

The Physical Groundwork:

The Role of the Artist and the Studio Space Shift

Adoption of the raw, open spaces to work...

In an Urban Environment To survive

The Artist in His Environment: Then

... and now: Urban Reuse

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The Literal Groundwork:
Cheap, Run Down Urban Space Made Hip Through the Presence of an Active Creative Presence

From Neglected to Revitalized, Gentrified and Chic: A Solution and a Problem
Strategies for Survival
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Payoff:
The Urban Environment Generates Form

The Urban Palette
Designing With Abundant Recycled Materials

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Medium as Message
Changing (returning) Ideas of and About Art, Making, and Beauty
Aesthetically Beautiful, Meaningful Sustainable

Creation without Wholesale Destruction: Will Society Follow?

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...More Goldsworthy
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... and Nash

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Strategies for Survival
Art at the Vanguard

…Grafting Gardens
…Reclamation Art

The Culture of Art   |   The Art of Culture
Strategies for Survival
Art and the Eco-Village: Product

- Products, and Artworks Sold Support Eco-Village
- Commodities Taken Outside the Village Advertise, Brand and Promote the Community
- Use as a Venue Increases Income, Interest In, and Profile of Eco-Village

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* Detail Book
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The Act of Making

Educates Attendees
Re: Technical Issues of Eco-Village

Directly Benefits Community with Physical Work

Provides an Opportunity for Outsider Experimentation and Experience in an Eco-Village

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Workshops

three days hands on.
Strategies for Survival
Art and the Eco-Village: Synergy

Art Supports Life
Life Supports Art

Community and Identity are Defined and Reinforced by the Act of Making the Physical Village and Its Products

The Tree Bears Fruit and the Fruit Bears a Seed

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Butterfly Garden by Mike MacDonald
Winner of the 2000 Aboriginal Achievement Award for New Media
the art of sustainable living:

thank you for your attention

the end... of the beginning...