11.307 Beijing Urban Design Studio
Spring 2008

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The Site

150'

Oil

Solvent
Categories of Contaminants

• Solvents
e.g.: Paint thinner, and parts degreaser.
Sources: Garages, industry.

• Heavy metals
e.g.: Lead, Arsenic, Chromium, Cadmium, and Mercury.
Sources: Metal finishing, metal plating, and manufacturing.

• Petroleum
e.g.: Gasoline, diesel, and motor oil.
Sources: Underground storage tanks, gas stations, tank farms, pipelines.
Cleanup Methods for Brownfields

• Remove the hazardous substances and store them at a safer location.
• Leave the substances where they are, but control them
  – Caps and Slurry Walls
  – Solvent Extraction
  – Bioremediation
Cleanup and Land Use

• The type of use determines the type of cleanup.
• Residential use demand the highest level of cleanup, because this land use involves the greatest likelihood of exposure.
Contamination Assessment of the Shougang Site

- Proxy—previous production activities on the site
  - Manufacturing plant, esp. refractories plant
    Waste water disposal
  - Railway transport
  - Cokemaking plant
  - Raw material/Slag storage
Beijing Studio 2008

Information on transformation of Beijing City and past Beijing Studios

Dennis Frenchman, Jan Wampler, Chris Zegras, Daphne Gondhalekar, Yang Jiang
## Methodology: Analysis matrix

<table>
<thead>
<tr>
<th>STUDIO DATE AND SITE</th>
<th>BEIJING STUDIOS</th>
<th>BEIJING CITY CONTEXT</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>QUALITATIVE DATA</strong></td>
<td></td>
<td><strong>QUANTITATIVE DATA</strong></td>
</tr>
<tr>
<td>1985 Shishahai, Dianmen Street</td>
<td><strong>About the studio site</strong></td>
<td><strong>Demography</strong></td>
</tr>
<tr>
<td>1987 Dashala, Pipe Street, Royal Academy</td>
<td>• Condition of site at time of studio</td>
<td><strong>Economy</strong></td>
</tr>
<tr>
<td>1992 Dewai Street, Longfusi Market, Fragrant Hills</td>
<td>• Studio ideas at the time of the studio</td>
<td><strong>Policy</strong></td>
</tr>
<tr>
<td>1995 White Rice Street</td>
<td>• Current condition of site</td>
<td>• Land-use</td>
</tr>
<tr>
<td>1998 White Pagoda</td>
<td><strong>Relation with the studio</strong></td>
<td>• Housing / built environment</td>
</tr>
<tr>
<td>2000 Two Bridges</td>
<td>• Government</td>
<td>• Transportation</td>
</tr>
<tr>
<td>2002 XiYuan</td>
<td>• Academic</td>
<td>• Energy</td>
</tr>
<tr>
<td>2004 Railway corridor</td>
<td>• Residents</td>
<td>• Green space / environment</td>
</tr>
<tr>
<td>2006 Sun Palace</td>
<td>• Developer</td>
<td><strong>Urban planning system</strong></td>
</tr>
<tr>
<td>2008 Capital Steel Plant</td>
<td><strong>Other</strong></td>
<td><strong>Historic events</strong></td>
</tr>
<tr>
<td></td>
<td>• Similarity between studio proposals and actual outcome</td>
<td><strong>Infrastructure</strong></td>
</tr>
<tr>
<td></td>
<td>• Analysis theme</td>
<td>• Transport</td>
</tr>
<tr>
<td></td>
<td>• Site story</td>
<td>• Infrastructure</td>
</tr>
<tr>
<td></td>
<td>• Larger Beijing story</td>
<td>• Energy</td>
</tr>
</tbody>
</table>

- Analysis of relationship between studio and real city transformation to assess the performance of the studios:

How did the context of the real city information influence the studios?

How did the studios impact the real city?
Huge urban expansion on limited land resources

Urban population has more than doubled since 1978
40% of city population expected to move to outer suburbs by 2010
Urban development pattern becoming increasingly dispersed

Source: Beijing Statistical Yearbook

Figures by MIT OpenCourseWare.
Comparative average population densities in built-up areas in 49 metropolitan areas

Comparative population densities in 2000

Source: "Order Without Design" Alain Bertaud, 2003

Courtesy of Alain Bertaud. Used with permission.
Increasing residential consumption

- Total
- High-storied (10 stories and above)
- Mid and High-storied (7-9 stories)
- More-storied (4-6 stories)
- Low-storied (1-3 stories)

Per capita GDP has increased 10-fold since 1978
Per capita living space has doubled since 1986
New residential construction increasingly urban fringe high-rise

Source: Beijing Statistical Yearbook
Increasing residential energy consumption

Increase in durable consumer goods
Per 100 households annual possession of durable consumer goods of 2000 urban households

Source: Beijing Statistical Yearbook

Energy consumption of households

Air conditioning units widespread

- Showers
- Washing machines
- Colour TV sets
- Refrigerators
Rising Car ownership with decreasing urban density

1984: Residents entitled to own private cars
2000: Local families encouraged to own automobiles
2008: Car increase in Beijing: 1400 per day
Beijing design studio sites:
studying changing urban development pattern

Example of dense traditional urban area:
1985: Inner city urban renewal: Shishahai area

STUDENT PROPOSALS:

- Preserve and densify existing housing
- Traffic congestion, pedestrian precinct along lake
- Selective intervention to accommodate economic growth

Actual change: increasing congestion
1985: Urban fringe issues: Haidian Town

STUDENT PROPOSALS:
- Maintenance of continuity and quality of life
- Develop commercial area
- Enable pedestrian precincts

Actual change: demolition of original town
1992: Large-scale commercial development

STUDENT PROPOSALS:
- Keep viable existing community and small scale market
- Develop site into important commercial centre

Actual change: disappearance of original community
2004: Public transport-oriented development

STUDENT PROPOSALS:
- Both sides of rail to develop as a whole
- Densify land-use mixture
- Motor vehicle restriction

Actual change: much larger in scale than anticipated
2006: Urban village: Sun Palace Neighborhood

STUDENT PROPOSALS:
- Integrate existing structures, densify and add green space
- Link to nearby subway stop under construction
- High rise buildings at edges of site

Actual change: complete demolition of existing community
Urbanization patterns driving land-use change involving several stakeholders

1) Inner city urban renewal
With government support:
- Outcome strongly resembles studio proposals: Sanitized residential and preserved historic with small-scale commercial activity for tourists

By developer:
- Local government sees more profit in commercial redevelopment and invited developers: Sites cleared for ‘renewal’ development

2) Large-scale commercial development
- No connection with government or residents
- Studios anticipated less large-scale commercial development

3) Transport oriented development
- Studio discourse with local residents
- In large government projects, old areas demolished
- Scale of new development and clearance of all old areas not anticipated

4) Urban villages in greenbelt
- Municipal government plans to implement greenbelt
- But village collective invites developer to initiate large-scale housing development for economic profit
- Studio had no contact with government or residents
- Sites completely demolished