How to assess the sustainability of historical buildings?

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Building obduracy

• Building as heterogeneous network
• Historical buildings as champions of obduracy!
• (Re)production of material order
  – Vulnerability & fragility of objects (Denis & Pontille)
  – Continuous need for re-production
  – The care of things (Mol)
• Conservation (Drury)
  – Maintenance
  – Repair (Graham & Thrift)
  – Conservation
  – Restoration (Yaneva)
Aren’t historical buildings inherently sustainable?

• Calls for sustainability since Our Common Future 1987
• Historical values threatened?
• Attempts to reconcile conflicting values
• Literature (Stubbs, Stovel & Smith, Pendlebury)
• Guidelines (examples):
  – English Heritage: ‘Conservation principles’
  – Deutsche Energie-Agentur: Leitfaden ‘Energieeinsparung und Denkmalschutz’
• Assessment methods, such as ‘DuMo’
Understanding heritage values

- Evidential value
- Historical value
  - Illustrative
  - Associative
- Aesthetic value
  - Design value / artistic value
  - ‘Fortuitous outcome of developments’
- Communal value
  - Commemorative and symbolic values
  - Social value
  - Spiritual value

From: Conservation Principles, Policies and guidance, English Heritage,
Conservation principles

(Selection of most important principles)

• Minimal intervention
• Authenticity
• Uniqueness of cases
• Investigation
• Reversibility
• Harmony and legibility
Minimal intervention in practice

From: FHBRO Guidelines Canada 1996
Sustainable-Historical Valuation

• Development of DuMo method
  – Duurzame Monumenten = Sustainable Historical buildings)
  – Initiated by Cultural Heritage Agency in the Netherlands in 2003
  – Need to take historical values into account in energy assessments and retrofit practices
  – Working group with building historians, architectural historians and energy specialists

• Inventory of sustainable restoration practices and designs

• Publication of Handbook Sustainable Monuments (Duurzame Monumentenzorg)

• Implementation of method since 2008

• Resulting DUMo-method consists of 3 components :
  i. Historical value assessment
     – New method developed with accompanying excel software
  ii. Environmental value assessment
     – Adapted Greencalc+ method
  iii. Strategies for improvement
     – Based on extensive study of practices in the Netherlands
• Building assessment with ‘Mo-worksheet’ in Excel
• Expert-opinion: only qualified building historian can carry out Mo-assessment
• Site-visits: interior and exterior
• Second opinion
• Archival documents
• Scores
  • P – very positive
  • Q – positive
  • R – moderate
  • S – negative

Mo/ His
Historical value assessment - 2

1. Building type and style
2. Architectural quality
3. Building quality
4. Importance in oeuvre of the architect
5. Importance with respect to historical themes
6. Relation with local historical developments
7. Relation with historical persons or events
8. Significance of environment for the building
9. Significance of building for its environment
10. How much of the historical material is preserved
11. Technical state of the building

Architectural-historical values

Cultural-historical values

Context-values

Completeness
Historical value coefficient

- ‘Touchability’ categories
  - A - historical values of primary importance
  - B - functional historical values
  - C - ‘flexible’ listed building
  - X - cultural perspective, not protected (a, b, c)

- Historical Value Coefficient
  - A: 2 - 3
  - B: 1,5 - 2
  - C: 1 - 1,5
  - X: 1 - 3
Assessing sustainability

- GreenCalc+
- MIG: Milieu Index Gebouw = Environmental Index Building
- Reference building from 1990 = 100
- Worksheet for Sustainability
  - Water
  - Materials
  - Energy
- Adapted and simplified version
Result: DuMo (SusHis) Label

A-label ≥ 234
D-label ≈ 180
G-label ≤ 126

Examples

<table>
<thead>
<tr>
<th>Touchability category</th>
<th>Mo-coefficient</th>
<th>Necessary Du-score for D-label</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>2-3</td>
<td>60-90</td>
</tr>
<tr>
<td>B</td>
<td>1.5-2</td>
<td>90-120</td>
</tr>
<tr>
<td>C</td>
<td>1-1.5</td>
<td>120-180</td>
</tr>
</tbody>
</table>
Valorisation strategies

• Basic principles
  – 1. Original qualities
  – 2. Minimal interventions
  – 3. Reversibility
  – 4. Appropriate use
  – 5. Adapted level of comfort

• Materials
  – 6. Re-use
  – 7. Traditional materials

• Energy
  – 8. Adjacent unheated rooms
  – 9. New installations
  – 10. Insulation

• Water
  – 11. Rainwater use
  – 12. Watersaving equipment

• Interior air quality
  – 13. Exploit high ceilings
  – 14. Limit harmful emissions

• Management
  – 15. Biodiversity protection
  – 16. User information
  – 17. Maintenance

• Design
  – 18. Interaction Du and Mo
  – 19. Assessment of diverse interests
  – 20. Harmonization of restoration strategy with DuMo profile
Valorisation: towards an improved DuMo-Label after restoration

Before

Du-score: 64
Mo-score: 1.8
DuMoscore: 115

After

Du-score: 120
Mo-score: 2
DuMoscore: 240

20 Strategies for sustainable management of built heritage

20 Strategieën voor duurzame monumentenzorg

Before After
Examples: Paushuize

Valorisation strategies used:

- Slimme compartimentering (trappenhuizen, garderoberuimten en delen van de zolderverdieping, die geen verblijfsfunctie hebben, worden niet verwarmd)
- Dakisolatie bij de zolder die wel een verblijffunctie heeft gekregen
- Isolatie begane grondvloer
- Weer in gebruik nemen van de binnenluiken op de bel-etage
- Achterzetrammen bij overige ruimten
- Luchtwarmtepomp
- Gebouwbeheersysteem
- Lage temperatuur verwarming (vloerverwarming/-koeling)
- Energiezuinig verlichtingsconcept
- Energiezuinige lift
- Waterbesparende sanitaire installaties
- Water- en energiebesparende keukeninstallaties

[Image of Paushuize building]
Valuation as evaluating and valorizing (Vatin)

• Evaluation: assessment of value
• Valorisation: production of value
  – Strategies for improvement
  – Improved label –
• Conflicting values?
  – the environment / climate change
  – history/ aesthetics/ identity
• Reconciliation of values
• Resistance against new demands
  – Regulation, users, energy performance, functionality
DuMo-assessment as boundary object

- Increasing divergence of building professions since 19th century
- Sociology of Professions (Gieryn)
  - Engineers
  - Art historians
- Reciprocal acknowledgement of different value registers
- Reconciliation of values
- Boundary object (Star & Griesemer)
Conclusion

• Historical buildings are champions of obduracy, not only because of the materials they consist of, but also supported by the historical, aesthetic and communal values that guide human actions with respect to them.

• Caring for historical buildings requires constant attention to vulnerable materials and construction.

• Valuation is a two-sided coin, where assessment and improvement continuously interact.

• If stakeholders acknowledge each others value registers, divergent professions and value systems can be reconciled in an integrated method, such as DuMo, which then subsequently serves as boundary object.
Thank you for your attention

Questions?

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