The campus of the future is a city: campus planning becomes urban planning

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The built environment can support innovation in technology campuses by using strategies that support the process of knowledge creation and diffusion in two ways. First, the design strategies of technology campuses can be used to -deliberately- accommodate in close proximity various users, whose activities and knowledge are close in relation. Second, the management strategies of technology campuses can be used to optimise such proximity while creating the opportunities for users to share activities and therefore, to strength the closeness of such relations.

Nowadays, universities, governments and industry increasingly build or expand technology campuses to encourage innovation for economic growth and development. With that assertion in mind, which has not been actually demonstrated to be true, technology campuses are built with similar characteristics: they are large-scale, clustered and (quasi)isolated built environments.

The campus of the future is a city: campus planning becomes urban planning

PROPOSITIONS
1. Students become tourists – Cherish the European academic heritage
2. The European campus is an enabler – or disabler – for Europe 2020
3. Campus planning is collective task of universities & cities

The "campus" is defined as the (collection of) buildings and land, used for university or university-related functions.

FUNCTIONAL definition of "campus"

• ACADEMIC: classrooms, library, offices, laboratories, lecture halls, ...
• RESIDENTIAL: student housing, hotels, ...
• RELATED BUSINESS: start-ups, incubators, industry, ...
• RETAIL & LEISURE: sports, restaurants, cafes, ...
• INFRASTRUCTURE

more info: http://managingtheuniversitycampus.nl
PROBLEM STATEMENT
The campus competes with the city – “new town development”

PROPOSITIONS
1. Students become tourists – Cherish the European academic heritage

Why study abroad?
Reasons (not) to go

<table>
<thead>
<tr>
<th>reasons to go</th>
<th>reasons not to go</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. academic reputation</td>
<td>1. academic reputation</td>
</tr>
<tr>
<td>- professors, programs</td>
<td>- English language skills of staff, workload</td>
</tr>
<tr>
<td>2. country / city / culture</td>
<td>2. city / culture</td>
</tr>
<tr>
<td>3. career development</td>
<td>3. social life</td>
</tr>
<tr>
<td>- employability, learning the language, personal/intercultural relations</td>
<td>- lack of organised events</td>
</tr>
<tr>
<td>4. university services</td>
<td>4. university services</td>
</tr>
<tr>
<td>5. social life</td>
<td>5. social life</td>
</tr>
<tr>
<td>- quality of life, friends, love</td>
<td>- lack of integration</td>
</tr>
</tbody>
</table>

source: European study choice platform “Study Portals” (2012)

UK research (HEDOF 2012) showed that 1/3 of all students admit to have rejected a university based on the (poor quality*) of the physical environment.

*That does not necessarily mean “buildings in bad condition”, but could also refer to an isolated campus or lack of social space.

more info: http://managingtheuniversitycampus.nl
Paradox:
- activities become more place-independent
- students & professors have choice
- ‘quality of place’ is more important than ever

“attract talent with quality of life”

The campus is a key asset in “the (global) Battle for Brains”

*good facilities can attract talent*
*bad facilities can chase them away…*

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The Campus as an enabler

Universities as growth engines – place matters.

Universities as urban growth engines

- Where technology campuses are located, innovation takes place
- Relation economic growth and presence (top-ranked) university

Performance Indicators - City + Campus models

- City + Campus
- City + Building
- Building + Campus
- Building + Building

Oldest 50 universities

<table>
<thead>
<tr>
<th>Country</th>
<th>Established</th>
</tr>
</thead>
<tbody>
<tr>
<td>Italy</td>
<td>925 years</td>
</tr>
<tr>
<td>United Kingdom</td>
<td>913 years</td>
</tr>
<tr>
<td>Spain</td>
<td>795 years</td>
</tr>
<tr>
<td>France</td>
<td>784 years</td>
</tr>
<tr>
<td>Portugal</td>
<td>725 years</td>
</tr>
<tr>
<td>Czech Republic</td>
<td>666 years</td>
</tr>
<tr>
<td>Poland</td>
<td>649 years</td>
</tr>
<tr>
<td>Austria</td>
<td>648 years</td>
</tr>
<tr>
<td>Germany</td>
<td>627 years</td>
</tr>
<tr>
<td>Croatia</td>
<td>617 years</td>
</tr>
<tr>
<td>Belgium</td>
<td>588 years</td>
</tr>
</tbody>
</table>

Source: Flavia Curvelo Magdaniel, PhD research “Technology campuses in cities”

more info: http://managingtheuniversitycampus.nl
The Campus as an enabler

European universities considered attractive places to live, work, be.

The Campus as a disabler

More than half of the university buildings from 1960s-1970s, in bad technical & functional state.

Performance Indicators: The age of the campus

<table>
<thead>
<tr>
<th></th>
<th>New &lt;10 years</th>
<th>Young 11-25 years</th>
<th>Established 26-50 years</th>
<th>Mature 51-100 years</th>
<th>Historic &gt;100 years</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heritage</td>
<td>4%</td>
<td>14%</td>
<td>19%</td>
<td>24%</td>
<td>39%</td>
</tr>
</tbody>
</table>

Performance Indicators: The condition of the campus

France

- One third of total GFA (m²) requires reinvestment higher than 40% of the replacement cost

Refurbishment cost as a % of Replacement cost for French universities’ GFA

<table>
<thead>
<tr>
<th>Percentage Replacement Cost</th>
<th>0% - 20%</th>
<th>20% - 40%</th>
<th>40% - 60%</th>
<th>60% - 80%</th>
<th>80% to 100%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Refurbishment Cost</td>
<td>33%</td>
<td>32%</td>
<td>21%</td>
<td>10%</td>
<td>4%</td>
</tr>
</tbody>
</table>

(re)investment costs: € 500 - € 4000 / m² gross floor area (price level 2011)

The Campus as a disabler

Low utilisation rates, high vacancy rates in offices, laboratories, classrooms.

more info: http://managingtheuniversitycampus.nl
**Performance Indicators - Sustainability of the campus**

- Energy efficiency of British university real estate, in DEC labels

<table>
<thead>
<tr>
<th>DEC</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
<th>G</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>5%</td>
<td>10%</td>
<td>15%</td>
<td>20%</td>
<td>25%</td>
<td>30%</td>
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<td>25%</td>
<td>30%</td>
<td>35%</td>
</tr>
</tbody>
</table>

- Academic GFA
- Residential GFA

**Performance Indicators - Campus Size**

- Total estimated GFA*: 136 mln m2
- Average GFA per student: 10 m2
- Max GFA per student: 21 m2 / student, Netherlands
- Min GFA per student: 2 m2 / student, Slovakia
- More spacious facilities: Northern Europe and Western Europe

<table>
<thead>
<tr>
<th>GFA m2 per student</th>
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</thead>
<tbody>
<tr>
<td>&lt;5</td>
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*GFA = gross floor area

**The European campus is a key asset in “the (global) Battle for Brains”**

- European campus as an enabler for Europe 2020
- European campus as a disabler for Europe 2020

1. Universities as economic growth engines: “place matters”
2. Europe’s knowledge economy accommodated in cultural heritage buildings
3. European “univer-cities” are considered attractive places to live, work, be...
4. > 50% from 1960s/70s
5. Bad functional / technical state: reinvestments required
6. Low utilization rates: high vacancy rates of offices, laboratories, classrooms
7. Campus 10-15% of total costs
8. Negatively affects “financial sustainability” of universities

**PROPOSITIONS**

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**the campus of the future**

“models for campus - city”

- 60s/70s campus
- science park
- campus + city
- science park in city
- gated community
- univer-city

more info: [http://managingtheuniversitycampus.nl](http://managingtheuniversitycampus.nl)
PROBLEM STATEMENT
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ACADEMIC: 
EDUCATION & RESEARCH

RETAIL & LEISURE
RELATED BUSINESS
RESIDENTIAL
INFRASTRUCTURE

PREFERRED MODEL
Network university → "UniverCity"

ACADEMIC: 
EDUCATION & RESEARCH

RETAIL & LEISURE
RELATED BUSINESS
RESIDENTIAL
INFRASTRUCTURE

Preferred model: “Network university”
- more institutions thoroughly mixed with urban fabric continued infusing in the urban domain with all campus space types (academic, housing, leisure etc.)
- (re)use heritage buildings
- focus on university-industry-community collaboration
- reduce footprint, shared use: increase density of people
- sharing resources → more quality for all stakeholders

CAMPUS IN THE CITY

Preferred model: “Network university”

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RESEARCH
1. Preserving cultural heritage of Europe
   redesign, re-use, better business models
2. Resource-efficient transformation of university buildings
3. Smart tools on campus: monitoring use patterns
4. Managing European campuses: stress test for universities
   (idea from European Commission’s DG R&D’s Robert-Jan Smits)
5. Planning European univer-cities – Interreg – joint proposal?

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Technology campuses |

Palo Alto, USA |
Eindhoven, NL |
Ithaca, USA |
Enschede, NL |
Cambridge, UK |
Daegu, KR |
Singapore, SG |
Tsukuba, JP |
Cambridge / Boston, USA |
Espoo / Helsinki, FI |
Hsinchu, TW |
Beijing, CN |
Sendai, JP |
Berlin, DE |
Shenzhen, CN |
Coimbra, PT |
Sittard-Geleen, NL |
Taichung, TW |
Amsterdam, NL |
Lisbon, PT |
Grenoble, FR |
Barcelona, ES |
Tainan, TW |
Aachen, DE |
Bremen, DE |
Cottbus, DE |
Kansai / Kyoto, JP |
Shanghai, CN |
Leiden, NL |
Perth, AU |
Côte d'Azur, FR |
Novosibirsk, RU |
Munich, DE |
The Triangle, USA |
Zurich, CH |
Delft, NL |
Guildford, UK |
2011 PhD thesis |
2014 European campus |
2015 Technology campuses in cities