Urban Integration of Warehouses in Metropolitan Areas –
The case of Paris (France) and the Randstad (The Netherlands)

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The location of logistics activities in metropolitan areas

Logistics sprawl: subject of a growing volume of research mostly in North American metropolitan areas Chicago, Atlanta, Los Angeles, Seattle, Toronto, Montreal

Few cases in Europe, except for Paris, despite a great heterogeneity in metropolitan structure
Metropolitan structure

- Two main types of urban structure: **monocentric** and **polycentric**
- Two metropolitan areas: Paris (France) and the Randstad (The Netherlands)
From Urban sprawl
To Logistics sprawl

- Dynamics of location of the warehouses
  - Logistics deconcentration
  - Logistics suburbanization
  - Logistics sprawl

FIGURE 1 Centrographic analysis of warehousing establishments, Atlanta, 1998-2008
Logistics sprawl
Measures

- Measure of logistics deconcentration and comparisons
  - Number of warehouses (CLAP, LISA databases) classified as NACE 52.1 “storage”
  - Centrographic method (mean distance of warehouses from center of gravity, dispersion ellipsis)
- Evolution:
  - For Paris: 2004 and 2012
  - For the Randstad: 2000 and 2013
Logistics deconcentration: Paris and the Randstad

<table>
<thead>
<tr>
<th>Agglomerations</th>
<th>2000/2004</th>
<th>2013/2012</th>
<th>Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flevoland (incl. The Hague)</td>
<td>17.7 km</td>
<td>21 km</td>
<td>+18.6%</td>
</tr>
<tr>
<td>Noord Holland (incl. Amsterdam)</td>
<td>21.6 km</td>
<td>19.6 km</td>
<td>−7.5%</td>
</tr>
<tr>
<td>Zuid Holland (incl. Rotterdam)</td>
<td>16.3 km</td>
<td>15.3 km</td>
<td>−6.2%</td>
</tr>
<tr>
<td>Utrecht</td>
<td>12.3 km</td>
<td>12.8 km</td>
<td>+4%</td>
</tr>
<tr>
<td>Paris</td>
<td>18.7 km</td>
<td>21.9 km</td>
<td>+17.1%</td>
</tr>
</tbody>
</table>
Warehouses urban integration
(1) Method – Typology

Integration of warehouses as a function of urban densities

<table>
<thead>
<tr>
<th>Profile</th>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Logistics in dense areas</td>
<td>High population density</td>
</tr>
<tr>
<td></td>
<td></td>
<td>High number of logistics establishments</td>
</tr>
<tr>
<td>B</td>
<td>Logistics in suburbs</td>
<td>Low population density</td>
</tr>
<tr>
<td></td>
<td></td>
<td>High number of logistics establishments</td>
</tr>
<tr>
<td>C</td>
<td>Residential zones</td>
<td>High population density</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Low number of logistics establishments</td>
</tr>
<tr>
<td>D</td>
<td>Rural zones</td>
<td>Low population density</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Low number of logistics establishments</td>
</tr>
</tbody>
</table>
Warehouses urban integration
(2) Results – Typology
## Warehouses urban integration

### (2) Results – Typology

<table>
<thead>
<tr>
<th>Dominant Profile (Municipalities)</th>
<th>The Randstad</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Paris</strong></td>
<td><strong>The Randstad</strong></td>
</tr>
<tr>
<td>2004/2000</td>
<td></td>
</tr>
<tr>
<td>- A: Logistics in dense areas</td>
<td>- B: Suburban logistics</td>
</tr>
<tr>
<td>- D: Rural</td>
<td>- C: Residential areas</td>
</tr>
<tr>
<td>2012/2013</td>
<td>- A: Logistics in dense areas</td>
</tr>
<tr>
<td>- A: Logistics in dense areas</td>
<td>- D: Rural</td>
</tr>
<tr>
<td>- D: Rural</td>
<td></td>
</tr>
</tbody>
</table>

### Graphs

- **2004**
  - A: Logistics in dense areas
  - D: Rural
- **2012**
  - A: Logistics in dense areas
  - D: Rural
Forms of logistics urbanization

- **Logistics suburbanization**
  - Road accessibility
  - Land prices
  - Main transportation infrastructure into suburbs
  - Monocentric metropolitan areas

- **Logistics intensification**
  - Urban center proximity (clusters economies)
  - Main transportation infrastructure into the dense part of the agglomeration
  - Polycentric metropolitan areas
Logistics urbanization issues
Challenges for urban planning

- Logistics decline in city center as a consequence of the logistics suburbanization
- Increasing distance and increasing emission of CO2
- Congestion
- Metropolitan fragmentation
The circle of life of the logistics activities in the metropolitan areas

Logistics decline into city center of metropolitan areas?
- Logistics revitalization into city center: policies of urban logistics
- Hybrid form of logistics urbanization or superimposition of logistics dynamics
Conclusion

- Most of previous studies were made in the case of **monocentric cities**, i.e. cities with dense central areas and highly developed suburbs (i.e. Paris).

- By analyzing changes in the location of warehouses in the **polycentric** Randstad region, we highlighted the existence of another “model”: **Logistics intensification**.

- In the cases of the Randstad and Paris, the intensification of logistics reflects a polycentric metropolitan structure, and logistics suburbanization a monocentric metropolitan one.

- The different forms of logistic urbanization reveal a **variable level of warehouse integration** in different metropolitan structures.

- More case studies would be needed to confirm a more regular pattern of logistics decentralization b/w monocentric and polycentric areas.
Acknowledgement

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Thank you for your attention

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