A comparative study of visitor’s visual preferences in a Dutch and German agricultural landscape

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Winterswijk  

Märkische Schweiz
Introduction

- Agricultural landscapes deliver Cultural Ecosystem Services (recreation, inspiration, tourism)
- Many studies on landscape preferences → context specific

Aim:
- Compare two regions → common study design
- Set of generic landscape characteristics (= attributes)
- Estimate relative preference in agricultural landscapes among visitors
- Influence of socio-cultural background?
The Case Study Regions

Winterswijk

Märkische Schweiz
The Case Study Regions

Winterswijk
- “Kulisse landscape” with a lot of hedgerows and treelines
- Low ice-pushed ridges with numerous lowland brooks
- Small and dispersed agricultural plots
- Well developed tourism
- Retirees from rural/peri-urban areas → overnight stays
- Visitors not familiar with landscape

Märkische Schweiz
- Fragmented, mosaic-like, semi-open landscape
- Hilly terrain
- Lakes, forest, farmland
- Large farm sizes (229 ha per farm)
- Less developed tourism
- High-educated urban dwellers from Berlin → daytrips
- Visitors very familiar with landscape
The Research Design

Stated preference analysis

• Trade-off analysis between the visual value of different landscape attributes (Visual Choice Experiment)

• Development of photorealistic representations of landscape choice cards

• Differentiation of **4 attributes in 3 levels** (high, medium, low) respectively

  2 (available / non-available):

  • Grazing livestock
  • Diversity of agricultural land use
  • Linear green elements
  • Point green elements
Visualizations

Base landscape
Visualizations
Visualizations
Visualizations
Results

Preferences for landscape attributes

• General high preference for high abundance of all kind of landscape attributes
• But also significant differences between them
• Different ranking of preference between CSAs

Table 2. Multinomial logit model estimations and attribute ranking.

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Level</th>
<th>Winterswijk</th>
<th></th>
<th>Märkische Schweiz</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Coefficient</td>
<td>Rank</td>
<td>Coefficient</td>
<td>Rank</td>
</tr>
<tr>
<td>Livestock</td>
<td>present</td>
<td>1.3***</td>
<td>3</td>
<td>0.8***</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>medium</td>
<td>0.3***</td>
<td>6</td>
<td>0.1</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>high</td>
<td>0.6***</td>
<td>5</td>
<td>1.1***</td>
<td>4</td>
</tr>
<tr>
<td>Agri LU diversity</td>
<td>medium</td>
<td>0.2***</td>
<td>7</td>
<td>1.3***</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>high</td>
<td>0.7***</td>
<td>4</td>
<td>2.2***</td>
<td>1</td>
</tr>
<tr>
<td>Linear elements</td>
<td>medium</td>
<td>1.6***</td>
<td>2</td>
<td>0.2*</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>high</td>
<td>2.1***</td>
<td>1</td>
<td>1.4***</td>
<td>2</td>
</tr>
<tr>
<td>Point elements</td>
<td>medium</td>
<td>0.2***</td>
<td>7</td>
<td>1.3***</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>high</td>
<td>0.7***</td>
<td>4</td>
<td>2.2***</td>
<td>1</td>
</tr>
</tbody>
</table>

→ Higher coefficients correspond to higher preference.
Results

Influence of socio-cultural background variables

- Full model → effect of variables on preference for landscape attribute levels
- Restricted model: backward stepwise regression → just significant influences ($p<0.10$)

Table 3. Summary of Random Parameter Logit Model (restricted), showing the influence of socio-cultural variables on preferences.

<table>
<thead>
<tr>
<th>Socio-cultural variable</th>
<th>Preference</th>
<th>Attribute</th>
<th>Preference</th>
<th>Attribute</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wintersweijk</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Urban</td>
<td>-</td>
<td>High Diversity</td>
<td>-</td>
<td>Medium Lin. Elements</td>
</tr>
<tr>
<td></td>
<td>-</td>
<td>Medium Lin. Elements</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Familiarity</td>
<td></td>
<td></td>
<td>- - -</td>
<td>Medium Lin. Elements</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>- -</td>
<td>High Lin. Elements</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>+ +</td>
<td>Medium Point Elements</td>
</tr>
<tr>
<td>Cyclist/Hiker</td>
<td>- -</td>
<td>High Point Elements</td>
<td>-</td>
<td>High Lin. Elements</td>
</tr>
<tr>
<td>Relation to agriculture</td>
<td>+ + +</td>
<td>Livestock</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Education</td>
<td>+ +</td>
<td>Medium Diversity</td>
<td>+ +</td>
<td>Medium Diversity</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>+ + +</td>
<td>High Diversity</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>+ +</td>
<td>Medium Point Elements</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>+</td>
<td>High Point Elements</td>
</tr>
<tr>
<td>Märkische Schweiz</td>
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<td></td>
</tr>
</tbody>
</table>

$\pm$, $++, -, +++/-$ → Significance at 10%, 5%, 1% level
Discussion

• Independent from landscape context:
  – Highly educated visitors have higher preference for the most preferred landscape attributes (point in MS, linear in WW)
    → Role of awareness and perception of cultural landscape features
  – Intensification, homogenization and vanishing of wooden elements → negative impact on preference

• Explanation for differences in preferences
  – Different cultural landscapes („Kulisse landscape“ with cattle vs. mosaic like landscape with natural ponds)
  – Different familiarity with the landscape
Conclusions

• Relationship between landscape attributes and preferences is largely determined by landscape context characteristics

• More comparative studies needed using same study design/generic set of landscape attributes

→ disentangle the role of local context and generic patterns

Thank you!

Papers:
- van Zanten et al. (in review) A comparative study of visitor’s visual preferences in a Dutch and German agricultural landscape. Land Use Policy.
- Haefner et al. (in preparation) A visual choice experiment on agricultural landscape preferences from a user perspective in the Märkische Schweiz, Germany. JEPM.