An Experimental Approach to Multimodality

Investigating the Interactions between Musical and Architectural Styles in Aesthetic Perception

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Overview

1. Results of a study series on intermodal interactions between styles
2. Relevance for multimodality research
3. Style in multimodal artefacts
Cross-modal interactions

• IUAV Venice (arts and design university)
• Cognitive psychology group
• Experimental aesthetics
• Part of a larger project on the Experimental aesthetics of style
Experimental approach to style

Assumptions

- Style: exists in various areas of culture and society
- Style as binding link between modes in multimodal texts

Operationalization

- Style perception can be measured via ratings on semantic scales
- Perceptual dimensions of style can be experimentally manipulated

Current limitations

- Not multimodal texts, but combinations of stimuli in different modes
- BUT: Connection between modes was given via stylistic properties
Study I: Online study

- Subjects were shown a short video (25 sec.) and asked for ratings on semantic scales.
- On the next page, they were asked if they heard the music. Those who answered "No" were excluded.
- 4 conditions / videos
- n = 626 (501 valid answers)
Study I

• Four videos:
  – Baroque architecture with baroque music
  – Baroque architecture with modern music
  – Modern architecture with baroque music
  – Modern architecture with modern music
Study I

• Four videos:
  – Baroque architecture with baroque music
  – Baroque architecture with modern music
  – Modern architecture with baroque music
  – Modern architecture with modern music

= intermodally congruent

= intermodally incongruent
Study I: Online study

Ratings of the architecture were elicited; music was not mentioned.

“Do you like the style of the buildings in the video?”

| not at all | – | very much |

“Please judge the style of the buildings on the following dimensions:”

<p>| introverted | – | extraverted |
| unbalanced  | – | balanced    |
| bright      | – | dark        |
| incoherent  | – | coherent    |
| grave       | – | agitated    |
| modest      | – | bold        |
| reason      | – | feeling     |
| complete    | – | incomplete  |</p>
<table>
<thead>
<tr>
<th>STYLE</th>
<th>STIMULUS</th>
<th>BUILDING, ARCHITECT</th>
<th>IMAGE URL, COPYRIGHT HOLDER, LICENSE, LICENSE URL</th>
</tr>
</thead>
</table>
| A1    | San Carlo alle Quattro Fontane, Rome, Italy  
Francesco Borromini | http://commons.wikimedia.org/wiki/File:SCarloQuattroFontaneRome2.jpg  
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http://creativecommons.org/licenses/by-sa/3.0/ |
| A2    | Einsiedeln Abbey, Einsiedeln, Switzerland  
Caspar Moosbruger | http://commons.wikimedia.org/wiki/File:Kloster_Einsiedeln_Frontansicht.jpg  
© Hofec  
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| A3    | Palais du Luxembourg, Paris, France  
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| A4    | Theatinerkirche, Munich, Germany  
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http://creativecommons.org/licenses/by/3.0/ |
| A5    | Stift Melk, Melk, Austria  
© User:Fb78 (commons.wikimedia.org)  
Creative Commons CC BY-SA 2.0 DE  
http://creativecommons.org/licenses/by-nc-nd/2.0 |
| M1    | Georg Philipp Telemann, Concerto grosso in D major, TWV 54:D3  
(1716)  
1. Intrada – Grave  
Trevor Pinnock / The English Concert  
(0:00 to 1:12) | http://www.youtube.com/watch?v=uz80V-YWEnc  
© Deutsche Grammophon. All rights reserved |
<table>
<thead>
<tr>
<th>Page</th>
<th>Image</th>
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<th>URL</th>
<th>License</th>
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| A6   | ![Image](https://commons.wikimedia.org/wiki/File:SAS_Royal_Hotel_Copenhagen,_1955-1960.jpg) | SAS Royal Hotel, Copenhagen, Denmark  
© seier+seier  
Creative Commons CC BY 2.0 | http://creativecommons.org/licenses/by/2.0/ |
| A7   | ![Image](https://commons.wikimedia.org/wiki/File:AaltoVah-01.jpg) | Aalto-Hochhaus, Bremen, Germany  
© Jürgen Howaldt  
Creative Commons CC BY-SA 2.0 DE | http://creativecommons.org/licenses/by-sa/2.0/de/ |
| A8   | ![Image](https://commons.wikimedia.org/wiki/File:Berlin_C_Legien_Trachtenbrodstr_26.jpg) | Wohnstadt Carl Legien, Berlin, Germany  
© Doris Antony  
Creative Commons CC BY-SA 3.0 | http://creativecommons.org/licenses/by-sa/3.0/ |
| A9   | ![Image](https://commons.wikimedia.org/wiki/File:Georgia_pacific_building_atlanta_01.jpg) | Georgia Pacific Building, Atlanta, Georgia, USA  
*Skidmore, Owings & Merrill* | http://commons.wikimedia.org/wiki/File:Georgia_pacific_building_atlanta_01.jpg  
© Ashley Moore  
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| A10  | ![Image](https://commons.wikimedia.org/wiki/File:Neue_Nationalgalerie_Berlin.jpg) | Neue Nationalgalerie, Berlin, Germany  
© Manfred Brückels  
Creative Commons CC BY-SA 3.0 | http://creativecommons.org/licenses/by-sa/3.0/ |
| M2   | ![Image](https://www.youtube.com/watch?v=5SUpWrsValg) | Soundtrack to the film *Koyaanisqatsi*  
*Philip Glass* (0:00 to 1:12) | http://www.youtube.com/watch?v=5SUpWrsValg  
© Philip Glass. All rights reserved |
Stylistic interactions

• Sliders movable by mouse (values from 0 to 101; preset to 50)

• For 8 from 9 scales: effect for “architecture”
  > the arch. styles were differently evaluated on all scales (except “grave – agitated”)

• No main effect for “music”
  > music did not influence the ratings (which were, after all, given for the architecture)

• BUT: two of the nine scales showed interaction effects
Study I: $2 \times 2$ ANOVA (architecture $\times$ music)

*baroque music: blue, modern music: red*
Study II

- Participants: 75 students from a design and arts faculty in Italy
- Same stimuli
- Same scales (with added Italian translations)
- Each participant judged both architectural styles (in randomized order)
  - “architecture” within-subjects factor
  - statistical advantages (individual differences factored out) 
    but: carry-over effects (from first to second video) possible
Study II

“Do you like the style of the buildings in the video?”

not at all  –  very much

“Please judge the style on the following dimensions:”

introverted  –  extraverted
unbalanced    –  balanced
bright        –  dark
incoherent    –  coherent
grave         –  agitated
modest        –  bold
reason        –  feeling
complete      –  incomplete
Study II: 2×2 ANOVA (architecture × music)

*baroque music: blue, modern music: red*
Study II: 2×2 ANOVA (architecture × music)

*baroque music: blue, modern music: red*
Study II: 2×2 ANOVA (architecture × music)

*baroque music: blue, modern music: red*
<table>
<thead>
<tr>
<th></th>
<th>Architecture</th>
<th>Music</th>
<th>Architecture × Music</th>
</tr>
</thead>
<tbody>
<tr>
<td>aesthetic preference / liking</td>
<td>baroque: preferred</td>
<td></td>
<td></td>
</tr>
<tr>
<td>introverted – extraverted</td>
<td>baroque: extraverted</td>
<td></td>
<td></td>
</tr>
<tr>
<td>unbalanced – balanced</td>
<td>baroque: balanced</td>
<td></td>
<td>intermodally congruent: balanced</td>
</tr>
<tr>
<td>bright – dark</td>
<td>modern: dark</td>
<td></td>
<td></td>
</tr>
<tr>
<td>incoherent – coherent</td>
<td>baroque: coherent</td>
<td></td>
<td>Intermodally congruent: coherent</td>
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<tr>
<td>grave – agitated</td>
<td>baroque: bold</td>
<td></td>
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<tr>
<td>modest – bold</td>
<td>baroque: bold</td>
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<tr>
<td>reason – feeling</td>
<td>baroque: feeling</td>
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<td></td>
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<tr>
<td>complete – incomplete</td>
<td>modern: incomplete</td>
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## Study II

<table>
<thead>
<tr>
<th></th>
<th>Architecture</th>
<th>Music</th>
<th>Architecture × Music</th>
</tr>
</thead>
<tbody>
<tr>
<td>aesthetic preference / liking</td>
<td>modern: preferred</td>
<td></td>
<td></td>
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<tr>
<td>introverted – extraverted</td>
<td>baroque: <em>extraverted</em></td>
<td>baroque: <em>extraverted</em></td>
<td>intermodally congruent: <em>extraverted</em></td>
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<tr>
<td>unbalanced – balanced</td>
<td></td>
<td></td>
<td>intermodally congruent: <em>balanced</em></td>
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<tr>
<td>bright – dark</td>
<td>modern: <em>dark</em></td>
<td>modern: <em>dark</em></td>
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<tr>
<td>incoherent – coherent</td>
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<td></td>
<td>intermodally congruent: <em>coherent</em></td>
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<tr>
<td>grave – agitated</td>
<td></td>
<td></td>
<td>intermodally congruent: <em>agitated</em></td>
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<tr>
<td>modest – bold</td>
<td>baroque: <em>bold</em></td>
<td></td>
<td>intermodally congruent: <em>bold</em></td>
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<tr>
<td>reason – feeling</td>
<td>baroque: <em>feeling</em></td>
<td></td>
<td></td>
</tr>
<tr>
<td>complete – incomplete</td>
<td></td>
<td></td>
<td>intermodal congruence: <em>complete</em></td>
</tr>
</tbody>
</table>
### Study I + II

<table>
<thead>
<tr>
<th></th>
<th>Architecture</th>
<th>Music</th>
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<tbody>
<tr>
<td>aesthetic preference /</td>
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<td>liking</td>
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<td>introverted – extraverted</td>
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<td>baroque: extraverted</td>
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<td>reason – feeling</td>
<td></td>
<td>baroque: feeling</td>
<td></td>
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<tr>
<td>complete – incomplete</td>
<td></td>
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<td>(?)</td>
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</tbody>
</table>
Results for style research

• Some scales are reliably connected with styles
• Proves the existence of relations between styles similarly categorized across modalities
• Intermodal categorization terms such as “baroque” and “modern” seem not to be arbitrary
Results for Multimodality Research

• Stylistic influences across perceptual and semiotic modalities proven
• Cognitive aspects: perception and judgment of style does not function separately in mode combinations
• We excepted an influence of the music for scales which are easily applied to music
  > Results are ambiguous
• However, some scales are unconsciously used to evaluate the relation between modalities (contrary to the task setting)
• In conventional experiment setting, as well as in (uncontrolled) online study
  > Probably automatic and unconscious task
Limitations

- Results only for a carry-over task
- Interactions between other layers (form, content, discourse)
Location in multimodality research (tentative)

Sign processes combining modes

- Multimodal text
- Non-textual combinations
Textual layer model
(simplified ...)

Textual layers

Form
- Segmentability
- Spatial relations
- Time relations
- Combination rules

Content
- Discourse referents
- Propositions
- Inferences

Discourse
- Rhetorical structure
- Narrativity
- Intertextuality
- Context and function

Style
- Choice-related aspects
- Connect artefacts with different function / content
Layers in multimodal texts

Text with modalities $M_1, ..., M_n$

Unimodal structure for $M_1, ..., M_n$

All interactions $I(M_i, ..., M_j)$ for $i, j \in n; i \neq j$

Holistic
Style in multimodal texts

Text with modalities $M_1, ..., M_n$

Unimodal style for $M_1, ..., M_n$

Style

All stylistic interactions $I(M_i, ..., M_j)$
for $i, j \in n; i \neq j$

Holistic aspects of style
Bibliography

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