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 coherent

= intermodally incoherent
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:”

introverted – extraverted
unbalanced – balanced
bright – dark
incoherent – coherent
grave – agitated
modest – bold
reason – feeling
complete – incomplete
<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    | [Image]  | San Carlo alle Quattro Fontane, Rome, Italy 
Francesco Borromini | http://commons.wikimedia.org/wiki/File:SCarloQuattroFontaneRome2.jpg
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Caspar Moosbrugger | http://commons.wikimedia.org/wiki/File:Kloster_Einsiedeln_Frontansicht.jpg
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| A3    | [Image]  | Palais du Luxembourg, Paris, France 
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http://creativecommons.org/licenses/by-nc-nd/2.0 |
| M1    | [Image]  | 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 |
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| **A6** | SAS Royal Hotel, Copenhagen, Denmark  
*Arne Jacobsen* | [Link](http://commons.wikimedia.org/wiki/File:SAS_Royal_Hotel_Copenhagen_1955-1960.jpg)  
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| **A7** | Aalto-Hochhaus, Bremen, Germany  
*Alvar Aalto* | [Link](http://commons.wikimedia.org/wiki/File:AaltoVahr-01.jpg)  
© Jürgen Howaldt  
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| **A8** | Wohnstadt Carl Legien, Berlin, Germany  
*Bruno Taut* | [Link](http://commons.wikimedia.org/wiki/File:Berlin_C_Legien_Trachtenbrotstr_26.jpg)  
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| **A9** | Georgia Pacific Building, Atlanta, Georgia, USA  
*Skidmore, Owings & Merrill* | [Link](http://commons.wikimedia.org/wiki/File:Georgia_pacific_building_atlanta_01.jpg)  
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| **A10** | Neue Nationalgalerie, Berlin, Germany  
*Ludwig Mies van der Rohe* | [Link](http://commons.wikimedia.org/wiki/File:Neue_Nationalgalerie_Berlin.jpg)  
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| **M2** | Soundtrack to the film *Koyaanisqatsi*  
*Philip Glass* (0:00 to 1:12) | [Link](http://www.youtube.com/watch?v=5SUpWrSValq)  
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Baroque architecture, baroque music

Intermodally coherent
Modern architecture, baroque music

Intermodally incoherent
Baroque architecture, modern music

Intermodally incoherent
Modern architecture, modern music

Intermodally coherent
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: 2×2 ANOVA (architecture × music)

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

• 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: 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*
## Study I

<table>
<thead>
<tr>
<th></th>
<th>Architecture</th>
<th>Music</th>
<th>Architecture × Music</th>
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</thead>
<tbody>
<tr>
<td>aesthetic preference /</td>
<td>baroque:</td>
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<tr>
<td>liking</td>
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<td>grave – agitated</td>
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<td>modest – bold</td>
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<td>reason – feeling</td>
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<td>complete – incomplete</td>
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## Study II

<table>
<thead>
<tr>
<th>Aesthetic Preference / Liking</th>
<th>Architecture</th>
<th>Music</th>
<th>Architecture × Music</th>
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<tbody>
<tr>
<td>Modern: preferred</td>
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<tr>
<td>Introverted – Extraverted</td>
<td>Baroque: extraverted</td>
<td>Baroque: extraverted</td>
<td>Intermodal similarity: extraverted</td>
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<tr>
<td>Unbalanced – Balanced</td>
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<tr>
<td>Bright – Dark</td>
<td>Modern: dark</td>
<td>Modern: dark</td>
<td>Intermodal similarity: coherent</td>
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<td>Incoherent – Coherent</td>
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<td>Grave – Agitated</td>
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<td>Modest – Bold</td>
<td>Baroque: bold</td>
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<td>Reason – Feeling</td>
<td>Baroque: feeling</td>
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<td>Complete – Incomplete</td>
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<td>intermodal similarity: balanced</td>
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<td>bright – dark</td>
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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 $M_1, \ldots, M_n$

Unimodal structure for $M_1, \ldots, M_n$

All interactions $I(M_i, \ldots, M_j)$

for $i, j \in n; i \neq j$

Holistic
Style in multimodal texts

Text with modalities $M_1, \ldots, M_n$

- **Unimodal style** for $M_1, \ldots, M_n$
- **All stylistic interactions** $I(M_i, \ldots, M_j)$ for $i, j \in n; i \neq j$
- **Holistic aspects of style**
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