Cross-modal mappings and audiovisual feedback

Nick Collins

University of Sussex
Summary

- Experiments in audiovisual combination and data flow
- Challenges of audiovisual mapping
Theoretical backdrop

- Film music vs music film
- 1-1 mappings, mickey-mousing, synchresis
- Meanings in parallel, audiovisual objects
Problems with mapping

- Maps between domains are usually not homomorphisms; not structure-preserving
- Sonification/visualisation from data, audio driving visuals or vice versa; all examples of potentially incompatible spaces
Psychological backdrop

- Synaesthesia is personal, not universal
- Audiovisual integration, attentional resources
- Coping with multiple objects in counterpoint
Some successful close audiovisual integrations?

- Coldcut/Hex *Timber* (1997)
- Autechre/Alex Rutterford *Gantz Graf* (2002)
- chdh’s audiovisual objects
Now...

- Some unsuccessful relations?
- Case studies from experiments
Case 1: PhotoNoise iPad app

- Image -> sound via pixel data
- Multi-touch -> RGB + intensity -> nonlinear oscillators
- Quirky, noisy, more of an esoteric instrument than deep in itself
Audiovisual feedback

- Round a processing chain incorporating both audio and video material and its analysis
- E.g., audio input -> audio analysis -> drive generative graphics -> video analysis -> drive audio synthesis -> audio input ...
- Processing delays
Case 2: klipp av (2002-2009)
Audiovisual performance score
Case 3: iterative cross-convolution
With onset detection
Case 4: audiovisual concatenative synthesis

- Concatenative synthesis = feature-matched substitution of an input from a database
- Usually audio or visual alone.
- Has been explored where video is brought along for free (Grierson and Casey 2007, Scrambled Hackz et al.)
- Can do both at once = audio and video feature data muddle
Case 5: auto aligned video

- Take an existing music work
- Extract audio features -> drive frame by frame rendering of generative graphics
- End up with close correlation
- Tool chain: SCMiR->Processing->ffmpeg
What is coming out of this?

- 1-1 mapping might be simple, but it is perceptually strong!
- Need for audiovisual objects as coherent entities
- Details of many mappings lost (can be other reasons to keep on regardless, e.g. improvisation in complexity)
Conclusions

- Considered some of the challenges of correlating audio and visual
- Discussed some projects of varying effectiveness
- Details often lost when mapping between modalities
Think you for lastening

http://www.sussex.ac.uk/Users/nc81/researchav.html


http://www.sussex.ac.uk/Users/nc81/iphone.html#PhotoNoise