

Socio-psychologic cognition of spatial sound and its application in interactive scenarios

Johanna GAMPE

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and applied aesthetics



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Motivation and Goals

- implementing the perception and socio-psychological cognition of spatial sound in virtual scenarios
- testing virtual sound and embodied interaction for scenic sound
- extending audio plays by the interlink of narration and interaction
- applying technologies for audio augmented environments and tracking technology to artistic expression

Assumptions

- Issues of spatial sound can be researched by the use of scenic application (localization, perspectives, immersion, environment)
- Aspects of socio-psychology are likely to be incorporated in virtual sound environments and sonic scenarios (back sphere, emotivity, proxemics, modalities of intimacy)



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Idea and Preparation

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- **Interlink of narration and interaction**
- **Split up of a scenario into different dimensions**

- adapting a scene from N Robert Niemanns "Willkommen neue Träume": four passengers in a train having small talk
- extracting dimensions:
actual conversations – thoughts – actions
- re-writing the characters' thoughts: neutral point-of-view
- choosing actions and reactions that allow to understand the whole scenario

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Interaction
Design **SI**

Recording and montage

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Sounds

- Helene – a resolute woman in the fifties, chatty and demanding
- Rudolf – her husband, asthmatic and introverted
- Lieutenant – tough with a pronounced military attitude
- Lyricist – courteous, curious, inhibited
- Narrator – neutral, soft and reticent
- Ambiances – Solar Eclipse from Barry Truax + train interior driving
– departing and arriving trains + sibilant sound from Kurt Schwitters' „Ursonate“ + rumbling of thunder
– train-interior-mix from my journey there with people talking
– the same recording but mixing pure train sounds

Mixes

- Mix 1 conversation, chaotic order, action sounds (eating, drinking, smoking) and paraverbal sounds (snoring, coughing)
- Mix 2 conversation + narrator
- Mix 3 ambiances

Scenario description

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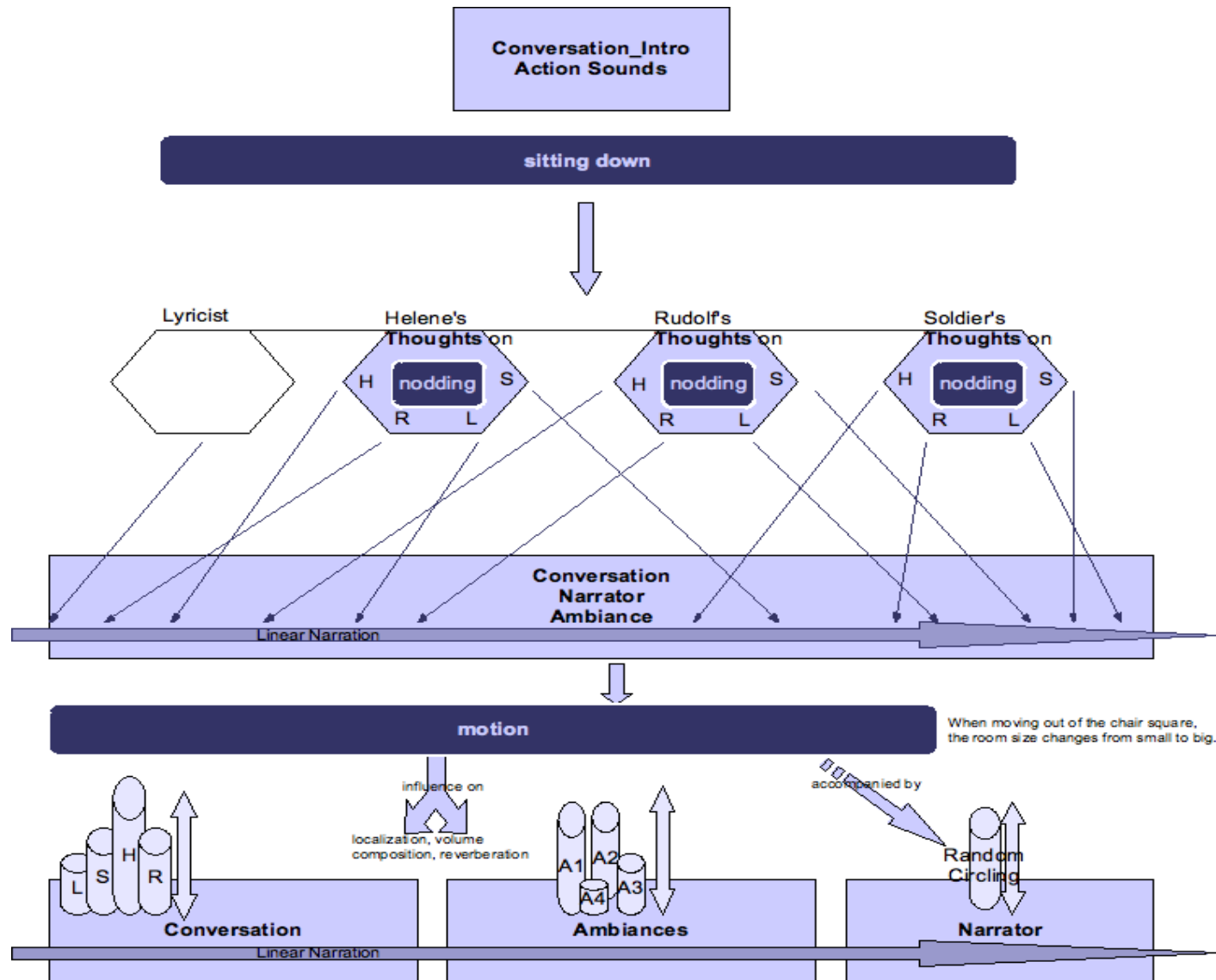


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Social-psychology ...

- traditions of perception: visual and "frontal" primacy as a scene
- back sphere theory: loss of control and passivity --> emotivity
- proxemics: spacial spheres, connoted by social and cultural habits
- equilibrium theory of intimacy: balancing modalities of intimacy like distance, glance, talking
- body and voice: congruence by paraverbalias, vocalizations, associations, etc.

... and Sound

- back sphere characterized by higher emotivity to outstanding sound
- higher emotivity can be balanced via distance and body attributes:
- loudness, reverbs, attitude of acting

→ dramaturgical ideas, artistic intention, listening attention

→ examples: attitude of narrator, location of thoughts, listening to conversations from different

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Intuitive Movements and Tracking

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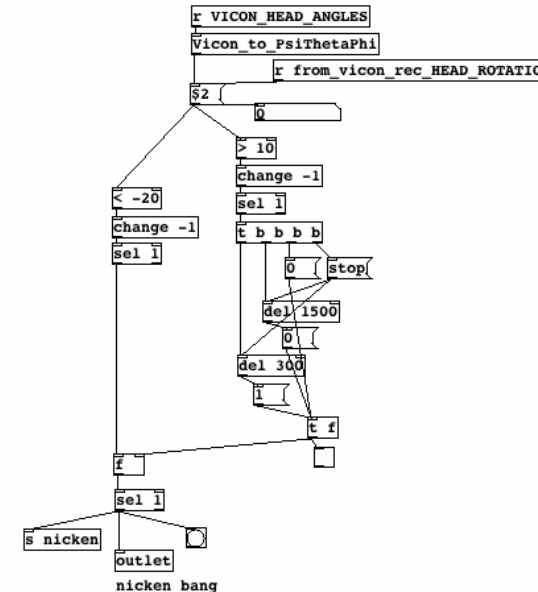
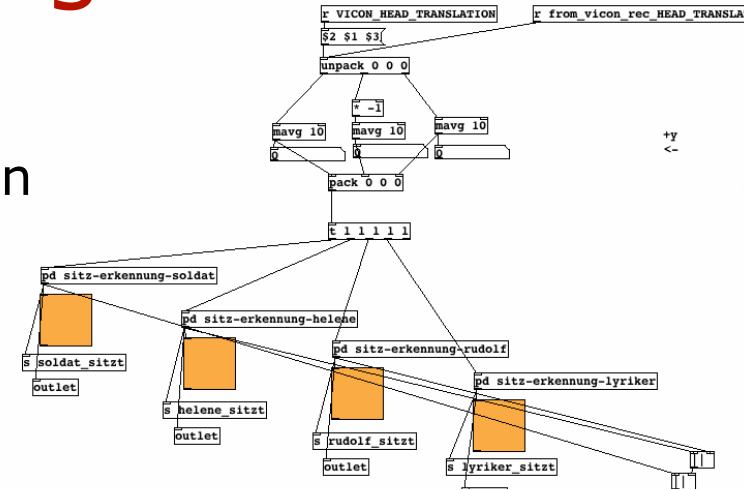
Intuitive movements with
internalized course of motion
and experiences

- cues
- virtual perception
(spatial sound) +
sensual perception
(embodied
interaction)

- sitting down
- nodding

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Binaural Rendering and Programing

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sound quality

- **aesthetics** -

**computational
power**

→ ambisonics order

→ sample rate

→ tracking system

→ spatialized

→ non-spatialized

→ acoustic options

→ one notebook
(macbook pro)



convincing immersion



artistic options and freedom



practicability, mobility, expense

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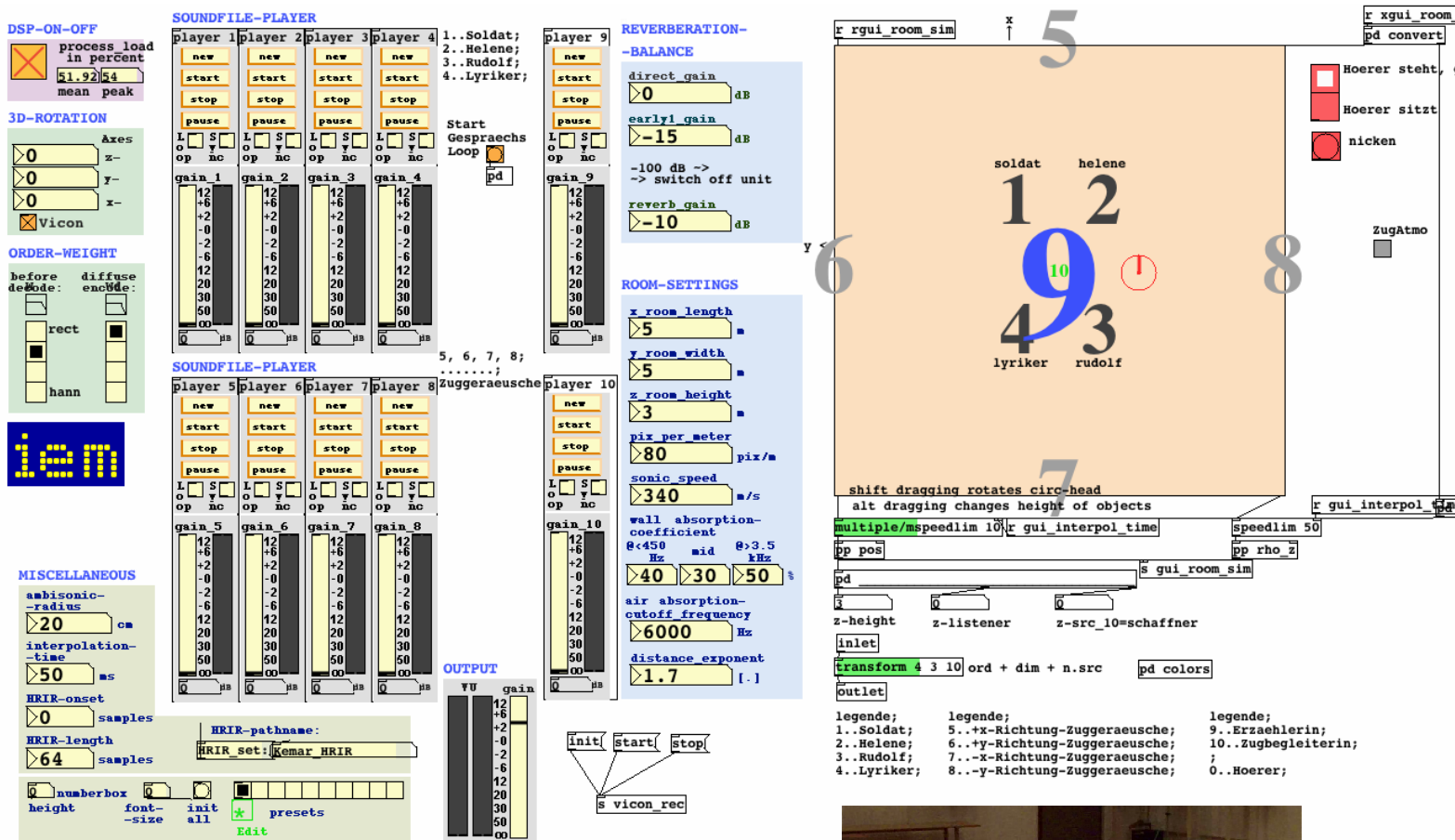
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Questionnaires

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Introduction – Test nodding – Installation – Questionary

- spontaneous impression?
- visual aids / chairs?
- localization / thoughts?
- voices / thoughts?
- nodding (as interactive element)?
- exploration / curiosity / main motivation to move on?
- action solely presented by a narrator?
- narrators attitude?
- following narrator?
- experiment with different mixes of ambiances?
- further development of scenario?
- headphones?
- lighting?
- irritations, problems?

Questionnaires

- evaluation

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- impression: captivation, interest, confusion at the beginning
- frame aspects: chairs visual aid, lighting support, headphones rather fine
- thoughts/voices pleasant (6) and exciting (2), but difficulties in localization
- nodding was mainly functioning, but distracting as soon as it didn't work (capturing differences, individual differences, one missing initial test nodding)
- narrator: neutral/pleasant, less exciting but helpful to concentrate on the story
- ambiances: contrast, mostly pleasant/exciting, few difficult/irritating
- problems/irritations: missing transitions (time constraints), system mushes (computational power limits), nodding
- driving motivation: curiosity on different installation levels/overall picture

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Résumé

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- **socio-psychology of space:** front and back sphere have a different ground tone, the kind of sound is relevant as well as its application, certain aspects of socio-psychology can be transposed into sound and into dramatic technique
- **virtual sound environment:** all components need to work i.e. quality of sound material, transitions, capturing, decor
- **further research:** interaction with virtual characters, directivity not implemented so far, enrichment of the scenario, degree of body implication
- **main conclusions of interactive scenarios**
 - interesting for listener (f.ex. putting together the global picture),
 - artist (f.ex. mixing up realistic sensation and artistic creation) and
 - researcher (f.ex. spatial sound perception can be more easily anchored)

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