

# **Sonic Interventions: Understanding and Extending the Domestic Soundscape**

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# Overview and motivation

- “**How sound of all kinds is managed in the home**”
- First holistic study about the sounds in home environment
  - Meaning
  - Role
  - Importance
- Research has been done in
  - Office soundscape
  - Mobile soundscape
  - Psychoacoustic field
  - This paper concentrates in **domestic soundscape**
- Very little has been applied to the field of HCI
- Sketching the outlines for a framework, a design space

# Method

- Purposeful sampling:
  - Seven households
  - Wide range of sonic practices and experiences
  - Dwelling type
    - apartment
    - single detached house
    - duplex house
    - row house
  - Family type
- Phases:
  - Home visit 1:
    - Walking tour (*Sound walk*)
    - Deployment of small recorders
  - Households complete their personal recordings (*sound diary*)
  - Home visit 2:
    - Individual interviews and explanations of the recordings
  - Brainstorming session

# Findings

- In four categories
  - Objective and subjective soundscape
  - Functions and meanings of sound
  - Socially managed soundscape
  - Recorded soundscape

# Objective and subjective soundscape

- Different sources

- Bi-product noises (electrical hum, washing machine, keys in lock...)
- Family members (people and pets)
  - Verbal (talking, shouting, calling, crying...)
  - Non verbal (walking, jumping...)
- Media (Tv and other home entertainment)
- Alarms
- Musical instruments
- Sonic ornamentation (wind chimes, fountains...)
- House noises (cracking stairs...)
- External noises
- Constant change in noise level and type
  - Day vs night
  - Peaks
  - Temporal / spatial distribution



**-When children visit and play**

**Kitchen loud in the morning, living room when TV is being watched**

# Objective and subjective soundscape

- People filter the domestic sounds all the time (psycho-acoustics)
- Different levels of sonic attention
- Washing machine / children jumping on the bed upstairs
- Most sounds are never noticed on conscious level
  - Revealed in playbacks of recordings
  - Noticed when annoying
    - Thresholds and certain frequencies
    - Vacuum cleaner can not be backgrounded
    - Dripping tap

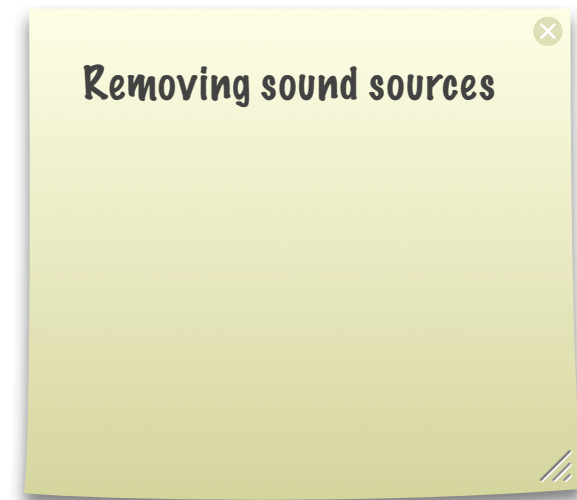


# Meanings and functions of soundscape

- Significance
  - Cooking: kickstarts the appetite / means domestic labour
- Time of the day
  - Newspaper being delivered at night
  - Children returning from school
- Occurrences in remote locations
  - Pitches of car engines to know who left or arrived
- Forthcoming events
  - Sound of coffee machine
- Layers and levels of meanings of sounds
  - Contextual
  - Personal

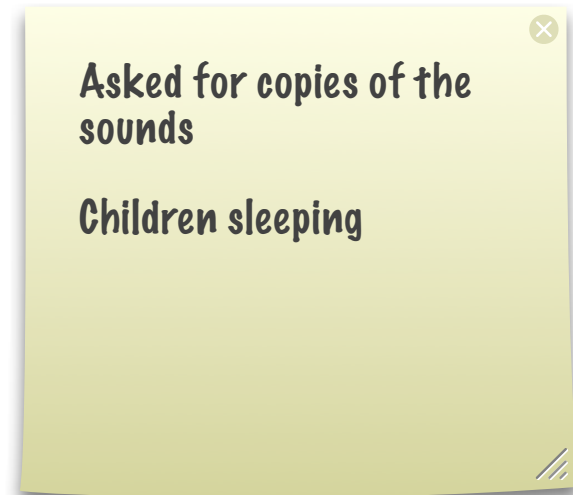
# The socially managed soundscape

- High degree of control
  - Domestic vs cityscape
- Dynamic volume control
  - Micromanaging different sources
  - Area of conflict
  - Sonic de-escalation
- Door control
- Noisy neighbors



# The recorded soundscape

- Findings from the recording exercise itself
- Participants recorded different sounds
  - Typical, from various rooms
  - Remind them of home
  - Would like to keep
  - Favorite
- Sonic gems were uncovered
  - Sleeping / playing children
  - Xmas meal
  - Pet sounds
- Reversed background and foreground listening



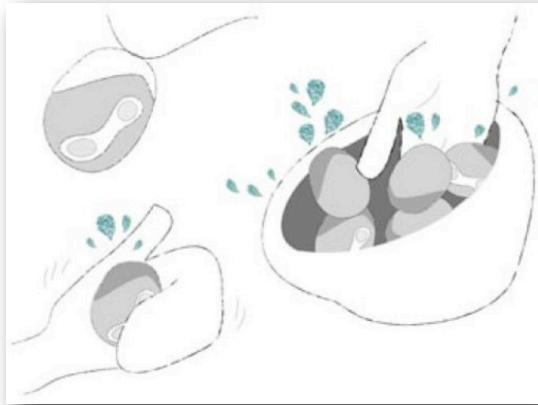
# Evaluation and discussion

- A set of behaviors and attitudes towards domestic soundscape was found
  - Would it be different with a different kind of sampling group
- Complex, subjective phenomenon
- Listeners are co-located and share the same social context
- Household members monitor
  - Own perceptions
  - Housemates perceptions
- Sonic gems were found almost accidentally

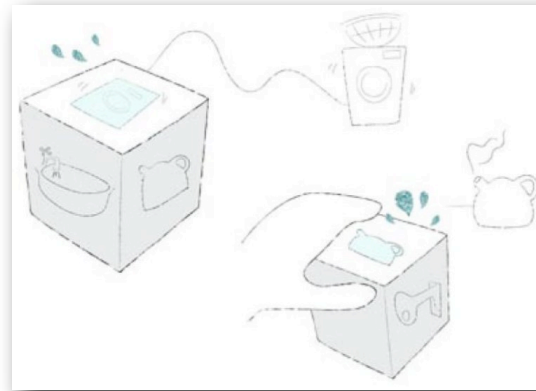
-Previous studies said it would be objective phenomenon  
-Household members finding is new  
-Methodology finding

# New applications

- Brainstorming session introduced new, sketchy concepts that can be further worked on.

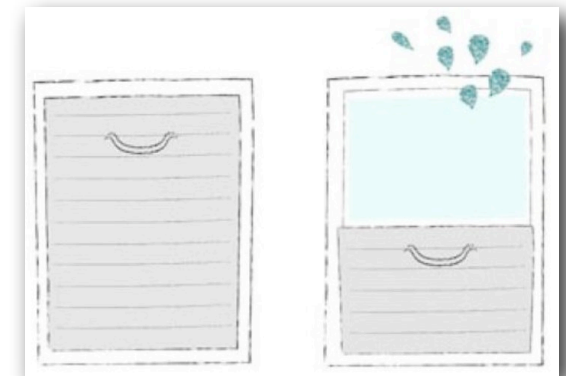


Sonic gems



Appliance cube

+ Interior sound barometer



Sound window

- Unobtrusive sound recording facility
- Tailoring the sound levels for individual hearing abilities
- Sensing and relaying sounds

# Conclusions

- First paper to study domestic soundscape
- Lots in common to the exterior sonic environment
- The concepts from brainstorming session can be further inspected and worked on
  - Multiple users implicate different kind of set of requirements for the design of audio systems etc.

**Time for discussion!**