



**Aalto University**  
School of Electrical  
Engineering

# Communication acoustics

## Ch 1: How to Study and Develop Communication Acoustics

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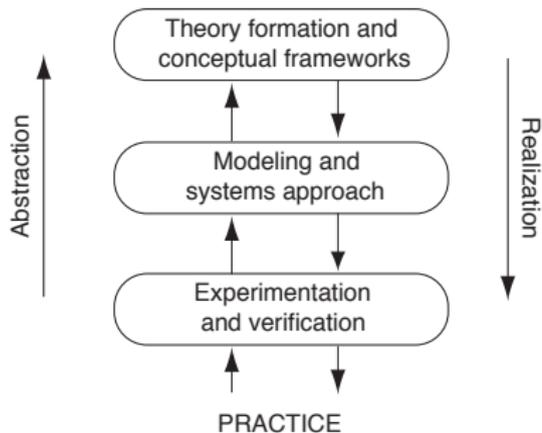
# How to develop communication acoustics

The objective of basic research in this field is to better understand how we communicate, while the engineering goal is to develop and use technology to make this communication more versatile and powerful. In both cases, the challenge is to understand a variety of topics and to solve problems by approaching them from several points of view.

# Domains of knowledge

- Acoustics, mainly "room acoustics"
- Signal processing
- Speech
- Audio technology
- Physiology and psychophysics

# Methodology of Research and Development

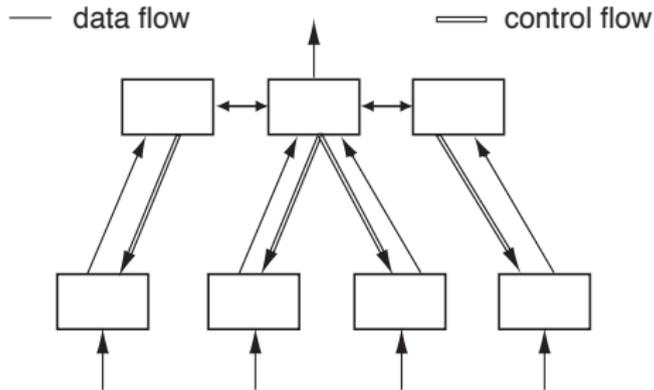


# Systems Approach to Modelling

For example, we want to construct a model how human responds to sounds, a simple model would be beneficial.



# Systems Approach to Modelling



A block diagram characterizing a system that consists of elements, data, and control flow links between them, and a hierarchical-type (two-level) organization.

# Some concepts in modeling

- Element
- Relation
- Structure
- State
- System
- Control
- Process
- Organization
- Hierarchy
- Data

# References

*These slides follow corresponding chapter in: Pulkki, V. and Karjalainen, M. Communication Acoustics: An Introduction to Speech, Audio and Psychoacoustics. John Wiley & Sons, 2015, where also a more complete list of references can be found.*