

# Perception of Privacy

Tom Bäckström

28.4.2022



Aalto-yliopisto  
Aalto-universitetet  
Aalto University



# Personal Privacy

- Information about myself to which I *feel* ownership.
- Ownership = "control over"
- Fulfills a psychological need



# What do users want?

... with respect to privacy





# Users want to feel safe



# What does privacy feel like?



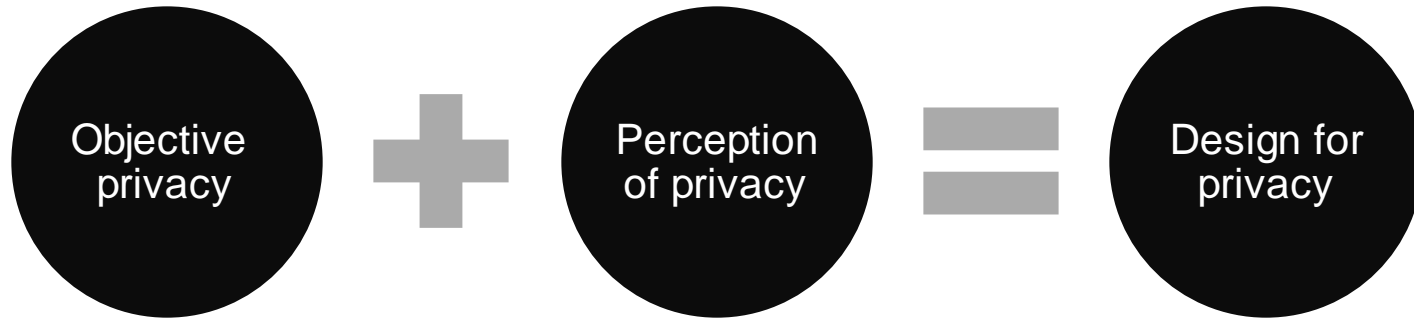


# A fraudster can induce a *feeling* of safety



# A system can induce a *feeling* of danger







# Perception and UI Design of & for Privacy

# Ask users about speech *devices*?



# Is privacy like...





# Ask users about *speech*?



# Ask users about *speech*



# Questions

**"Could you tell a secret to a friend in this environment?"**

**"How loud would you speak when telling a secret to a friend in this environment?"**

**"Could you talk about intimate medical matters with your doctor over the phone in this environment?"**



# Scenarios





**Interpersonal  
through device**



**Interpersonal  
device-supported**



**Interpersonal  
multigroup**

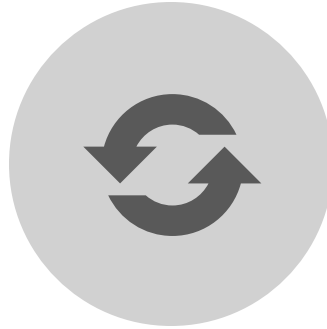


**Interpersonal  
multidevice**

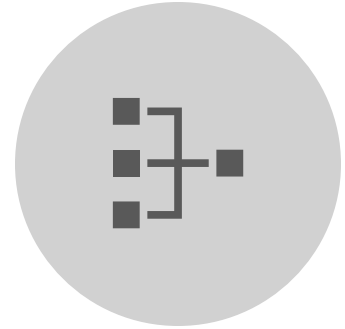
# Communication models



**LINEAR MODEL –  
MESSAGE PASSING**



**INTERACTIVE MODEL –  
FEEDBACK LOOP**



**TRANSACTIONAL MODEL –  
CO-CREATION OF MEANING**



# What is *personal* privacy in speech?

Health, age, physical size and body type	Intra-personal
Linguistic content	Inter-personal
Sexual, religious, political orientation etc.	Inter-personal
Emotions	Intra- and inter-personal
Relationships, power structures, familiarity	Inter-personal
Location	Intra- and inter-personal
Ethnic, cultural origin	Inter-personal

What about

- Self-talk?
- Thoughts?
- Emotions about self?

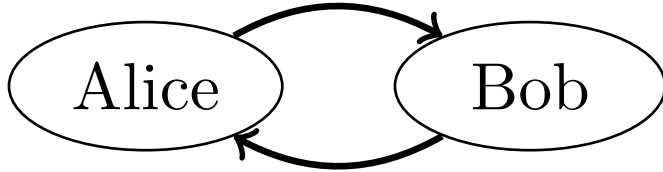


# *Personal Privacy in Speech* is Misleading?



# Inter-personal Privacy Models

- Privacy in **primary** interaction

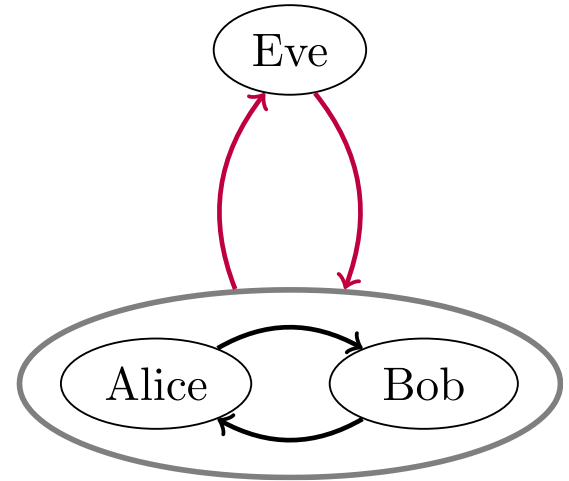


- How to not reveal private things?

- Privacy in **secondary** interaction

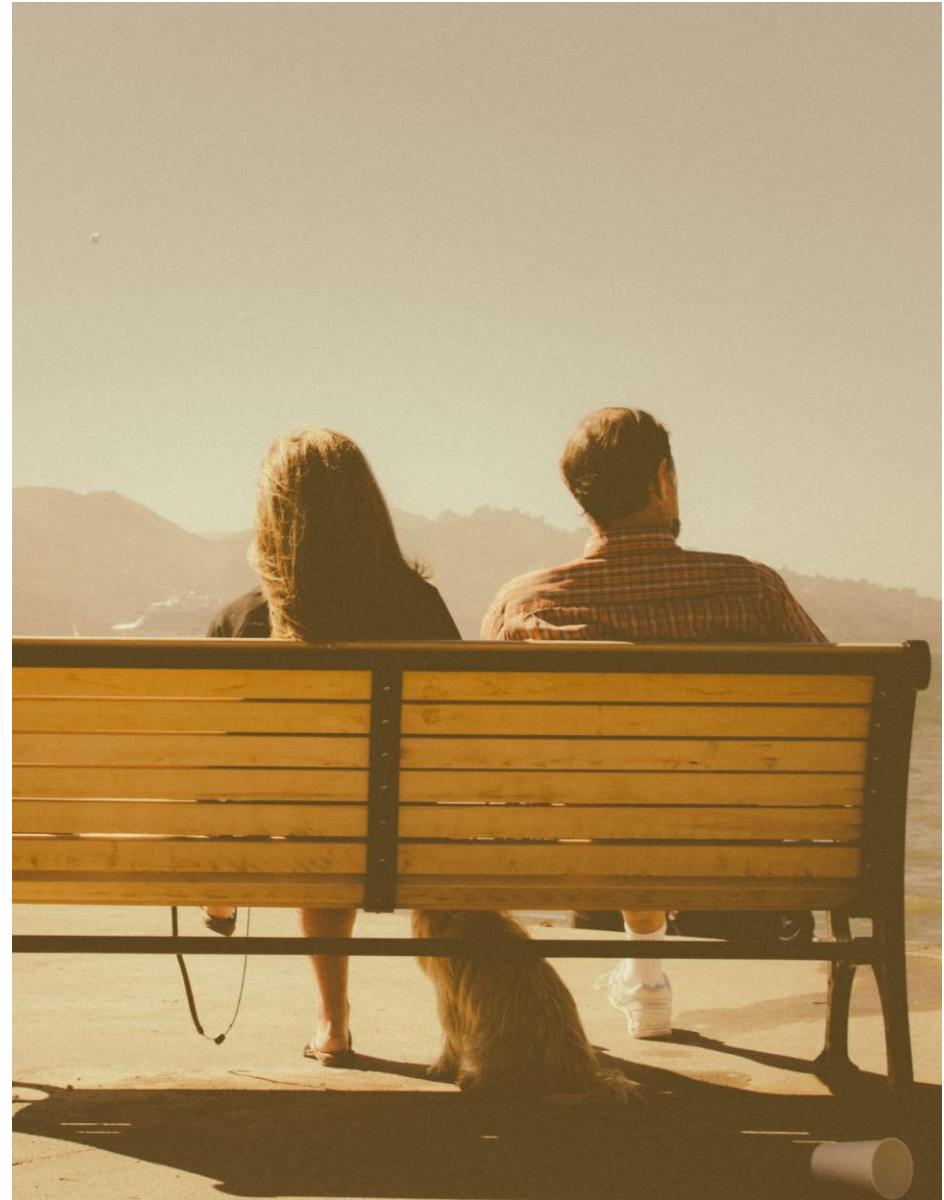
Restricted  
interactor

Private  
speech  
interaction



# Interpersonal Ownership

- Who owns a discussion?
- How do we jointly manage access to third parties?



# Privacy in Speech Technology

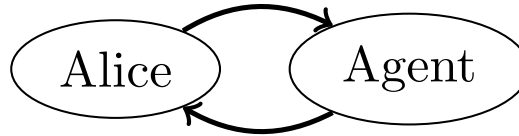
# Scenarios





# Interaction Privacy Models

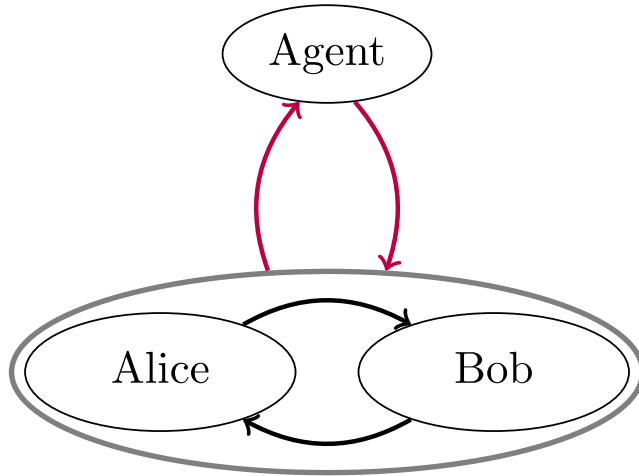
Agent is primary



Agent is secondary

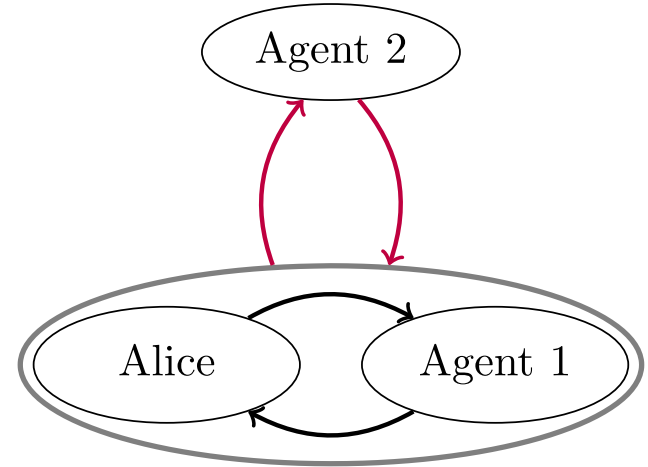
Restricted  
interactor

Private  
speech  
interaction



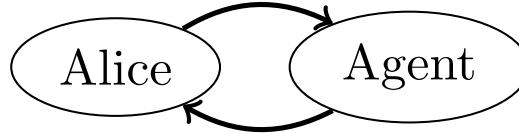
Restricted  
interactor

Private  
speech  
interaction



# Interaction Privacy Models

Agent is primary

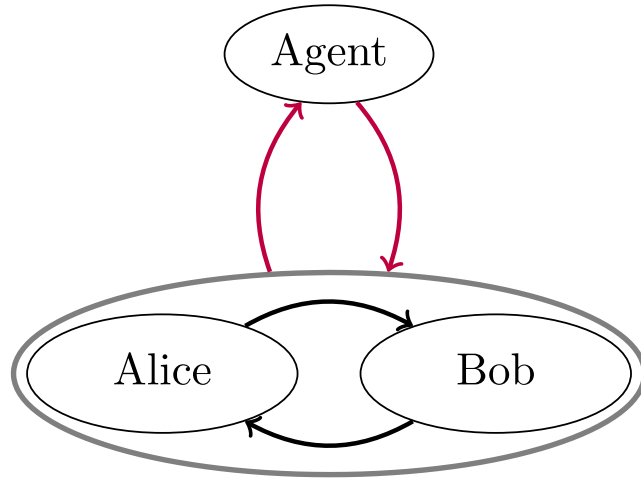


- Information other than the intended?
- Super-human capabilities?
  - Infinite **memory** (retention)
  - **Analysis** tools

# Interaction Privacy Models

Restricted  
interactor

Private  
speech  
interaction



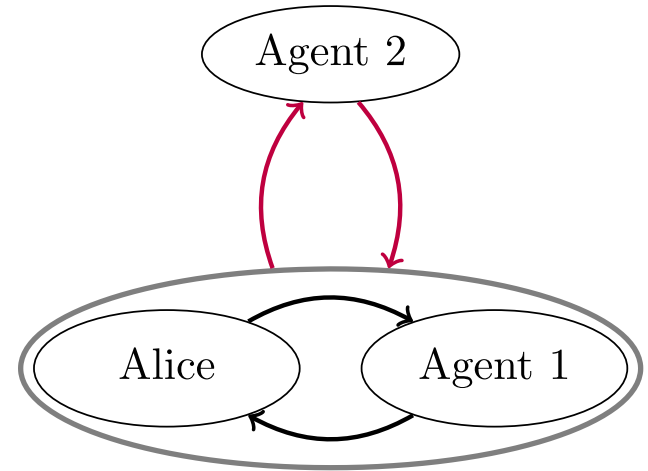
- **How should the agent be treated wrt privacy?**
- **How would you treat a human personal assistant?**
- **Is it different?**

# Interaction Privacy Models

- **Are agents allowed to interact?**
- **Boundaries of services;**
  - Is "ordering a pizza" with Alexa a separate service?
- **Is a personal assistant like an**
  - extension of self or
  - external agent?

Restricted  
interactor

Private  
speech  
interaction





# Conclusion



**Very little personal about speech**



**Privacy in speech is about protecting interactions**



**Privacy design is about**

objective privacy protections *and* perception of privacy