### Grounding in Conversations

Bente Reichardt

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### Outline

- ▶ What is grounding?
- Grounding techniques
- Costs of grounding
- Summary

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# What is Grounding?

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# The Problem of Grounding

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► One person speaks

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What is Grounding?

- ► One person speaks
- ► Another person listens

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### The Problem of Grounding

What is Grounding?

- One person speaks
- Another person listens
- ► How do the speaker and the listener can be sure that the listener understands what the speaker means.

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### What is Grounding?

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### What is Grounding?

What is Grounding?

► Assumes they speak the same language

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### What is Grounding?

What is Grounding?

- Assumes they speak the same language
- ► Builds a knowledge base

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### What is Grounding?

What is Grounding?

- ► Assumes they speak the same language
- ► Builds a knowledge base
- ► Effected by the environment

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### What is Grounding?

What is Grounding?

- ► Assumes they speak the same language
- Builds a knowledge base
- Effected by the environment
- ► Done by both dialogue partners

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### Standard Form of Grounding

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# Standard Form of Grounding

What is Grounding?

► Grounding consists of two phases

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### Standard Form of Grounding

What is Grounding?

- ► Grounding consists of two phases
- ► Phase 1: Presentation phase A presents a thought

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### Standard Form of Grounding

- ► Grounding consists of two phases
- ► Phase 1: Presentation phase A presents a thought
- ▶ Phase 2: Acceptance phase B accepts the thought or clarifies it

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# **Grounding Techniques**

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# ► Humans use grounding

Natural Grounding Techniques

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### Natural Grounding Techniques

What is Grounding?

- Humans use grounding
- ► Frequently in every day life

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### Natural Grounding Techniques

- Humans use grounding
- ► Frequently in every day life
- ► Various forms of grounding

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### Natural Grounding Techniques

What is Grounding?

- ► Humans use grounding
- ► Frequently in every day life
- Various forms of grounding
- ► Depend on the circumstances

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► Ex. A: Mr. Meyer has a thing.

B: What does he have?

A: A dog.

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Ex. A: Mr. Meyer has a thing.

B: What does he have?

A: A dog.

► Ex. A: Mr. Meyer has a m-dog.

B: A dog?

A: yes.

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► Ex. A: Mr. Meyer has a thing.

B: What does he have?

A: A dog.

Ex. A: Mr. Meyer has a m-dog.

B: A dog?

A: yes.

B asks about what he did not understand

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# Grounding by Reference

What is Grounding?

► Ex. A: Mr. Meyer has a dog.

B: Thomas Meyer?

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### Grounding by Reference

- ► Ex. A: Mr. Meyer has a dog.
  - B: Thomas Meyer?
- ▶ B gives more information to clarify a certain aspect

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### **Grounding Verbatim Content**

► Ex. A: The number is 0-4-0. B: 0-4-0.

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### **Grounding Verbatim Content**

What is Grounding?

- ► Ex. A: The number is 0-4-0. B: 0-4-0.
- ▶ B repeats the important parts word by word

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Grounding by Accepting Noises

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### Grounding by Accepting Noises

What is Grounding?

Ex. A: Mr. Meyer has a dog, you know? B: Yeah.

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### Grounding by Accepting Noises

- Ex. A: Mr. Meyer has a dog, you know? B: Yeah.
- ► A searches for evidence that he has been heard and understood

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- Ex. A: Mr. Meyer has a dog, you know? B: Yeah.
- ► A searches for evidence that he has been heard and understood
- ► Ex. A: Mr. Meyer has a dog. B nods: hm.

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# Grounding by Accepting Noises

- ► Ex. A: Mr. Meyer has a dog, you know? B: Yeah.
- ➤ A searches for evidence that he has been heard and understood
- ► Ex. A: Mr. Meyer has a dog. B nods: hm.
- ▶ B gives signs that he listened and understood

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# Contraints on Grounding

What is Grounding?

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# Contraints on Grounding

What is Grounding?

► Copresence: same environment

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# Contraints on Grounding

What is Grounding?

- ► Copresence: same environment
- ▶ Visibility: partners see each other

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# Contraints on Grounding

What is Grounding?

- ► Copresence: same environment
- ► Visibility: partners see each other
- ► Audibility: speaking with sound

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# Contraints on Grounding

- ► Copresence: same environment
- ► Visibility: partners see each other
- ► Audibility: speaking with sound
- ► Simultaneity: no delay

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# Contraints on Grounding

- ► Copresence: same environment
- Visibility: partners see each other
- Audibility: speaking with sound
- Simultaneity: no delay
- Sequentially: alternating conversation

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What is Grounding?

- ► Copresence: same environment
- ▶ Visibility: partners see each other
- ► Audibility: speaking with sound
- Simultaneity: no delay
- Sequentially: alternating conversation
- ► Reviewability: review other massage

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# Contraints on Grounding

- ► Copresence: same environment
- Visibility: partners see each other
- Audibility: speaking with sound
- ► Simultaneity: no delay
- Sequentially: alternating conversation
- Reviewability: review other massage
- ► Revisability: review own massage

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Summary

- Grounding with questions
- Grounding by reference
- Grounding verbatim content
- Grounding by accepting noises

- Copresence
- Visibility
- ► Audibility
- Simultaneity
- Sequentially
- Reviewability
- ► Revisability

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# Costs of Grounding

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# Generell Concept

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# Generell Concept

What is Grounding?

► Grounding takes effort

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- ► Grounding takes effort
- ► Humans are generally lazy

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- ► Grounding takes effort
- ► Humans are generally lazy
- ▶ Is done by both dialog partners

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# Generell Concept

- ► Grounding takes effort
- ► Is done by both dialog partners
- ► Humans are generally lazy
- → Least collaborative effort

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# Costs of A

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#### Costs of A

- ► Formulation costs
- ► Production costs

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#### Cost of B

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#### Cost of B

What is Grounding?

Reception costs

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#### Cost of B

- Reception costs
- ► Understanding costs

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**Shared Costs** 

► Start-up costs

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- ► Start-up costs
- ► Delay costs

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- ► Start-up costs
- ► Delay costs
- ► Asynchrony costs

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- ► Start-up costs
- Delay costs
- Asynchrony costs
- ► Fault costs

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- ► Start-up costs
- Delay costs
- Asynchrony costs
- ► Fault costs
- ► Repair costs

Bente Reichardt 65/74

- ► Start-up costs
- Delay costs
- Asynchrony costs
- ► Fault costs
- ► Repair costs
- etc.

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► Grounding defines the dialog topic

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- ► Grounding defines the dialog topic
- Occurs in natural conversations

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- ► Grounding defines the dialog topic
- Occurs in natural conversations
- ► Different techniques

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- ► Grounding defines the dialog topic
- Occurs in natural conversations
- ▶ Different techniques
- Depend on the medium

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- Grounding defines the dialog topic
- Occurs in natural conversations
- Different techniques
- Depend on the medium
- ► Need effort of both dialogue partners

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- Grounding defines the dialog topic
- Occurs in natural conversations
- Different techniques
- Depend on the medium
- ► Need effort of both dialogue partners
- Difficult to model

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