Establishing and Using Common Ground in Dialogue

BCS 152

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Common Ground is important for understanding

A: okay, okay, I got it...ele...okay
B: all right, hold on, I got another easy piece
A: I got a well wait I got a green piece RIGHT above that
B: Above this piece?
A: Well not exactly right above it
B: It can’t be above it
A: It’s to the...it’s...it doesn’t wanna fit in the cardboard
B: It’s to the right, right?
A: Yep
B: Wh-how? Where?
A: It’s...kinda line up with the two holes
B: Line ‘em up right next to each other?
A: Yeah, vertically

What’s going on?
What does it mean for something to be in common ground?
If I want to flout a Gricean Maxim...

- I have to know the maxims
- I have to know that you know the maxims
- I have to know that you know that I know the maxims
- I have to know that you know that I know that you know the maxims
- ...
- ...
If I want to use the word ‘horse’ effectively...

• I have to know what a horse is
• I have to know that you know what a horse is
• I have to know that you know that I know what a horse is
• I have to know that you know that I know that you know what a horse is
• ...
• ...
What’s in common ground?

• Sometimes assumed (e.g., world knowledge)

• Sometimes context-dependent
  – Prior discourse
  – Shared sensory environment
World knowledge example: hyperbole

A: This bag of candy cost me $1,500.
implicates
The bag of candy was expensive for a bag of candy
It probably didn’t cost $1,500
World knowledge example: hyperbole

A: This laptop cost me $1,500.

Don’t really get a hyperbolic implicature here ($1,500 is normal for a laptop)
If something’s not in common ground, how do we get it there?

Negotiation and backchanneling in dialogue

A: So I was cat-sitting my friend’s Scottish Fold.
B: [looks confused]
A: Scottish Folds are this cat with funky looking ears
B: What do they look like?
A: They’re like folded over [mimes]
B: [nods] oh yeah, those cats
A: [continues story] ..
How do we study use of common ground in dialogue?

• Study naturalistic dialogue in a constrained context

• Referential games
Establishing common ground: Conceptual Pacts
Tangram Matching Game
1: All right, the next one looks like a person who’s ice-skating, except they’re sticking their two arms out front.
2: The person ice skating that has two arms
3: The person ice skating, with two arms
4: The ice skater
5: The ice skater
6: The ice skater
Round of Game

Length of Referring Expression

new partner
Conceptual Pact

- Interlocuturers have developed a *conceptual pact* to call the ‘ice skater’
- Reference to a weird object is now predictable and easy! (it’s in common ground)
- Have to establish a new conceptual pact with a new conversational partner
- How strong are conceptual pacts?
Brennan & Clark (1996)

Play a matching game where speaker has to describe the card they have to the listener

Phase 1: different kinds of objects from the same category

Phase 2: all different categories
Phase 1 Results

‘high heel’

‘sneaker’

‘orange fish’

‘blue fish’
Phase 2 Results

‘high heel’

‘orange fish’

‘tool’

‘chair’
• Conceptual pacts last even if they’re no longer needed to make informative distinctions between objects
Ibarra & Tanenhaus (2016)

• How strong are conceptual pacts? Do we break them under some circumstances?

• Tested 2 situations:
  – The goal of the game changes
  – New items appear that are confusable with a previous conceptual pact word
Experiment 1: Goal Change

• Speaker has a stack of cards, listener has a pile of objects

• Speaker & listener separated by a divider

• Speaker tells the listener what to do with the objects
Experiment 1: Goal Change

- Item Phase: Sort a bunch of objects into different piles

Example Card
Experiment 1: Goal Change

• Build Phase: build creatures out of the objects

Example Card
• Does the name for the same object stay the same between phases (maintain conceptual pact) or change (break conceptual pact)?
Results

References to lion leg across phases

Item Phase
A: Alright, my turn. It’s kinda, alright, the one I’m looking at kind of looks like a wrench. It’s the same color. (turn 477)
B: Got it. There’s two wrenches, though. (turn 478)
A: Um, this is the one {fate}, this is the one that if you put the circle at the bottom, the other hole is facing left. (turn 479)
B: Um, so it has a flat side. One has like a, (turn 480)
A: Yeah, one, so, yeah, it’s flat towards the left. (turn 481)
B: Alright, got it. (turn 482)

B: So, this is the flat tow-, this is the same wrench but the one that is like, not, like a little bit disoriented. (turn 483)
A: Alrighty. (turn 484)
B: Alright. So just both wrenches. (turn 485)

Build Phase
A: Alrighty. Um, the next piece is uh basically assembling the leg. So what you get is you get the long flat one, (turn 682)
B: Yeah. (turn 683)
A: Not the long flat one, the one with like straight edges. (turn 684)
B: The wrench, yeah. (turn 685)
Results

Referring expression more likely to change trial-to-trial in Build Phase than Item Phase
Experiment 2: New Confusable Items

- Game: slide cards around until they’re in the correct configuration
- Speaker knows the configuration and has to describe to listener
The catch: some items are hidden at first and only appear later in the game.
Round 2
Round 3
Round 4
• What do people do when a new name competitor appears?

• Possibility 1: Keep the conceptual pact and come up with a different name for the new object.
• What do people do when a new name competitor appears?

• Possibility 2: Break the conceptual pact and come up with new names for both

- ‘turtle’
- ‘turtle’
- ‘more real-looking turtle’
- ‘blocky turtle’
Breaking pact: more words to refer to blocky turtle after real turtle reveal than before
Keeping pact: same amount of words to refer to blocky turtle after real turtle reveal as before
Results

people use more words when a competitor appears, ‘breaking’ the conceptual pact
Conceptual Pacts: Summary

• Establishes common ground for how to refer to an object or concept
difficult-to-describe abstract object → ‘ice skater’

• Strongly binding: use them even when simpler words are sufficient

• Partner-specific through negotiation and dialogue
Conceptual Pacts: Summary

• But, conceptual pacts can be re-negotiated if needed
  – New goal
  – New competing objects
Using Common Ground in Comprehension
• So we’ve established common ground…
• How do we use it to make real-time inferences about meaning?

• 2 possibilities:
  – we take into account what we know first, and only consider common ground later or if we’re wrong
  – we take into account common ground as early as possible
Brown-Schmidt et al. (2008)

- Can listeners predict what information a speaker is asking about?
- Game: ‘Barnyard Oscars’
Listener

Speaker

board filled with cards

track where listener is looking
speaker doesn’t have card

listener doesn’t have card

both have card
Some items are in common ground

Others are in ‘privileged ground’ (only one person has access to them)
“What’s above the cow with....”
“What’s above the cow with....”
“What’s above the cow with....”
If listeners DON’T take common ground into account right away...

look between these equally

look between these equally

“What’s above the cow with....”
If listeners DO take common ground into account right away...

look between these equally

look only at this one

“What’s above the cow with....”
• Listeners can quickly figure out what the speaker is asking about by using common ground

• Occurs immediately, before disambiguating information
Heller, Grodner, & Tanenhaus (2008)

- Are listeners able to quickly use common ground to infer referential meaning?
Listener

track where listener is looking

Speaker

cubbyholes filled with objects
Speaker is cued to refer to one of the objects
‘Click on the big…’
‘Click on the big…’
‘Click on the big…’

2-contrast condition
have to wait until noun

1-contrast condition
‘big’ should refer to duck
participants start looking toward ‘duck’ early in 1-contrast condition.
• What if not all the objects are in common ground?
Small box is **NOT** in common ground
Small box is *privileged ground* for the listener