

Using Language

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How do we coordinate communicative efforts with others to communicate what we need to?

Joint project: a joint action projected by one of its participants and taken up by the others

- Problem: How do we come to a mutual understanding of what the project is?
 - Work together to construct a complex joint project.
 - Look for evidence that you agree on the construal of the project.

Building joint projects

Joint projects begin when one participant proposes a project, and end either when participants mutually agree on successful enough completion, or when one or both participants clearly withdraw from the project.

Joint purposes in joint actions must meet four requirements:

Identification: A&B must identify the same joint purpose

Ability: A&B must be able to fulfill their parts

Willingness: A&B must be willing to fulfill their parts

Mutual belief: A&B must each believe that all requirements are part of the common ground.

Building joint projects

Complex joint projects are constructed locally by linking adjacency pairs to accomplish a series of successive related goals, or subgoals.

[ring]

Hello?

Hi, it's Brian, want to go to the park?

Thanks, but I'm busy.

Options in Joint Projects

At each stage, speakers have a number of options for where to go with the project:

1. Continue directly toward goal.
2. Initiate side project:
 1. Remember the guy we saw at the park? Well...
3. Chain a new sub-goal.

Options in joint projects

Similarly, listeners have options of how they can react to speakers:

1. Full compliance
2. Alteration of project
3. Decline project
4. Withdraw from project

Examples

Full compliance

- “Want to go to see Shaun of the Dead?”
- “Sure, what’s a good time?”

Alteration of project

- “Hey Jill, we found your missing cat!”
- “You did? Great!”
- “Well, I *think* it’s your cat.”

Examples

Declining project

- “Does my insurance cover lightning strikes?”
- “I don’t know, actually.”

Withdrawal from project

- “So, do you want to go out again on Saturday?”
- “Um, hey, do you when the next bus is coming?
I’ve really gotta go...”

Evidence of construal

How do participants in a conversation decide what the speaker means?

Joint construal: What participants mutually take the speaker to mean. (a la Grice 1982)

- *Not* what the speaker means (necessarily)

Principle of joint construal: For each signal, the speaker and addressees try to create a joint construal of what the speaker is taken to mean.

Uptake as evidence of construal

- Uptake provides evidence not only that the hearer understands an utterance, but also of how the hearer construes that utterance. If the original speaker accepts the uptake, that construal is taken as the joint construal.

A: Have a seat.

B: Yes sir!

B: Thanks, but I'm fine.

Uptake as evidence

- Uptake also indicates degree of commitment to a project:

A: Hey, let's go see a movie.

B: Sounds great!

B: Ok, I guess.

Validation and correction of construals

- Uptake gives the original speaker an opportunity to verify or correct that construal.

A: Have a seat.

B: Thanks, I'm fine.

A: That wasn't a *suggestion*.

Validating and correcting construals

Initial construal	Intervening action	Final construal
Full construal	Accept	Verified construal
misconstrual	Detect and correct	Corrected construal
misconstrual	Detect but accept	<i>Revised construal</i>
misconstrual	Fail to detect, accept	Undetected misconstrual
Narrowed construal	Detect but accept	<i>Narrowed construal</i>

Elective construals

- With indirect speech acts, recipient can elect whether to respond to the literal content or both the literal and implied content:

A: Do you take credit cards?

B: Yes.

B: Yes, Visa and Mastercard.

Evaluating success

- So, how can we tell when we have successfully communicated?

Grounding: Establishing something as part of the common ground *well enough for current purposes*.

The bottom line: communication as a balancing act between accuracy and efficiency.

Principle of closure:

Agents performing an action require evidence, sufficient for current purposes, that they have succeeded in performing it.

- Validity
 - Economy of effort
 - Timeliness
 - Least effort
- Closure is opportunistic: actions are considered complete as soon as sufficient evidence is present.

Evidence for closure

- **Holistic evidence:** Evidence that an agent has succeeded on a whole action is evidence that the agent has succeeded on each of its parts.
- **Downward evidence:** In a ladder of actions, evidence that one level is completed is also evidence that all levels below it are complete.

Action ladder

- **Levels of action:**
- 4: A proposes to B that B should tell her P. (meta – level of collaboration)
- 3: A asks B whether P. (content/reference)
- 2: A presents a signal S to B (signal)
- 1: A articulates an utterance (utters sounds, forms signs, types letters) (mechanics)

Action ladder

- A: “Do you know where the bank is?”
- 4: A proposes to B that if he knows, he should tell her where the bank is.
- 3. A asks B if he can tell her where the bank is
- 2. A says “Do you know where the bank is?”
- 1. A utters “Do you-um-know where the bank is?”

4: B takes up A's proposed joint project

- "Sure, you just go past the post office...."

3: B has understood what A means by her utterance, but hasn't decided to take it up.

"Sorry, I don't know."

2: B has identified A's presentation correctly, but doesn't know what she means by it.

- "Which bank?"

1: B has identified that A has executed a presentation, but isn't sure he heard it correctly.

- "Sorry, did you ask where the *tank* is?"

0. B fails to notice that A's communicative behavior.

- [B is oblivious, listening to headphones.]

Joint closure

- The participants in a joint action try to establish the mutual belief that they have succeeded well enough for the current purposes.
- **Traditional view:** Participants assume success unless presented with negative evidence.
- **Proposed view:** Success requires positive evidence.

Information packaging

- Speakers package information in utterances in order to obtain what they feel is sufficient verification.
 - Installments
 - Trial constituents
 - Fade-out

Information packaging

- **Installments:** Contributor breaks information up into substrings to give opportunities for verification of each part in turn (e.g. directions).

Gives contributor maximum control (C.f. continuing contributions, where partner decides when to conclude)

Information packaging

Trial constituents: Intonationally marked constituents followed by a pause as implicit request for verification.

A: So you know your friend in... Wautosa...?

B: Wauwatosa?

Information packaging

Fade-outs: Contributor purposefully leaves contribution incomplete.

- The omitted material is assumed to be familiar.
- Fade-outs are often used when the omitted material is inappropriate in some way.

“Anyway I told my boss, and he *said* he was going to do something about it, but....”

Contributions and closure

- Similarly, listeners structure their responses to give evidence of closure
 - Concluded contributions
 - Continuing contributions

Contributions and closure

Concluded contributions: A presents a signal that B accepts by presupposing understanding – by initiating the next contribution at the same level as A's contribution.

- Pass up the opportunity to ask for clarification
- Initiate an answer as the next contribution
- Provide an appropriate answer

Contributions and closure

- **Continuing contributions:** A presents a signal that B accepts by asserting understanding with a backgrounded acknowledgement.
 - “mm” “uh huh”
- Implies that A thinks more information is coming.

Contributions and closure

Opportunistic closure: listeners want to provide closure as efficiently as possible – they may not even wait for the speaker to conclude.

A: I want an upgrade so I-

B: -Don't have to worry the replacement has the same problem.

A: We have a seat available in first class if-

B: I'll take it!

Collateral communication

- Clark proposes that communication uses a two-track system to jointly accomplish both official business and communicative success (metacommunication).

Collateral communication

- | • Track 1 | Track 2 |
|--|-------------|
| • A: now, um, do you and
your husband have a j- car | |
| • B: | have a car? |
| • A: | yeah |
| • B: no | |

Claim: Every presentation enacts the collateral question “Do you understand what I mean by this?”

- Respondents complete this joint project immediately when they answer or imply “yes”; they alter it when they initiate a repair sequence that implies “no”.

Principle of projected evidence

- With every presentation, contributors use signals in track 2 to request or project the type of evidence of understanding that they consider to be valid, economical, and timely enough.

Collateral signals

In addition to explicit verification and requests for verification, collateral signals provide ongoing evidence for communicative success.

- Backgrounded
- Simultaneous
- Brief
- Differentiated from Track 1 signals
- Examples: Timing of utterances , marked intonation, gesture

Intermedium complications

Because of the different communication mediums, many collateral signals for the hearing are actually Track 1 (contentful) signals in signed languages.

- Signers may therefore both misperceive utterance content and fail to perceive intended collateral signals from beginning signers because they categorize the signals differently.
- Similarly, beginning signers tend to have a difficult time learning to consciously control gesture and facial expression.

Conclusions

- Participants in a conversation collaborate to decide upon joint projects.
- They constantly evaluating evidence and giving each other feedback to ensure that
 - 1. They are still working towards the same goal.
 - 2. Goals are accomplished *successfully enough*.

Application: conversational agents

- **Implementing joint project:** The various kinds of responses (uptake, withdrawal, etc) at any juncture can be mapped as a decision tree.
 - Problem: How do we categorize utterances?
 - Some signals appear to fit in multiple categories, depending on the context. (Withdrawal vs. initiation of side project)

Conversational agents

- **Grounding:** The agent will need to evaluate evidence of whether each stage of the joint project is successful.
 - It should track the level of certainty and assume success when above a threshold; but ask for verification when fall below that level.

Erring on the side of accuracy:

- **Amtrack phone reservation system:**
 - verifies each stage of the interaction
 - “I think you said X; press 1 to verify.”
 - If there is evidence of persistent error, calls are shunted to a human operator.

Erring on the side of efficiency: Chatbots

- **Jenny18:**

“'eliza' is a program that talks to you, pretending to be a psychologist. its script of possible responses is super tiny, so it doesn't fool anyone.... so i replaced eliza's tiny, boring script with a massive dumb blonde script that has like 3,800 responses on all sorts of topics, but mostly sex.... this goes to show that lots of challenge in AI is in speaking naturally, and on the internet most people speak like idiots, so you can sort of cheat around a lot of things.”
(<http://virt.vgmix.com/jenny18/>)

Jenny18

- <jenny18> i am 18 and from the wesside. u? proposes jp
<Scorpion832> 13 and from the eastside uptake
<jenny18> mmmMm..
Acknowledgement
<Scorpion832> do you have [...] pics proposes jp –
probe
<jenny18> ah. neither accepts
nor declines
<Scorpion832> do you probe
<jenny18> i dunno what u mean =) declines
[...]
<Scorpion832> ?????
<jenny18> o really? ;) probe
<Scorpion832> ok one of my friends made a bet that i could not get
5 pics before the night is over so i need to get 2 since i have the
other 3....

Autism as multi-level communication failure

- 1: sensory overload can cause shutdown of perceptions
- 2: difficulty attending to fast acoustic signals such as consonants result in misheard or partially heard words
- 3 reference: overly literal interpretation can lead to missing the point of a contribution
- 4: joint project: failure to pick up on collateral signals can lead to failure to understand intended project (esp. indirect speech)