I THOUGHT POINTING IS RUDE

A DIALOGUE-SEMANTIC ANALYSIS OF POINTING AT THE ADDRESSEE

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'Can you jump over this spout?'

locating referent

metonymic relation

'This is my favourite author.'

(Nunberg 1993; Clark 1996)

'then you do not exit here [*index finger downwards*] (but there).'

(taken from SaGA V9, 6:56 (Lücking et al. 2010))

also called *abstract deixis* (McNeill, Cassell and Levy 1993); projection from gesture space into described situation (cf. function $\vec{v}$ of Lascarides and Stone (2009))

(context: *F [on the right] recaps route direction, hesitates*)

```
F:    da steht die (.) die /   T: there is the the
R:    die SKULptur ((pointing at F)) /   T: the
      sculpture
```



```
F:    die skulptur drauf /   T: the sculpture on top
```
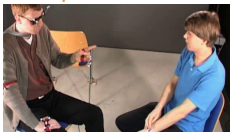
(SaGA V5, 13:58)

(context: *F [on the right] recaps route direction, hesitates*)

> F: da steht die (.) die / T: there is the the
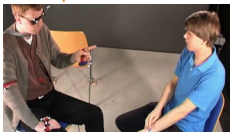> R: die SKULptur ((pointing at F)) / T: the
>   sculpture

> F: die skulptur drauf / T: the sculpture on top

(SaGA V5, 13:58)

R is pointing at the addressee (F), but:

- not locating addressee *F*
- no metonymic relation between *F* and the sculpture
- no spatial projection from *F*
- → what to do with the pointing gesture?

'Man zeigt nicht mit nacktem Finger auf angezogene Leute!'

(*It is bad manners to point at dressed people with naked fingers!*)

Context of example:

- *F* recaps a route direction he got from *R*
- *F* has difficulties to recall a certain landmark
- *R* jumps in and supplies the landmark (i.e. 'sculpture')
- → the gesture emphasizes known material

Shared information gestures …

'[…] mark material that the addressee probably already knows—information that is part of their common ground. They mean, essentially, "As you know".' (Bavelas et al. 1992, p. 397)

cf.: *marker of common ground* (Holler 2010)

- Needed: notion of addressee and known material
- Systematic framework: KoS (Ginzburg 2012), formal dialogue semantics

$DGBType :=$

$$\begin{bmatrix} \text{spkr} & : Ind \\ \text{addr} & : Ind \\ \text{utt-time} & : Time \\ \text{c-utt} & : \text{addressing(spkr, addr, utt-time)} \\ \text{facts} & : \text{set}(Prop) \\ \text{visualsit} = \begin{bmatrix} \text{foa} : Ind \vee Sit \end{bmatrix} : RecType \\ \text{pending} & : \text{list}(LocProp) \\ \text{moves} & : \text{list}(LocProp) \\ \text{qud} & : \text{poset(Question)} \\ \text{mood} & : Appraisal \end{bmatrix}$$

- rich context representation, information-state update
- *facts* already provides a model of common ground

- KoS is implemented in a type-theoretical formal semantics: *Type Theory with Records* (TTR, Cooper 2012; Cooper and Ginzburg 2015; Cooper 2020)
- basic notions: *judgments*, *records* and *record types*
- The record $\begin{bmatrix} l_1 & = a_1 \\ l_2 & = a_2 \\ \dots \\ l_n & = a_n \end{bmatrix}$ is of record type $\begin{bmatrix} l_1 & : T_1 \\ l_2 & : T_2(l_1) \\ \dots \\ l_n & : T_n(l_1, l_2, \dots, l_{n-1}) \end{bmatrix}$

  iff $a_1 : T_1, a_2 : T_2(a_1), \dots, a_n : T_n(a_1, a_2, \dots, a_{n-1})$

Dialogical progress is
regimented by conversational
rules of the form:

$$\begin{bmatrix} \text{Preconds} : DGBType \\ \text{Effects} \quad : DGBType \end{bmatrix}$$

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Minimal example: Turn change

$$\begin{bmatrix} \text{Preconds} : \begin{bmatrix} \text{spkr} : Ind \\ \text{addr} : Ind \end{bmatrix} \\ \text{Effects} \quad : \begin{bmatrix} \text{spkr=Preconds.addr} : Ind \\ \text{addr=Preconds.spkr} : Ind \end{bmatrix} \end{bmatrix}$$

(only altered DGB values are shown)

- Interlocutors exchange **utterances**
- Utterances have as their content dialogue moves (of type *IllocProp*)
- Utterances are represented as **Loc(utionary) prop(ositions)**—token-type syn-sem structures (of type *LocProp*)

$$\text{sit} = \begin{bmatrix} \text{phon} = [\text{aryurud}] \\ \text{constits} = \left\{ \text{u1(ar),u2(yu),u3(rud),u4(aryurud)} \right\} \\ \text{dgb-params} = \begin{bmatrix} \text{spkr} = a \\ \text{addr} = b \\ s_o = \text{sit3} \end{bmatrix} \end{bmatrix}$$

$$\text{sit-type} = \begin{bmatrix} \text{phon} : /\text{are you rude}/ \\ \text{cat} = V[\text{+fin, +root}] : SynCat \\ \text{constits} = \left\{ \begin{array}{l} \text{are, you, rude,} \\ \text{are you rude} \end{array} \right\} : set(Sign) \\ \text{dgb-params} : \begin{bmatrix} \text{spkr} : Ind \\ \text{addr} : Ind \\ s_o : Sit \end{bmatrix} \\ q1 = ? \begin{bmatrix} \text{sit}=s_o \\ \text{sit-type}=\begin{bmatrix} c : \text{rude(addr)} \end{bmatrix} \end{bmatrix} : Quest \\ \text{cont} = \text{Ask(spkr,addr,q1)} : IllocProp \end{bmatrix}$$

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Using KoS, the informal analysis of *common ground pointing* or *shared information gesture* can be made more precise in the following way:

$$
\begin{bmatrix}
\text{Preconds} : \begin{bmatrix} \text{Pending} : LocProp \\ \text{u} : sign \\ \text{c1} : \text{In(u,Pending.constits)} \end{bmatrix} \\
\text{Effects} \quad : \begin{bmatrix} \text{R} : Rel \\ \text{p} = \text{R(c)} : Prop \\ \text{c} = \text{Preconds.u.cont} \\ \text{c1} : \text{In(FACTS,p)} \end{bmatrix}
\end{bmatrix}
$$

allows for *compositional multimodal integration* along the lines of Rieser (2004), Alahverdzhieva, Lascarides and Flickinger (2017) and Lücking (2013)

Note that CG pointing is lexicalized on the dialogical level, relating PENDING and FACTS.

F: ok_nochmal beim
     anfang dieses
     <<pointing at R>
     mit den säulen
     scheint ja
     irgendwie was
     komplizierter zu
     sein ja? (-)>

ok back to the start, the
thing (*CG pointing*) with
the pillars seems to be a
bit more complicated,
isn't it? (SaGA V2, 9:16)

F: auf jeden
     fall (.) DANN
     ((pointing at
     R)) muss ich
     in den park
     gehen?

anyhow, then (*CG
pointing*) I have
to go into the
park?
     (SaGA V4, 9:43)

Survey of six SaGA dialogues: 13 instances of CG pointing.

But also other classes:

- UTT (*utterance anaphora*), 20
- SCTM (*something's coming to mind*), 9
- GrabTurn, 2

Utt (utterance anaphora)

indicating a DR of the actual utterance (difference to CG, which relates to grounded DR); occurs with topic (DR) introduction, affirmation of utterance of the other interlocutor, request clarification, or corrections; formally pointing at R/F, or index finger raising

R: °hh und dann kommen halt äh (-) die ((pointing at F)) BÄUme / and then there will just eh be the (*UTT pointing*) trees

(SaGA V2, 7:30)

SCTM (something's coming to mind)

pointing gesture associated with having an idea or recollection (in this case it is also CG); usually affiliated to expressives

R: da gehst du rein (-) °h da kommt n SEE: /
     there you enter, and there is a lake
R: ah gut ((pointing at F)) (.) ich glaub

es kam doch erst der park
well (*SCTM pointing*) I guess there was the
park first

(SaGA V4, 5:23)

$$
\begin{bmatrix}
\text{Preconds}: \begin{bmatrix}
\text{spkr}: \textit{Ind} \\
\text{addr}: \textit{Ind} \\
\text{Pending.cont}: \textit{IllocProp} \\
\text{q}: \textit{Question} \\
\text{c1}: \text{About(Pending.cont,q)}
\end{bmatrix} \\
\\
\text{Effects} \quad : \begin{bmatrix}
\text{spkr} = \text{pre.spkr}: \textit{Ind} \\
\text{addr} = \text{pre.addr}: \textit{Ind} \\
\text{Pending.cont}: \textit{IllocProp} \\
\text{c2}: \neg\text{About(Pending.cont,Preconds.q)}
\end{bmatrix}
\end{bmatrix}
$$

$\approx$ 'actual utterance pertains to a different question than the previous one'

GRABTURN

Grab turn

usually index finger raising; affiliated to turn-taking expressions

> R: du bleibst auf jeden fall auf der straße wo du
> bist und gehst geradeaus °h / in any case you
> stay on the street where you are and go
> straight ahead
>
> F: <<index raised, repeated>ich frage nochmal
> kurz was nach> (.) also ähm / I have abrief
> clarification request ehm

(SaGA V4, 4:28)

$$\begin{bmatrix} \text{Preconds} : \begin{bmatrix} \text{spkr} : \mathit{Ind} \\ \text{addr} : \mathit{Ind} \end{bmatrix} \\ \text{Effects} \quad : \begin{bmatrix} \text{spkr} = \text{pre.addr} : \mathit{Ind} \\ \text{addr} = \text{pre.spkr} : \mathit{Ind} \end{bmatrix} \end{bmatrix}$$

- speaker change
- can be realised by finger-raising instead of addressee pointing

- Even 'rude' pointings have a discourse meaning
- The significance of pointing gestures not only consists in locating referents, but also in controlling the addressee's attention and her view of the status of these referents in the incrementally emergent context
- Accordingly, a dialogical-oriented semantics is required
- Future work:
  - Extended corpus work
  - Interaction with gaze, intonation, …

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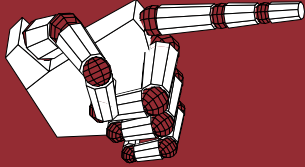
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