The semantic impact of co-speech gestures

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Gestures have a long tradition in neurosciences, evolution theory, communication theory, semiotics, robotics, and in particular psychology.

But – except for pointing gestures – they are generally ignored in (formal) semantics or pragmatics.

(recent exceptions: Lascarides & Stone 2009; Giorgolo 2012)
Why Gestures?

Received wisdom: gesture facilitates speech/language

- **Production:**
  - relieves working memory \(\text{(de Ruiter 2000)}\)
  - serves as helping device for retrieval of lexical items \(\text{(Krauss 1998)}\)
  - serves as a means to convey certain aspects of meaning \(\text{(McNeill 1992, Kita 2000)}\)

- **Perception:**
  - highlights new and important information \(\text{(McNeill 1992; Ebert et al. 2011)}\)
  - facilitates foreign language word learning \(\text{(Macedonia et al. 2011)}\)

- **Onto- and phylogensis:**
  - is a precursor for speech during acquisition \(\text{(Özçaliskan & Goldin-Meadow 2005)}\)
  - initiates evolution of language \(\text{(Tomasello 1999)}\)
Gestures and Communication

- Some of these theories argue: gestures serve communicative function and are intended as such (McNeill 1992, Kita 2000) ('Gesture and speech work together to convey one thought')

- One explanation (Hostetter & Alibali 2008): (co-speech) gestures are the result of simulated action and perception

- Such simulations are executed as gestures if:
  - activation of the simulated action is sufficiently high
  - the *gesture threshold* is low enough
  - the motor system is simultaneously engaged in speaking
Gestures and Communication

This elucidates...

- why gestures not only transmit emotions and feelings, but also semantic contentful information
- that speech-accompanying gestures can be co-expressive (double information already given by speech) and complementary (add information not expressed in speech)
- that recipients are sensitive to gestures and integrate their meanings (verified e.g. by retellings of multimodally presented stories, cf. Cassell et al. 1999)
Division of labor: gesture vs. speech

- Often made claim:
  certain aspects are better to be realized gesturally (e.g. shape), others verbally (e.g. abstract properties)
But there are other constraints that seem to be triggered by the utterance situation.

Gesture-speech allocation and the form of the gesture is influenced by...

- common ground (Holler & Stevens 2007; Gerwing & Bavelas 2004) and information structure (McNeill 1992)
- the concrete communicative goals of the speaker
Communicative Potential

What is usually not addressed in gesture research is...

- how gesture-speech allocation is influenced by the concrete communicative goals of the speaker
- what co-speech gestures reveal to the hearer about the speaker's communicative plan
- what co-occurring linguistic material does to the communicative potential of gestures
Main Claim

- When accompanying speech, gesture contribution is not at issue by nature

- Gesture contribution is not what the speaker intends to push conversion to

- Unless gestures...
  - stand alone (without co-occurring speech), or
  - accompany demonstratives
Main Questions

- **Questions for this talk:**
  
  - **How** does gesture meaning combine with verbal meaning?
    
    → **claim:** co-speech gestures are non-at-issue by default
  
  - **What exactly** is the (formal-semantic) meaning contribution of the gesture?
    
    → **claims:**
      - (iconic and pointing) gestures denote (rigid designators to) the gesture referent
      - there are additional meaning contributions due to alignment with verbal phrases
Some Background on gesture theory
Gestures

- Gesture: communicative movements of hands and arms transporting emotions, intentions, and thoughts

- Types of Gestures:
  - Iconic gestures
  - Pointing gestures
  - Emblematic gestures
  - Metaphoric gestures
  - Regulators
  - Beats
A Corpus Example

- Speech-accompanying iconic gesture
- From the Bielefeld Speech-and-Gesture-Alignment (SaGA) corpus of project B1 *Speech-gesture-alignment* of the SFB 673 *Alignment in Communication* (Lücking et. al 2013)
A Corpus Example

Interloc. right: The sculpture, [what is there represented]$^{reg-g}$?
Interloc. left: It is on a [grey base made of concrete]$^{ic-g}$. Three meters high. And on it, there are [red tubes]$^{ic-g}$. 
Gesture Phases

Gesture phrase divides up into three phases
(Kendon 1980; McNeill 1992):

- **Preparation phase**
  (preparation, pre-hold)
- **Stroke**
- **Retraction phase**
  (post-hold, retraction)
Temporal Alignment

Gesture and speech are temporally aligned:

- stroke and main accent
  (e.g. Pittenger, Hockett, & Danehey 1960; Loehr 2004)
  stroke occurs just before or at the same time as
  (but not later than) the nuclear accent

- gesture phrases and 'tone groups' (Kendon 1972)
  (i.e. 'the smallest grouping of syllables over which a completed intonation
tune occurs')

- gesture phrases and 'information units' (Kendon 1988, cf. Halliday 1985)
- gesture phrases and 'intermediate phrases' (Loehr 2004)
- gesture phrases and focus phrases (Ebert, Evert & Wilmes 2011)
Semantic Contribution

- Gesture information adds semantic content to the utterance
- Here: information about the shape of the base and the arrangement of the tubes
Objective 1

gestures systematically contribute non-at-issue meaning
Two Dimensions

- ‘Multidimensional meanings’: at-issue vs. non-at-issue material (e.g. Potts 2012)
- Words, phrases, and entire sentences contribute meanings in different ‘dimensions’ (cf. Grice 1975)
- Formal frameworks: Potts 2005, 2007; Gutzmann 2012; Koev 2013; AnderBois et al. t.a. among others
Two Dimensions within Speech

- Core phenomena:
  1. expressives like *damn* (or 'mixed items' like *cur*)
     Ex.: *The damn dog howled all night.*
  2. supplements like appositive relative clauses or appositive NPs
     Ex.: *Paul, the best horse riding instructor in the world, moved to Stuttgart recently.*

- bring in information that is not at issue at the time of utterance, but sneaked in as ‘secondary’ information
- information is not for disposition, non-negotiable
- Gestures naturally contribute information in a different 'dimension' (mode)
Expressives and Emblems

- Expressives ≈ (co-speech) emblematic gestures

- Transmit attitudes and feelings, often negative ones, often offensive in an immediate fashion (what Nouwen 2014 characterizes as 'toxic')

- Potts (2012, p. 2532): expressives create ‘a window into [the speaker’s] underlying emotional state at the time of utterance’

- Recurring metaphor for gestures: a ‘window to the mind’ (cf. the title of McNeill 2000, see also: McNeill 1992, 2005)
Supplements and Iconics

Appositives $\approx$ (co-speech) iconic gestures


Conveys roughly the same meaning as:

(2) Cornelia: "Ich habe eine große Flasche Wasser zum Talk mitgebracht." / "I brought a big bottle of water to the talk."
Gestures' Semantic Contribution


- Questions:
  - How does gesture meaning combine with verbal meaning?
  - What exactly is the meaning contribution of the gesture?
Gesture Meaning is Non-at-issue

- Gestures contribute non-at-issue meaning (in the sense of Potts 2005)
- Speech-accompanying (iconic and pointing) gestures roughly behave like appositives
- Appositives (cf. Potts 2005):
  (3) Ludger Beerbaum, an outstanding show jumper, was accused of poling.
  (4) Ludger Beerbaum, who is an outstanding show jumper, was accused of poling.
Tests for Non-at-issueness

- Appositives are argued to be non-at-issue (Potts 2005)
- Among other things, appositives have these properties:
  - they cannot be denied directly in discourse
  - they project, e.g. they cannot be the target of negation
Appositive Meaning is Non-at-issue

The direct denial test

**protest to appositive**

(5) Ludger Beerbaum, an outstanding show jumper, was accused of poling.

Direct denial response:

(6) #That's not true! He is actually a lousy show jumper.

Discourse interrupting protest:

(7) Hey, wait a minute! Actually, he is not an outstanding show jumper, but pretty lousy.

**protest to main clause**

(5) Ludger Beerbaum, an outstanding show jumper, was accused of poling.

Direct denial response:

(8) That's not true! He was actually accused of doping.
Appositive Meaning is Non-at-issue

The negation test

Negating the appositive

(9)  It is not true that Ludger Beerbaum, an outstanding show jumper, was accused of poling.

Negation elaboration:

(10) #He is actually a lousy show jumper.

Negating the main clause

(9)  It is not true that Ludger Beerbaum, an outstanding show jumper, was accused of poling.

Negation elaboration:

(11) He was actually accused of doping.
The direct denial test

Speech & gesture

(12) *I brought [a bottle of water].*

Direct denial response:

(13) #That's not true! You actually *brought a small bottle.*

Discourse interrupting protest:

(14) *Hey, wait a minute! Actually, the bottle is not as big.*

Speech only

(15) *I brought a big bottle of water.*

Direct denial response:

(16) *That's not true! You actually brought a small bottle.*
Gesture Meaning is Non-at-issue

The negation test

speech & gesture

(17) I did not bring [a bottle of water] to the talk.

Negation elaboration:

(18) #A small one is enough for me.

speech only

(19) I did not bring a big bottle of water to the talk.

Negation elaboration:

(20) A small one is enough for me.
How does gesture meaning combine with verbal meaning?

At-issue: semantic content of the speech signal

The speaker brought a bottle of water to the talk

Non-at-issue: 'semantic content' of the gesture (roughly):

The bottle is big
Gesture Meaning is Non-at-issue

- Intermediate conclusion:
  Gesture meaning is non-at-issue

- Predictions:
  - gesture meaning is processed like other non-at-issue material (e.g. appositives)
  - gesture meaning is not treated like asserted material and does not enter truth conditions straightforwardly (but see Syrett & Koev 2014 and their results for the truth-conditional contribution of appositives)

- Rating experiment to test for these predictions
Gesture Meaning is Non-at-issue

rating study: influence of iconic gestures on truth-value judgements

Auf diesem Bild ist eine Mauer mit [einem Fenster] zu sehen. (In this picture, you see a wall with a window.)

Does the description in the video fit the picture? □ 1 □ 2 □ 3 □ 4 □ 5
1 = not at all; 5 = perfectly
Gesture Meaning is Non-at-issue

rating study: influence of iconic gestures on truth-value judgements

Auf diesem Bild ist eine Mauer mit [einem Fenster] zu sehen...

match vs. mismatch
Prestudy to decide on the gesture/adjective to be taken

- Pretest to test for the **typicality of the gestures for the NP concept**
- Worry: some gestures might be considered typical for the NP ('interpretantenbezogene Gesten' (*concept related gestures*), cf. Fricke 2012)
- Picture/gesture match might then be considered high, because gesture matches NP concept, not the concrete DP object
- Solution: choose gestures that are untypical for the NP concept
Gesture Meaning is Non-at-issue

- materials:
  24 experimental items (48 fillers)

- independent variables:
  MATCH: match vs. mismatch
  MODE: gesture vs. adjective

- participants:
  40 students of the University of Stuttgart
  native speakers of German

expectation: gesture mismatch >> adjective mismatch
Gesture Meaning is Non-at-issue

**Graph:**
- **Y-axis:** Rating
- **X-axis:** Match vs. Mismatch
- **Colors:**
  - Adjective (dark grey)
  - Gesture (light red)
- **Annotations:**
  - (4,4) for Adjective, (3,7) for Gesture
  - (4,3) for Adjective, (2,1) for Gesture
  - *** indicates statistical significance

**Data Points:**
- Adjective: (4,4) for Match, (4,3) for Mismatch
- Gesture: (3,7) for Match, (2,1) for Mismatch
Gesture Meaning is Non-at-issue

- Predictions confirmed:
  - clear interaction effect: negative influence of mismatches much lower for gestures than for adjectives
  - gesture meaning does not enter truth conditions straightforwardly → not treated like asserted material
- Gesture meaning is non-at-issue
- Future work: run exact same experiment with appositives instead of gestures
Objective 2

gestures contribute lexical and constructional meaning
Gesture Meaning Contributions

What exactly is the meaning contribution of the gesture?


Conveys roughly the same meaning as:

(2) Cornelia: "Ich habe eine große Flasche Wasser zum Talk mitgebracht." / "I brought a big bottle of water to the talk."
Gesture Meaning Contributions

What exactly is the meaning contribution of the gesture?

- No difference between iconic and pointing gestures:

  (21) Daniel also brought [a bottle of water].

  But actually a big one.

- Continuation indicates:
  pointing gesture conveys The bottle is small

- pointing gesture makes non-at-issue contribution in the same way as a corresponding iconic gesture
Gesture Meaning Contributions

'Lexical' meaning

- iconic and pointing gestures function alike — both refer to an individual
- For iconic gestures: represented individual is abstract and carries at least the features crucial for comparison (cf. Umbach & Gust to appear)
Gesture Meaning Contributions

'Constructional' meaning

- Gesture and speech are temporally aligned
  (e.g. Pittenger, Hockett, & Danehey 1960; Loehr 2004)

- Proposal:

  indefinite article
  +  ☽ g

  name/definite article
  +  ☽ g

  noun phrase
  +  ☽ g

\{ 
\begin{align*}
  g \text{ is similar to verbal referent} \\
  (\text{cf. Umbach & Gust to appear for such an analysis of similarity demonstratives})
\end{align*}
\}

\{ 
\begin{align*}
  g \text{ is identical to verbal referent} \\
  \end{align*}
\}

\{ 
\begin{align*}
  g \text{ exemplifies verbal concept} \\
  (\text{cf. Fricke 2012, Lücking 2013})
\end{align*}
\}
Gesture Meaning Contributions

Illustrations via gesture mismatch:

- name + gesture → identity

  (22)  *[Daniel Hole]* is one of the organizers of this workshop.

- definite article + gesture → identity

  (23)  *[The big bottle of water]* is blue.

- noun phrase + gesture → exemplification

  (24)  *Most [bottles] are made of plastic nowadays.*
A Formal Analysis

Combined meaning contributions of speech and gesture:

- **Indefinite article + gesture**:
  - $a$
  - $\exists x$
  - Similarity
    - $\text{SIM}_{p^*}(x, z)$

- **Name/definite article + gesture**:
  - *the*
  - $\exists x$
  - Identity
    - $x = p^* z$

- **Noun phrase + gesture**:
  - *bottle*
  - $\text{bottle}_{p^*}(x)$

+ Presuppositions (existence & uniqueness)
A Formal Example
(indefinite article + NP)

Combined meaning contributions of speech and gesture:

\[ \exists x \land \text{bottle}_p(x) \]

\[ \text{SIM}_p^*(x, z) \text{ similarity \ exemplification} \]

\[ \exists z \land z = \{\text{bottle}_p(z)\} \]

\[ \exists z \land z = \{\text{bottle}_p(z)\} \land \exists x \land \text{bottle}_p(x) \land \text{SIM}_p^*(x, z) \land \text{bottle}_p(z) \]
A Formal Example
(indefinite article + NP)

(25) *Cornelia brought [a bottle].*

At-issue: there is a bottle that Cornelia brought

Non-at-issue: the gesture referent is similar to this bottle
the gesture referent is itself a bottle
Objective 3

demonstratives are 'dimension shifters'
German *so* as Dimension Shifter

The negation test

**speech & gesture**


*I never bring [a bottle of water] to talks.*

Negation elaboration:

(27) *Eine kleine reicht mir nämlich.*

*(A small one is enough for me.)*

**speech + *so* & gesture**

(28) *Ich bringe niemals [SO eine Flasche Wasser] mit zu Vorträgen.*

*I never bring [a bottle of water like that] to talks.*

Negation elaboration:

(29) *Eine kleine reicht mir nämlich.*

*(A small one is enough for me.)*
German so as Dimension Shifter

- What happened here?

(28) *Ich bringe niemals [SO eine Flasche Wasser] mit zu Vorträgen.*
(I never bring [a bottle of water like that] to talks.)

is synonymous to

(30) *Ich bringe niemals eine große Flasche Wasser mit zu Vorträgen.*
(I never bring a big bottle of water to talks.)

- so shifted gesture meaning contribution (i.e. similarity) from the non-at-issue level to the at-issue level
German *so* as Dimension Shifter

The direct denial test

**speech & gesture**


*I brought [a bottle of water].*

Direct denial response:

(31) *#Das stimmt nicht. Du hast doch eine kleine mitgebracht*  
*(That's not true! You actually brought a small bottle.)*

**speech + *so* & gesture**


*I brought [a bottle of water like that].*

Direct denial response:

(33) *Das stimmt nicht. Du hast doch eine kleine mitgebracht.*  
*(That's not true! You actually brought a small bottle.)*
Demonstratives make speech-accompanying gesture meaning at-issue

Comes close to Tomasello's (1999) claim (in the spirit of Bühler 1934) that demonstratives are attention shifters and serve to create 'joint attention' (cf. Diessel 2006)

Cf. Fricke 2012, Umbach & Ebert 2009, Streeck 2002 for placeholder-function of so (see also König 2012)

Demonstratives function as dimension shifters from non-at-issue to at-issue (pace Potts 2005, 2007 and Gutzmann 2012)
Demonstratives as Dimension Shifters

- *diese/this* is the demonstrative version of the shifted definite article *die/the*, i.e.

\[\text{diese} = \text{so} + \text{die}\] \[\text{this} = \text{so} + \text{the}\]

- **At-issue:**
  - \(\exists x\)
  - \(\text{SIM}_p(x, z)\)

- **Non-at-issue:**
  - \(\text{SIM}_p^*(x, z)\)
  - \(x = p^* z\)
A Formal Example
(so + indefinite article)

Combined meaning contributions of speech and gesture:

\[ \exists x \land \text{bottle}_p(x) \]

\[ \exists z \land z = \left. \left. \exists g \right| \right. \]

\[ \exists z \land z = \left. \left. \exists g \right| \right. \]

\[ \exists z \land z = \left. \left. \exists g \right| \right. \]

(cf. Umbach & Gust to appear)
(34) Cornelia hat [SO eine Flasche] mitgebracht.  
Cornelia brought [a bottle like that].

At-issue: there is a bottle which is similar to the gesture referent that Cornelia brought

Non-at-issue: the gesture referent is itself a bottle
Conclusion

- The division of labour between speech and gesture is (partly) determined by the communicative goals of the speaker.

- **How** does gesture meaning combine with verbal meaning?
  - Co-speech gestures are non-at-issue by default.
  - Demonstratives make gesture meaning at-issue.

- **What** exactly is the meaning contribution of the gesture?
  - Lexical: co-speech gestures are directly referential and denote rigid designators to their referent.
  - Constructional: depending on the verbal phrase, they add similarity to (indefinite), identity to (definite) or exemplification of (NP) the speech referent.
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References


References


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Appendix A
formal analysis, definites and demonstrative 'this'
A Formal Analysis

- Make use of ideas of Koev (2013) and AnderBois et. al. (to appear) to account for at-issue/non-at-issue distinction
- uni-dimensional and dynamic system → accounts for anaphora/binding between different levels
- Keep track of at-issue/non-at-issue content via propositional variables $p, p^*:
  - At-issue proposal: $p$
  - Non-at-issue imposition: $p^*$
- rough approximation of pragmatic use (cf. Farkas & Bruce, 2010):
  - $p$ is on the table for discussion
  - $p^*$ is not for discussion and silently imposed
(A1)  *Ludger Beerbaum, an outstanding show jumper, was accused of poling*

\[ \exists x \land x = \text{ludger_beerbaum} \land \text{outstanding_show_jumper}_{p^*}(x) \land \text{accused_of_poling}_{p}(x) \]

- derives two propositions:
  - **At-issue proposal:** Ludger Beerbaum is accused of poling
  - **Non-at-issue imposition:** Ludger Beerbaum is an outstanding show jumper
A Formal Analysis

- in the formal system: variables such as $x$ stand for an individual concept (i.e. they are of type $\langle s,e \rangle$)
- basic gesture meaning of $\Rightarrow g$: direct reference to gesture referent $g$ by means of a rigid designator, noted as $\left[ \Rightarrow g \right]$:
  
  for all possible worlds $w$: $\left[ \Rightarrow g \right](w) = g$
- coverbal performance of gesture $\Rightarrow g$:
  
  $$\ldots \exists z \land z = \left[ \Rightarrow g \right] \ldots$$
A Formal Example
(definite article + NP)

- Definite descriptions come with presuppositions of existence and uniqueness:

  the bottle  presuppositions:
  - there is a bottle
  - there is not more than one salient bottle

- presuppositions (not formally spelled out here) must be satisfied by the context set
A Formal Example
(definite article + NP)

Combined meaning contributions of speech and gesture:

\[ \exists x \land \text{bottle}_p(x) \]

identity

\[ x = p^* z \]

exemplification

\[ \exists z \land z = \left( \not\exists g \right) \]

\[ \exists z \land z = \left( \not\exists g \right) \land \exists x \land \text{bottle}_p(x) \land x = p^* z \land \text{bottle}_p^*(z) \]
(A2) (Consider all the things on the table.)
Cornelia brought [the bottle].

\[
\exists z \land z = 'g' \land \exists x \land \text{bottle}_p(x) \land x = p^* z \land \text{bottle}_p(z) \\
\land \text{bring}_p(\text{cornelia}, x)
\]

Presupposition: there is a unique (contextually salient) bottle

At-issue: Cornelia brought that bottle

Non-at-issue: the gesture referent is that bottle
the gesture referent is itself a bottle
A Formal Example
(this)

Combined meaning contributions of speech and gesture:

\[ \exists x \land bottle_p(x) \]

**Identity**

\[ x =_p z \]

**Exemplification**

\[ \exists z \land z = \mathcal{g} \]

\[ \exists z \land z = \mathcal{g} \land \exists x \land bottle_p(x) \land x =_p z \land bottle_{p^*}(z) \]
A Formal Example

Since the identity $x =_p z$ is at issue it becomes part of the description relevant for the presuppositions of the definite.

**this bottle** presuppositions:
- there is a bottle **which is identical to the gesture referent**
- there is not more than one salient bottle **which is identical to the gesture referent**

presuppositions are satisfied if there is a unique bottle pointed at
(A3) Cornelia brought [this bottle].

\[\exists z \wedge z = \{\text{ornelia}\} \wedge \exists x \wedge \text{bottle}_p(x) \wedge x = p \cdot z \wedge \text{bottle}_{p^*}(z) \wedge \text{bring}_p(\text{cornelia}, x)\]

**Presupposition:**
there is a unique (contextually salient) bottle which is identical to the gesture referent

**At-issue:**
Cornelia brought that bottle and that bottle is identical to the gesture referent

**Non-at-issue:**
the object pointed at is itself a bottle


Discussion

- The gesture is directly referential to \( g \) and determined by the utterance situation.

(A4)  \( ^F \text{If the two bottles changed places, [this bottle] would be blue.} \)

- This mirrors Kaplan's (1989a) crucial observation for 'true demonstratives' as directly referential concepts.

- Compare this to:

(A5)  \( ^T \text{If the two bottles changed places, [the bottle on the right] would be blue.} \)
Discussion

Crucial mismatch scenario I: definite

(A6) A: [The bottle of Christian] is tipped over.

(A7) B: True. But this is not it/Christian's bottle.

(A8) B: True. But this is not a bottle of Christian.

Presupposition: there is a unique (contextually salient) bottle of Christian

\[
\exists z \land z = \text{bottle of ch}_p(z) \land \exists x \land \text{bottle of ch}_p(x) \land x = p^* z \land \text{tip over}_p(x)
\]
Discussion

Crucial mismatch scenario II: demonstrative

(A9) A: [This bottle] is tipped over.

(A10) B: False, the object you are pointing at is not tipped over.

Presupposition: there is a unique (contextually salient) bottle which is identical to the gesture referent

\[ \exists z \wedge z = \left\{ \text{gesture} \right\} \wedge \exists x \wedge \text{bottle}_p(x) \wedge x = p \cdot z \wedge \text{bottle}_{p^*}(z) \wedge \text{tip}_o(x) \]
Appendix B

why are gesture contributions non-at-issue by default?
Sources for Non-At-Issueness

What is the source of the non-at-issueness of the gestures we have seen so far?

3 hypotheses:

a) the nature of gesture as such
b) their iconic character
c) the fact that they are speech-accompanying
Sources for Non-At-Issueness

The nature of gesture as such

- not tenable

- Ladewig (2012): speech-replacing gestures capable of conveying meaning on their own without speech; they are often not emblematic, but what Müller (1998) calls 'referential'

- Meaning of speech-replacing gestures enters at-issue dimension

  (B1a)  A: *Have you met Paul recently?*
         B: *shakes head.*

  (B1b)  *Can you pass me the [ ]?* + iconic 'shape' gesture

  (B1c)  *Have you been [ ]?* + iconic 'swim' gesture
Sources for Non-At-Issueness

Iconicity

- Iconic gestures are maximally iconic, also emblematic gestures involve some degree of iconicity
- Pointing gestures? Not iconic themselves, but their index often stands in an iconic relation to the referent
- Is iconicity the driving force for non-at-issue interpretation? (p.c. with Klaus von Heusinger)
- Test cases:
  - other types of iconic signs like *ideophones* within spoken languages (p.c. with Manfred Krifka) and *iconic signs in sign languages* (p.c. with Philippe Schlenker)
  - Prediction: they contribute non-at-issue
Sources for Non-At-Issueness

Iconicity

- Iconicity plays an important role in sign languages: many productive non-conventionalized signs and expression types
- One example: *GROW* in DGS (see Schlenker to appear for a related example in ASL)
- Depending on what grows, the sign looks different
- Also, iconic realization possibilities: *The group grew*
  - signer can vary distance between the endpoints and speed
  - small and slow movement = minor and slow growing process
  - big and quick movement = quick growing process
- A matter for intensive research whether these iconic meaning components can be interpreted at issue or not
Sources for Non-At-Issueness

Iconicity

- Ideophones (Dingemanse): ‘marked words that vividly evoke sensory events’ like *holterdipolter*

- Play a far more significant role in many African and Asian languages (Dingemanse 2012)

- Can be seen as vocal gestures (e.g., they often have onomatopoetic, i.e. iconic, properties, cf. also phonaesthemes, Firth 1964)

- Fixed inventory or productive? Are they non-at-issue??
  
  (B2a) *Er kam holterdipolter die Treppe herunter.*

  (B2b) A: *Wie kam er die Treppe herunter?  B: ???Holterdipolter.*

  (B2c) *Das kann nicht Peter sein.*

     ??*Er würde niemals holterdipolter die Treppe runterkommen.*

     ?*Er würde niemals so holterdipolter die Treppe runterkommen.*
Sources for Non-At-Issueness

Iconicity

- Could be (partly) responsible for non-at-issueness
- But we have seen examples of at-issue contributions of iconic gestures (if accompanied by demonstratives or speech-replacing)
- To be investigated more closely:
  ideophones, iconic elements in sign languages, possibly non-iconic gestures
Sources for Non-At-Issueness

Speech-accompanying character

- Because they come in a different mode, speech-accompanying gestures are naturally 'secondary'
- Could be (partly) responsible for non-at-issueness
- But we have seen examples of at-issue contributions of co-speech gestures (if accompanied by demonstratives)
- Further investigation needed
Appendix C

rating study on gesture meaning contribution
**Gesture Meaning is Non-at-issue**

**Prestudy** to decide on the gesture/adjective to be taken

- Solution: choose gestures that are untypical for the NP concept
- Two groups of 15 native speakers each were played silent videos and asked to rate the typicality of the gestures for the corresponding NP
- E.g. Is the gesture typical for a window? Scale: 1 (not typical at all) to 5 (very typical)
- Example: mean rating for 'window': square = 3.9, round = 1.3
Gesture Meaning is Non-at-issue

Fillers (48)

- A: 24 with gesture (polysems),
  B: 24 without gesture (background check)

- A: 12 gesture picture matches,
  12 gesture picture mismatches;

- Example A (match):
  *Auf diesem Bild ist eine Fliege zu sehen.*
  *In this picture you can see a fly/bow tie.*
Gesture Meaning is Non-at-issue

Fillers (48)

- B: 12 speech picture match, 12 speech picture mismatches
- Examples B (mismatch):
  *Auf diesem Bild sind im Hintergrund Wolken zu sehen.*
  *'In this picture you can see clouds in the background.*"
References of Appendix


