

# MULTIMODAL INTERACTION IN DIALOGUE AND ITS MEANING

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- Pointing: from pointing cone to shift of attention
- Discourse pointing
- Brief outlook to iconic gestures

# TODAY'S LECTURE

1. laughter
2. head shake: negation and beyond (noetic uses)
3. both head shake and laughter involve *Mood*

- Laughter originally studied by philosophers (Plato, Aristotle, Hobbes, Kant, Schopenhauer, Bergson, ...) and writers (Stendahl, Baudelaire,...), Freud etc
- Modern era: Darwin's *The expression of the emotions in man and animals* (Darwin, 1877)
- Darwin provides extensive evidence that a variety of non-human species have systematic means (non-verbal social signals [NVSS]) of displaying/making manifest their emotional states.
- These signals have origins in non-communicative acts:
  - ▶ sighing: a physiological requirement for deep breath periodically to avoid alveolar collapse in the lungs,
  - ▶ frowning: can be caused by need to avoid glare,
  - ▶ laughing: can be caused by tickling (in the right circumstances)

## LAUGHTER: OVERVIEW II

- Forgotten until the 1950s; rediscovered inter alia by Paul Ekman, who went on to show that NVSS such as smiling, frowning, glaring etc universally recognisable across cultures (lots of caveats!)
- Much interest by social psychologists, biologists. (Gervais and Wilson, 2005) and by neuroscientists (Szameitat et al., 2009) since, in contrast to verbal signals, there is significant evidence for continuity with apes (Ross, Owren and Zimmermann, 2010)
- These emerge at a far earlier stage than verbal signals with infants (Sroufe and Wunsch, 1972).
- Goes back even to rats? (Panksepp and Burgdorf, 2003) and more recently (Ishiyama and Brecht, 2016)
- Some dubious that this is connected to the same system (Gervais and Wilson, 2005).
- But similar connection to moods and ticklishness.

# LAUGHTER: OVERVIEW I

- In fact, laughter is pervasive in conversation:
- 30k tokens in the spoken British National Corpus (BNC) (1 every 14 turns)
- 5.8–57/10 minutes of conversation (Vettin and Todt, 2005; Mazzocconi, Tian and Ginzburg, 2016)
- How much laughter and what functions it has widely divergent across corpora (e.g., DUEL (Hough et al., 2016) v. BNC).

- how to systematically characterise the functions of laughter?
- a variety of incommensurate taxonomies have been proposed for classifying the functions of laughter (Poyatos, 1993; Shimizu, Sumitsuji and Nakamura, 1994; Campbell, Kashioka and Ohara, 2005; Reuderink et al., 2008; Szameitat et al., 2009).
- For a recent study with wide coverage of laughs in the BNC and the DUEL corpus see Mazzocchi, Tian and Ginzburg, 2020a
- Not so much work among linguists, until recently, and most of that by speech scientists/phoneticians.
- Why? Assumption that NVSS system distinct and non-interacting with the linguistic system.

- A crucial assumption in the literature, usually implicit (but see e.g., (P. Glenn and Holt, 2013) for an explicit statement in this regard for laughter) is that laughter does not have propositional content (though see (Bavelas and Chovil, 2000; Wierzbicka, 2000) for proposals that facial gestures do have symbolic meaning)
- In other words, laughter (and smiling and sighing etc) have a very different meaning from "word based" language, that is used to grossly speaking ask questions, give answers, make commands, greet, part etc.



## SOME BASIC QUESTIONS, AIMS I

- Does laughter (and more generally non-verbal social signals like smiling, frowning etc) have propositional content? Is it input to pragmatic processes? (Yes; yes).
- Does laughter interact with spoken language? (Yes)
- Does adding NVSS into semantics/pragmatics require major changes? No, but ...: requires emotional component, needed for other purposes.
- Aim: explain the range of uses it has by positing a small number of meanings and deriving the uses by dialogical and domain-based reasoning.

## LAUGHTER: EARLY HISTORY I

- (Beattie, 1779) defends in some detail the thesis that 'Laughter seems to arise from the view of things incongruous united in the same assemblage.' (Beattie, 1779, p. 344 et seq).
- This view became influential via Kant and Schopenhauer:  
*laughter arises out of the sudden transformation of a strained the expectation into nothing, or, in other words, its reduction to absurdity ... a parallelism between body and mind: the body's convulsions reflect its sympathy with the mind's jostling.* (Kant, Critique of Judgment)
- *Laughter originates in every instance from nothing other than perceived incongruity between a concept and the real objects that had been thought through it... and is itself only the expression of this incongruity, a reflex reaction to mental stimuli.* (Schopenhauer, The World as Will and Representation, vol. 1)

## LAUGHTER: EARLY HISTORY II

- Freud: Certain events create sexual/aggressive energy; when the tension is undone dramatically , energy release and result: laughter. (Freud, 1905; Freud, 2003)

- So key notions associated with laughter:
  1. Superiority
  2. Release
  3. Incongruity
- In fact, there exists much laughter without Spkr/Addr superiority, that does not give rise to 'release', and (to a lesser extent) that is not based on incongruity, but their potential needs capturing.
- (Raskin, 1985a) no contradiction:
  - ▶ superiority relates to social relations between interacting parties,
  - ▶ release relates to participants' emotional states,
  - ▶ incongruity is a semantic-pragmatic characteristic of the *laughable*—laughter's trigger.

# CONVERSATION ANALYSIS AND LAUGHTER I

- Initial work by Jefferson (Jefferson, 1979): she describes various cases where laughter can be (but is not necessarily) responded to by laughter:
  - (1) a. Roger: you are what dey refer to in rougher circles as a chickn shit.  
Roger: hhhhehh  
Ken: heh:heh:heh
  - b. Bee: So the next class hhh!hh fer an hour and fifteen minutes I watched his ha:nds hh hh hhh Ava: What's the matter with him?  
Bee: hh t hhh he keh he doesn't haff uh full use uff hiss hha fingers
- Entirely non-jokey subject matter;
- Spontaneous, note occurrence of self-repair/disfluencies

## CONVERSATION ANALYSIS AND LAUGHTER II

- In (1a), an instance of *antiphonal* laughter, ‘responsive laughter’ whereby the responder shares the initial laugher’s assessment of the situation.
- (1b) illustrates that laughter can raise a potential issue for discussion that the other participant need not take up, staying with the direct issue raised.
- Crucially, **Jefferson treats laughter as a possible response in the range of responses an utterance generates, on a par with verbal utterances.**
- Jefferson takes a strategic view of laughter, as a social activity a speaker can invite others to join in.

## CONVERSATION ANALYSIS AND LAUGHTER III

- Much subsequent CA work along lines inspired by this (P. J. Glenn, 2003; P. Glenn and Holt, 2013; Clift, 2012).
- In particular, a key insight of (P. J. Glenn, 2003), the notion of *laughable*: *laughter marks its referent as laughable and potentially funny*.
- Work in CA has documented the use of laughter in a variety of settings:
  - ▶ medical (Haakana, 1999)
  - ▶ job interview situations (P. Glenn, 2013)
  - ▶ political: politicians use laughter to deflect questions. (Romaniuk, 2013)

## CONVERSATION ANALYSIS AND LAUGHTER IV

- Problems: as with CA work in other domains (see e.g., discussion of repair in (Ginzburg and Kolliakou, 2018)), no semantics is proposed.
- There is recognition of a variety of effects laughter can produce:
  - (2) a. (same turn) a tension between what we say, how this could be interpreted by others and what we mean
  - b. in terminal position can modulate a (potentially or incipient) disaffiliative action
  - c. as a “post-completion stance marker”
  - d. adjust the seriousness of its referent (P. Glenn and Holt, 2013, p. 6).
- But in the absence of anything more than a ‘referential semantics’ in terms of laughables these remain an essentially arbitrary list of effects.



# LAUGHTER AS CONTENT BEARING AND INTERACTING WITH VERBAL CONTENT

- Does laughter have propositional content?
- Does laughter participate in semantic/pragmatic processes?

# BANKERS, ORANGUTANS, GOD, AND ABRAHAM I



## BANKERS, ORANGUTANS, GOD, AND ABRAHAM II

A: I will take care of your savings. B: (laughs)

~> I don't think you will take care of my savings!

God: You will at age 99 with your aged wife Sarah have a son.

ABraham: laughs. ~> I don't think I will at age 99 have a son ...

- (3) (Context: Bayern München goalkeeper Manuel Neuer faces the press after his team's (*Dreierkette*) defense has proved highly problematic in the game just played (3-2 against Paderborn).)
- a. Journalist: (smile): *Dreierkette* auch One Option? (*Is the three-in-the-back also an option?*) Manuel Neuer: fuh fuh fuh (brief laugh)  $\leadsto$  The three-in-the-back is not an option!

- b. <https://www.youtube.com/watch?v=HxN1STgQXW8>  
at about 2:25 Theresa May : They will know we built them  
a better Britain. B: (laughs)  $\leadsto$  that's a ridiculous claim (I  
don't believe that they will know we built them a better  
Britain)

## WHY ASSIGN CONTENT TO LAUGHTER ACTS? I

- The previous examples illustrates that laughter can occur as a stand alone utterance.

- Laughter's force disputable:

Lecturer: so the Korean war started and the United Nations' forces were commanded by one General Douglas MacArthur, General Douglas MacArthur, in case you don't know, won the second world war single handedly

Audience: <laugh>

Lecturer : er <laugh> it's not funny, he believed it! (BNC)

## WHY ASSIGN CONTENT TO LAUGHTER ACTS? II

- There is also a significant class of ‘positive’, affiliative, empathetic laughters, which we will unify as *pleasant*.
- In his novel *The Book of Laughter and Forgetting* Kundera, 2020 explicitly suggests the existence of two forces laughter can have, which correspond quite closely with the opposition we propose to make here.

(4) Example from a conversation at a bar (BNC, KDP)†

Richard: Right, thanks Fred. You're on holiday after today?; Fred: mh mh (affirmative);

Richard: Lovely. < laughter/ >

(5) Interviewer: ... [cough] Right, [cough][cough] you seem to be pretty well qualified. John: I hope so (laugh) yes (laugh) (BNC, JNV)

- (6a-c) exemplifies intra-utterance laughter, where the laughter has the effect of scare-quoting (Predelli, 2003) the sub-utterance it precedes.
  - (6) a. A : well I I'm interested in it in a ( . laughs ) ((comfortably))  
re:laxed way, you know, I mean I . I do keep, I have kept up with  
it (London Lund Corpus)
  - b. (i) A: Jill is John's, (laugh) long-term friend. (ii) A: She is John's  
long-term (laugh) friend.
  - c. (i) A: Jill is John's, (wink) long-term friend. (ii) A: She is John's  
long-term (wink) friend.



- We postulate two basic meanings for laughter:
  - (7) a.  $\text{Pleasant}(p, \delta, \text{spkr})$  given: a context that supplies a laughable  $p$  and speaker  $\text{spkr}$ , content: the laughable is pleasant for the speaker to a contextually given degree  $\delta$ .
  - b.  $\text{Incongr}(p, \delta, \tau)$  given: a context that supplies a laughable  $p$  and topos  $\tau$ , content: the proposition that  $p$  is incongruous relative to  $\tau$  (to extent  $\delta$ ).
- Here one of the relata of incongruity is a topos  $\tau$ , an inference rule that represents “congruity” (what is expected).  
(Breitholtz, 2014).

# INGREDIENTS NEEDED FOR A THEORY OF THE MEANING OF LAUGHTER

- What is pleasant?
- Account of incongruity

- Mood : weighted sum of appraisals
- Mood represents the publicly accessible emotional aspect of an agent that arises by publicly visible actions (such as non-verbal social signal), which can but need not diverge from the private emotional state.
- As with insincere illocutionary acts, one manifestation of a “fake” laugh/smile is a laugh/smile that does not reflect genuine pleasure.
- We treat each appraisal as being a record of the type Appraisal, given in (8).

$$\begin{aligned}
 (8) \text{ a. Appraisal} &= \begin{bmatrix} \text{pleasant : Pleasure} \\ \text{responsible : RecType} \\ \text{power : Power} \end{bmatrix} \\
 \text{b. Pleasure} &= \begin{bmatrix} \text{Pred = Pleasant : EmotivePred} \\ \text{arousal : } \begin{bmatrix} \text{pve : } \mathbb{N} \\ \text{nve : } \mathbb{N} \end{bmatrix} \end{bmatrix} \\
 \text{Power} &= \begin{bmatrix} \text{Pred = Powerful : EmotivePred} \\ \text{arousal : } \mathbb{N} \end{bmatrix}
 \end{aligned}$$

- Each field corresponding to an answer to a stimulus evaluation check or to the basic dimensions proposed by Russell.
- We restrict attention here to these dimensions, which seem needed for current purposes.

- Pleasantness is specified via a scalar predicate *Pleasant* which can be positively aroused or negatively aroused or both.
- Both corresponds to the case of mixed emotions (Minsky, 2007), which in practice are relatively common (Oatley and Duncan, 1994):
  1. the case of a joke told in a funeral
  2. Conversely, the case of a sigh occurring when one is generally in a rather elated mood.
- Power is specified in terms of a scalar predicate *Powerful* whose lower bound arises when the arousal value is zero.

## AN UPDATE RULE FOR EMOTION I

- An update rule that increments the positive pleasantness recorded in Mood to an extent given by the weight  $\epsilon$  is given in (9a), whereas the converse operation of incrementing the negative pleasantness is given in (9b).

(9) a.  $\text{PositivePleasantnessIncr}(\delta, \epsilon) =_{\text{def}}$   
    (i)  $\text{Mood.pleasant.arousal.pve} =$   
         $\epsilon(\text{Mood.pleasant.arousal.pve}) + (1 - \epsilon)\delta$   
    (ii)  $\text{Mood.pleasant.arousal.nve} =$   
         $\epsilon(\text{Mood.pleasant.arousal.nve})$   
b.  $\text{NegativePleasantnessIncr}(\delta, \epsilon) =_{\text{def}}$   
    (i)  $\text{Mood.pleasant.arousal.nve} =$   
         $\epsilon(\text{Mood.pleasant.arousal.nve}) + (1 - \epsilon)\delta$   
    (ii)  $\text{Mood.pleasant.arousal.pve} =$   
         $\epsilon(\text{Mood.pleasant.arousal.pve})$

c. PositivePleasantnessIncr( $\delta = 12, \epsilon = .25$ )

$$\left( \begin{array}{l} \text{pleasant} = \left\langle \text{pleasant}, \begin{bmatrix} \text{pve} = 4 \\ \text{nve} = 2 \end{bmatrix} \right\rangle \\ \text{responsible} = [x = b] \\ \text{power} = \langle \text{powerful}, 2 \rangle \end{array} \right)$$

$$= \left( \begin{array}{l} \text{pleasant} = \left\langle \text{pleasant}, \begin{bmatrix} \text{pve} = 10 \\ \text{nve} = .5 \end{bmatrix} \right\rangle \\ \text{responsible} = [x = b] \\ \text{power} = \langle \text{powerful}, 2 \rangle \end{array} \right)$$

## PLEASANT SMILING AND LAUGHTER I

- One meaning for smiling: communicates positive pleasantness, with low to medium arousal; weaker arousal than laughter.
- Form: which needs to be specified in terms of various parameters pertaining to facial shape/activity (the Zygomaticus major and orbicularis orbi muscles); as with crying we abstract away from this using the label 'smileshape':



## PLEASANT SMILING AND LAUGHTER II

$$(10) \quad \left[ \begin{array}{l} \text{shape : smilesapetype} \\ \\ \text{dgb-params : } \left[ \begin{array}{l} \text{spkr : Ind} \\ \text{addr : Ind} \\ \text{t : TIME} \\ \text{c1 : addressing(spkr,addr,t)} \\ \delta : \text{Int} \\ \text{c2 : Arousal}(\delta, \text{phon}) \\ \textbf{c3 : } \delta < \textbf{HighArousal} \\ \text{s : Rec} \\ \text{p = } \left[ \begin{array}{l} \text{sit = l} \\ \text{sit-type = L} \end{array} \right] : \text{prop} \end{array} \right] \\ \\ \text{content = } \left[ \begin{array}{l} \text{sit = s} \\ \text{sit-type = } \left[ \text{c4: Pleasant(p, } \delta, \text{spkr)} \right] \end{array} \right] : \text{Prop} \end{array} \right]$$

- Similarly, we can formulate a lexical entry for pleasure-expressing laughter.
- The *effect* of such laughter on the speaker is captured in terms of an update rule that increments the (positive) pleasantness recorded in Mood to an extent given by the weight  $\epsilon$ , as described earlier.
- Note that this conversational rule is *participant sensitive*: it can apply only to someone laughing;
- This ensures that in order to boost one's Mood.pleasantness (which represents one's *public* emotional state) one is actually required to laugh (or engage in other action, as we will see below.).

# PLEASANT SMILING AND LAUGHTER IV

$$\begin{array}{lcl}
 (11) & a. & \left[ \begin{array}{l} \text{phon} : \text{laughterphontype} \\ \\ \text{dgb-params} : \left[ \begin{array}{l} \text{spkr} : \text{Ind} \\ \text{addr} : \text{Ind} \\ \text{t} : \text{TIME} \\ \text{c1} : \text{addressing}(\text{spkr}, \text{addr}, \text{t}) \\ \delta : \text{Int} \\ \text{c2} : \text{Arousal}(\delta, \text{phon}) \\ \text{s} : \text{Rec} \\ \text{p} = \left[ \begin{array}{l} \text{sit} = \text{l} \\ \text{sit-type} = \text{L} \end{array} \right] : \text{prop} \end{array} \right] \\ \\ \text{content} = \left[ \begin{array}{l} \text{sit} = \text{s} \\ \text{sit-type} = \left[ \text{c4} : \text{Pleasant}(\text{p}, \delta, \text{spkr}) \right] \end{array} \right] : \text{Prop} \end{array} \right]
 \end{array}$$

b.

$$\left[ \begin{array}{l} \text{tcs} = \left[ \begin{array}{l} \text{dgb} : \text{DGBType} \\ \text{private} : \text{Private} \end{array} \right] : \text{TCS} \end{array} \right.$$
$$A = \text{dgb.spkr} : \text{IND}$$
$$A.\text{pre} : \left[ \text{LatestMove.cont} = \text{Assert}(\text{spkr}, \text{Pleasant}(p, \delta, \text{spkr})) : \text{IllocProp} \right]$$
$$A.\text{effect} : \left[ \text{PositivePleasantnessIncr}(\delta, \epsilon) \right]$$

## PLEASANT SMILING AND LAUGHTER VI

- From pleasantness, we can derive three functions of laughter: affiliation, empathetic acknowledgement, and superiority.
- Affiliative laughter arises by resolving the laughable as the state where the speaker and addressee are *co-present*.
- We abbreviate the laughable

$$\left[ \begin{array}{l} \text{sit} = l \\ \\ \text{sit-type} = \left[ \begin{array}{l} A:\text{Ind} \\ B:\text{Ind} \\ t: \text{TIME} \\ c1:\text{addressing}(A,B,t) \\ c2: \text{CoPresence}(\{A,B\},t) \end{array} \right] \end{array} \right] \text{ as } \text{CoPresence}(A,B).$$

- Affiliation then involves the following sequence:
  1. A laughs at B; content:  $\text{Pleasant}(A, \delta, \text{CoPresence}(A, B))$  bringing about an update: A's  $\text{Mood.pleasant.arousal}$  is positively incremented by  $\delta$ .
  2. This can give rise to a similar Mood update for B, signalled by laughter at A with content  $\text{Pleasant}(B, \delta', \text{CoPresence}(B, A))$ .
- This does not rule out the possibility one would like to distinguish the two “functions” (expressing pleasure and affiliation) if there were systematic reasons for so doing—say, a laugh incontrovertibly dedicated to the latter function and positing a “precompiled” lexical entry therefor.
- Nonetheless, absent such a demonstration, we need not assume affiliation *requires* a distinct laughter.

- Empathetic laughter: Empathetic acknowledgement of A's utterance by B laughing requires the defeasible assumption (more on this soon) *If it's pleasant for me that you said that  $p$ , then I agree that  $p$* —A's utterance is the event pleasant for B.
- Superiority/mocking laughter: A observes an event  $e$  which affects B negatively. Laughter can then be taken to reflect A's appraisal of  $e$  as pleasant. If, in addition, A has control over the event, the added element of superiority or even sadism can emerge.

- Negation as involving *alternatives*.
  - The types  $S$  and  $T$  are incompatible  $=_{def}$  it is never the case that  $s : S$  and  $s : T$ .
  - Classifying the table as *not black* requires evidence that it is green or brown or blue ....
- (12) a. If  $T$  is a type then  $\neg T$  is a type  
b.  $a : \neg T$  iff there is some  $T'$  such that  $a : T'$  and  $T'$  precludes  $T$ . We say that  $T'$  *precludes*  $T$  iff either
1.  $T = \neg T'$  or,
  2.  $T, T'$  are non-negative and there is no  $a$  such that  $a : T$  and  $a : T'$  for any models assigning witnesses to basic types and p(red)types
- It follows from this that:
    - ▶  $a : \neg\neg T$  iff  $a : T$



- If  $a : \neg\neg T$ , there exists  $T'$  that precludes  $\neg T$  such that  $a : T'$ . Since  $\neg T$  is negative, the only precluding element is  $T$ , hence  $a : T$ . Now assume  $a : T$ , then there exists  $T'' (= T)$  that precludes  $\neg T$ , hence  $a : \neg\neg T$ .
- It is the case that  $s : T$  or  $s : \neg T$
- On the other hand, in contrast to classical negation:
- $a : T \vee \neg T$  is *not* necessary ( $a$  may not be of type  $T$  and there may not be any type which precludes  $T$  either).
- If I observe Jo cutting onions, the situation I observe neither tells me if Putin is smoking a cigar, nor that he is not smoking a cigar.
- Hence,  $s_{visual} : Cutting(j, o)$ ,  $s_{visual} : \neg CigarSmoke(putin)$ , hence: it is not the case that  $s_{visual} : CigarSmoke(putin)$ , but neither is it the case that  $s_{visual} : \neg CigarSmoke(putin)$

- Thus this negation is a hybrid of classical and intuitionistic negation.

- incongruity as a clash between (an enthymeme triggered by) the laughable and a topos that represents ‘congruity’, i.e., the much more probable course of action.
- In (13),  $p$  is a proposition comprised of  $l$ , the laughable event, and  $L$  a type that classifies  $l$ ,  $E$  is the triggered enthymeme, and  $\tau$  is the clashing topos— $E$ ’s domain is a subtype of  $\tau$ , but its range ( $L_1$ ) is **incompatible** with  $\tau$ ’s range:  
 (13) Incongruous  $(p, \tau)$  iff for  $p = \left[ \begin{array}{l} \text{sit} = l \\ \text{sit-type} = L \end{array} \right] : \text{TrueProp}, \tau$   
 $= \lambda r: T_1 . T_2 : (\text{Rec} \rightarrow \text{RecType})$ , there exists  $E = \lambda r: L . L_1 : (\text{Rec} \rightarrow \text{RecType})$  such that  $L \sqsubseteq T_1$  and  $L_1 \perp T_2$
- Given this, we can now formulate the lexical entry for incongruous laughter:

# MODELLING INCONGRUITY II

(14) incongruous laughter

$$\left[ \begin{array}{l} \text{phon} : \text{lphontype} \\ \\ \text{dgb-params} : \left[ \begin{array}{l} \text{spkr} : \text{Ind} \\ \text{addr} : \text{Ind} \\ \text{t} : \text{TIME} \\ \text{c1} : \text{addressing}(\text{spkr}, \text{addr}, \text{t}) \\ \delta : \text{Int} \\ \text{c2} : \text{Arousal}(\delta, \text{phon}) \\ \text{p} = \left[ \begin{array}{l} \text{sit} = \text{l} \\ \text{sit-type} = \text{L} \end{array} \right] : \text{Prop} \\ \tau = \lambda r : (T_1)T_2 : (\text{Rec})\text{RecType} \\ \text{c2} : \text{SubType}(\text{L}, T_1) \end{array} \right] \\ \\ \text{content} = \left[ \begin{array}{l} \text{sit} = \text{s} \\ \text{sit-type} = \left[ \text{c3} : \text{Incongr}(\text{p}, \delta, \tau) \right] \end{array} \right] : \text{Prop} \end{array} \right]$$

# MODELLING INCONGRUITY III

## EXAMPLES FOR INCONGRUITY I


- How do we explain the 'slipping on a banana peel' incongruity?
- Congruity: If one walks at  $t_0$ , one continues to stay upright at  $t_1$ ; observed: Jo slips on a a banana peel at 11:59:55.  
Enthymeme: If Jo walks at 11:59:54, she slips on a a banana peel at 11:59:55.
- <https://www.youtube.com/watch?v=RP4abiHdQpc>
- Congruity: the persistence topos—If an object has a certain form at  $t_0$ , it continues to have this form at  $t_1$ ; observed: Dad tears the paper at 11:59:55. Enthymeme: If the paper is whole at 11:59:54, it is torn at 11:59:55.

- We sketch some examples of functions that emerge from the basic laughter meanings via pragmatic reasoning:
  1. **Irony:** Whenever a declarative utterance is made by A which involves a proposition  $p$  there are (inter alia) two possible understandings available (consequents of conversational topoi): with high probability: A asserts  $p$ , or with low probability: A intends to convey a content incompatible with  $p$ . Incongruity here involves a clash with the high probability topos.
  2. **Question deflection:** laughter as deflecting a question can be analyzed as signalling a clash with standard conversational rule following a question. The conflicting topos in this case is the conversational rule *if A poses  $q$ , then either A or B utter a utterance conveying a direct answer..*

# HEAD SHAKE AND 'No' I

- Claim: headshake is a form variant of verbal 'No'.
- Initial support:

(1) a. A: (1) Do you want some coffee? / (2) You don't want some coffee?

b. B:  (= head shake)

- The crucial observation here is that depending on whether A produced a negative or a positive propositional kernel in the question, B's head shake is either a denial of the positive proposition (1) or a confirmation of the negative one (2). That is, a head shake behaves like q/a 'No'.



## HEAD SHAKE AND ‘No’ II

- This is one of the meanings of *no* discussed by Tian and Ginzburg (2016) as “No” with explicit antecedent’, a simplified lexical entry for which is given as in (2):

(2)

$$\left[ \begin{array}{l} e_{head} : no / \text{🙄} \\ \text{dgb-params} : \left[ \begin{array}{l} \text{spkr} : Ind \\ \text{addr} : Ind \\ \text{u-time} : Time \\ \text{c1} : \text{addr}(\text{spkr}, \text{addr}, \text{u-time}) \\ p : Prop \\ \text{MaxQUD} = p? : \text{PolarQuestion} \end{array} \right] \\ \text{content} = \text{Assert}(\text{spkr}, \text{addr}, \text{u-time}, \text{NoSem}(p)) : \text{IllocProp} \end{array} \right]$$

- NoSem negates  $p$  if  $p$  is a positive proposition, and confirms  $p$  if  $p$  is a negative proposition:

$$\text{NoSem}(p) = \begin{cases} \neg p & \text{if } p : \text{PosProp} \\ p & \text{if } p : \text{NegProp} \end{cases}$$


- Note that the result of 'NoSem( $p$ )' is always of type *NegProp* (if  $p : \text{NegProp}$  then  $p = \neg q$ , which remains unchanged).

## HEAD SHAKE AND 'No' I

- The other uses of “No” discussed by Tian and Ginzburg (2016) are called “‘No’ with exophoric antecedent’ (3) and “‘No’ with implicit antecedent’ (4).


- (3) a. (*A child is about to touch a socket*) Adult: No!  
b. (*A discovers smashed beer bottle in freezer*) A: No!  
(Both uses of ‘No’ indicate that the speaker does not want a certain situation type to happen or to be realized)
- (4) a. A: How’s your girlfriend?  
b. B: She is no longer my girlfriend.  
c. A: Ah, I’m sorry.  
d. B: No, she is my wife now.

## HEAD SHAKE AND 'No' II

- The occurrences of *No* in (3) and (4) can be replaced by the head shake  without a change in meaning. (Though speaking requires auditory, shaking visual attention.)
- Hence, there is evidence that the head shake and the particle 'No' are both form variants of the same lexical resources (this in cultures where the head shake is associated with negation and not with affirmation, as it is in Bulgaria and, with some modifications, Greece, Turkey, and Southern Italy) (Jakobson, 1972).

# SIMULTANEOUS HEAD SHAKE

- Simultaneous head shake can be used by a speaker to emphasize negative utterances, as in a famous speech given by Bill Clinton in (5) [6:29].
- Note that three chunks of head shake gestures are produced, one for each of the negated verbal sub-utterances (*never ... not ... never*).
- ➔ Repetition seems to be used as a temporal means of aligning head movements and the scope of negation, as observed in manual gesture (Harrison, 2010)

(5) *I never told anybody to lie (.) not a single time (..) never*  
[repeated 

# SIMULTANEOUS HEAD SHAKE

- Simultaneous head shake seems to presuppose a negative particle in speech:

(6) a. I don't believe you.



b. ?I believe you.



- (6a) provides a negative proposition,  $\neg\text{believe}(A,B)$ , which by *NoSem* the headshake affirms.
- (6b) provides a positive proposition,  $\text{believe}(A,B)$ , which by *NoSem* the headshake negates, hence a contradiction ensues.

- However, the contradiction can be ameliorated:

(7) *(Context: Claims that B stole 500 Euro)*

- a. B: They say I stole the money. But I didn't.
- b. A: I believe you.



- One can understand A's headshake as
  1. affirming the negative proposition B makes, or
  2. expressing that A is upset about 'their' accusation.
- In either case, this requires us to assume that the head shake can be **disassociated from speech** that is simultaneous with it.

## HEAD SHAKE AND DISSOCIATED CONTENTS

- Dissociated gesture and speech is an assumption argued for in some detail with respect to speech laughter. (Mazzocconi, Tian and Ginzburg, 2020b)
- Such observations are of great importance for a multimodal theory.
- This is because it has been claimed that multi-tier interpretation is guided by the heuristic ‘if multiple signs occur simultaneously, take them as one’. (Enfield, 2009, p. 9)
- The semantic and pragmatic synchrony rules stated by McNeill (1992) are even more explicit: ‘[...] speech and gesture, present the same meanings at the same time’, p. 27; ‘[...] if gestures and speech co-occur they perform the same pragmatic functions’, p. 29



(8) (*Context: Claims that B stole 500 Euro*)

a. B: They say I stole the money. But I didn't.

b. A: I believe you.



- One can understand A's headshake as expressing that A is upset about 'their' accusation and disapproves it.

## BACK TO EXAMPLE

'I believe you.'

■ 
$$\left[ \begin{array}{l} \text{form : } \text{😊} \\ \text{dgb-params : } \left[ \begin{array}{l} \text{spkr : } Ind \\ \text{sito : } Rec \\ \delta : Int \text{ (negative)} \\ \text{c2 : } Arousal(\delta, form) \\ Q : Type (= \text{what they did}) \\ p = \left[ \begin{array}{l} \text{sit = so} \\ \text{sit-type = } Q \end{array} \right] : Prop \end{array} \right] \\ \text{cont = } CBI(spkr, p, \delta) : Prop \end{array} \right]$$

■ **NegativePleasantnessIncr:**

$$\left[ \begin{array}{l} \text{pre: } [LatestMove.cont = Assert(spkr, disapprove(spkr, p, \delta)) : IllocProp] \\ \text{effect : } [NegativePleasantnessIncr(\delta, \epsilon)] \end{array} \right]$$

# THROAT WHISTLING

*Contestant throat whistles while playing the guitar in talent show)*

Judge: **You're such a talent. Incredible** + 🙄

(Simplified from

<https://languagelog.ldc.upenn.edu/nll/?p=50436>)



[show on YT, images clickable]

- The head shake expresses amazement concerning the artistic achievement.
- ➔ It expresses **positive appraisal**.

- 'Negation of situation' is expressed via negative *Mood*  $\approx$  *don't want a situation to be realized*
- in general, positive and negative mood correspond to approval resp. disapproval headshake
- ➔ Head shake as a **noetic** signal: an expressive phenomenon (mood, emotion) that influences thinking and knowing (semantics) [inspired by William James]
- ➔ common pattern underlying multimodal communication (?)

# THE MEANING OF LAUGHTER I

- Laughter has meaning akin to what words and phrases possess. (Ginzburg, Mazzocconi and Tian, 2020)
  - It involves reference to external real world events, quite analogously to event anaphors (Plessner, 1970).
  - It has stand alone meanings:
- (9) a. (Context: Bayern München goalkeeper Manuel Neuer faces the press after his team's (*Dreierkette*) defense has proved highly problematic in the game just played (3-2 against Paderborn).)
- b. Journalist: (smile): *Dreierkette* auch 'ne Option? (*Is the three-in-the-back also an option?*) Manuel Neuer: fuh fuh fuh (brief laugh)  $\leadsto$  The three-in-the-back is not an option!

## THE MEANING OF LAUGHTER II

- Laughter participates in semantic and pragmatic processes like scare quotation, repair, implicature, and irony:
- (10a-c) exemplifies intra-utterance laughter, where the laughter has the effect of scare-quoting (Predelli, 2003) the sub-utterance it precedes.

- (10) a. A : well I I'm interested in it in a ( . laughs)  
          **((comfortably)) re:laxed** way, you know, I mean I . I do  
          keep, I have kept up with it (London Lund Corpus)
- b. (i) A: Jill is John's, (laugh) long-term friend. (ii) A: She is  
     John's long-term (laugh) friend.
- c. (i) A: Jill is John's, (wink) long-term friend. (ii) A: She is  
     John's long-term (wink) friend.

## THE MEANING OF LAUGHTER III

- Two basic meanings for laughter (cf Kundera's devilish and angelic laughter in *The Book of Laughter and Forgetting*):

- (11) a.  $\text{Pleasant}(p, \delta, \text{spkr})$  given: a context that supplies a laughable  $p$  and speaker  $\text{spkr}$ , content: the laughable is pleasant for the speaker to a contextually given degree  $\delta$ .
- b.  $\text{Incongr}(p, \delta, \tau)$  given: a context that supplies a laughable  $p$  and topos  $\tau$ , content: the proposition that  $p$  is incongruous relative to  $\tau$  (to extent  $\delta$ ).

- c. Conversational rule (inspired by Morreall 1983):

Positive affect incrementation of Mood (the speaker's public emotion display): given the LatestMove being an incongruity proposition by the speaker, the speaker increments the (positive) pleasantness recorded in Mood to an extent determined by the laughter's arousal value.



# THE MEANING OF LAUGHTER V

- From pleasantness, we can derive three functions of laughter: **affiliation**, **empathetic acknowledgement**, and **superiority**.
- Affiliative laughter arises by resolving the laughable as the state where the speaker and addressee are *co-present*.
- We abbreviate the laughable

$$\left[ \begin{array}{l} \text{sit} = l \\ \\ \text{sit-type} = \left[ \begin{array}{l} A:\text{Ind} \\ B:\text{Ind} \\ t:\text{TIME} \\ c1:\text{addressing}(A,B,t) \\ c2:\text{CoPresence}(\{A,B\},t) \end{array} \right] \end{array} \right] \text{ as } \text{CoPresence}(A,B).$$

## THE MEANING OF LAUGHTER VI

- Affiliation then involves the following sequence:
  1. A laughs at B; content:  $\text{Pleasant}(A, \delta, \text{CoPresence}(A, B))$  bringing about an update: A's  $\text{Mood.pleasant.arousal}$  is positively incremented by  $\delta$ .
  2. This can give rise to a similar Mood update for B, signalled by laughter at A with content  $\text{Pleasant}(B, \delta', \text{CoPresence}(B, A))$ .
- (Common in parent–child interaction)
- This does not rule out the possibility one would like to distinguish the two “functions” (expressing pleasure and affiliation) if there were systematic reasons for so doing—say, a laugh/smile incontrovertibly dedicated to the latter function and positing a “precompiled” lexical entry therefor (cf. Ekman, 1992; Wood and Niedenthal, 2018).
- Nonetheless, absent such a demonstration, we need not assume affiliation *requires* a distinct laughter.

## THE MEANING OF LAUGHTER VII

- Empathetic laughter: Empathetic acknowledgement of A's utterance by B laughing requires the defeasible assumption (more on this soon) *If it's pleasant for me that you said that  $p$ , then I agree that  $p$* —A's utterance is the event pleasant for B.
- Superiority/mocking laughter: A observes an event  $e$  which affects B negatively. Laughter can then be taken to reflect A's appraisal of  $e$  as pleasant. If, in addition, A has control over the event, the added element of superiority or even sadism can emerge.

- Building on work in humour theory<sup>1</sup>, we explicate incongruity as a notion that relates a contextually salient entity  $l$  with a defeasible rule (a *topos*<sup>2</sup>) in case there exists a contextually salient characterization of  $l$  that is incompatible with  $\tau$ .
- The topos is not explicitly introduced into the context; the most plausible assumption is to assume it requires access from Long Term Memory.

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<sup>1</sup>Raskin, 1985b.

<sup>2</sup>Breitholtz and Cooper, 2011.

## A LEXICAL ENTRY FOR PLEASANT LAUGHTER I

- We can now formulate a lexical entry for pleasant laughter, as in (15a): the content we posit is that the laughable is pleasant for the speaker to a contextually given degree  $\delta$ .
- The *effect* of such laughter on the speaker is captured in terms of an update rule that increments the (positive) pleasantness recorded in Mood to an extent given by the weight  $\epsilon$ , as described earlier.





# A LEXICAL ENTRY FOR PLEASANT LAUGHTER II

[phon : laughterphontype	
dgb-params :	[
	spkr : Ind
	addr : Ind
	t : TIME
	c1 : addressing(spkr,addr,t)
	δ : Int
	c2 : Arousal(δ, phon)
	s : Rec
	p = [
	sit = l
	sit-type = L ] : prop
content =	[
	sit = s
	sit-type = [c4: Pleasant(p, δ, spkr)] : Prop
preconditions: [LatestMove.cont =	
Assert(spkr, Pleasant(p, δ, spkr)) : IllocProp]	
effect : [PositivePleasantnessIncr(δ, ε)]	

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