Dialogue across the Lifespan

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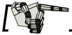
Yesterday's Lecture

1. Some features of QNPs: predication, anaphora, clarification request answering potential ➔ witness-based quantification resting on set-triples
2. But there are also referential, 'demonstrative' QNPs: *Look []! Every x …*
3. Pointing: from direct reference to visual attention (cf. DGB's ViSit)

Today's Lecture

1. Characterizing the response space of queries
2. Non Sentential Utterances and dialogue context

Characterizing Dialogical Relevance: a programme

- Stage 1: RespSpace(Query,2Person): characterize relevance for queries and their responses = RespSpace(Query–specific,2Person) $\cup$ RespSpace(Utterance–general,2Person).
- Stage 2: Extend this characterization to assertions and their responses—RespSpace(Assertion,2Person): = RespSpace(Assertion–specific,2Person) $\cup$ RespSpace(Utterance–general,2Person).
- Stage 3, …, n: Extend this characterization to other moves (commands, exclamations, …) and their responses—RespSpace(2Person) = $\cup_{moves}$ RespSpace(moves,2Person) $\cup$ RespSpace(Utterance–general,2Person).

Characterizing Relevance: a programme (extensions)

- Multi-party dialogue (Ginzburg and Fernández, 2005; Ginzburg, 2012)
- Monological "text" (multi-genre: letters, press releases, etc): Text–Dialogicity Hypothesis: RespSpace(1Person) $\subsetneq$ RespSpace(2Person)

Query responses to queries I

- Starting point: the typology for responses in the form of questions provided in (Łupkowski and Ginzburg, 2017).
- A wide coverage taxonomy for question/question sequences tested on the BNC, CHILDES, BEE, AMEX , CornellMovie (English), Spokes (Polish) corpora ; formal modelling in the framework of KoS–TTR

- The study sample consisted of 1,846 query/query response pairs.
- 6 classes of questions (LG Classes) that a given query gives rise to.
  1. CR: clarification request:
     A:What's Hamlet about? B: Hamlet? [KPW, 945–946]
  2. **Dependent questions** (DP) constitute the case where the answer to the initial question (q1) depends on the answer to the query-response (q2), as in:

     A: q_1

     B: q_2

     $\mapsto q_1$ depends on q_2
     A: Does anybody want to buy an Amstrad? <*pause*> B: Are you giving it away? [KBO, 3343–3344]
     (cf. *Whether anybody wants to buy an Amstrad depends on whether you are giving it away.*)

3. MOTIV: questions about an underlying motivation :
   A: What's the matter?
   B: Why? [HDM, 470–471]
4. CHT: questions aimed at Changing the Topic:
   A: Yeah what was your answer? B: What was yours? [KP3, 636–637]

   BBC INTERVIEWER: How did Singapore handle the pandemic so well?

   SINGAPORE HEALTH OFFICIAL: The question should be "How did UK not handle it so well?".

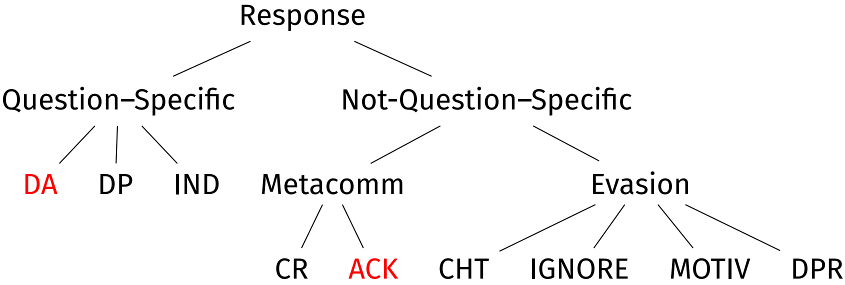
   BBC INTERVIEWER: What do you mean?

   SINGAPORE HEALTH OFFICIAL: We followed 'UK Pandemic Response Protocol', the UK did not! (Twitter 24 May 2021)
5. IND: questions indirectly conveying an answer:
   A: Is your job safe? B: Well, whose job's safe? [G5L, 130–131]

6. IGNORE: responses ignoring the initial question, but addressing the same situation:
   A: Well do you wanna go down and have a look at that now? <*pause*> While there's workmen there? B: Why haven't they finished yet? [KCF, 617–619]

Hypothesis and Extended Taxonomy I

(1) Main hypothesis: Resp(Query,2pers) = responses drawn from or concerning the 6 LG classes of questions, plus **direct answerhood** and **acknowledgements** exhaust the response space of a query.



Hypothesis and Extended Taxonomy II

- **Acknowledgement** (ACK)—a speaker acknowledges that s(he) has heard the question, e.g. *mhm*, *aha* etc.

  (2) A: that's about it innit?
  B: *Mm mm.*

- Propositional examples for these classes:
- MOTIV:

  REPORTER: Who did you back prime minister?
  THERESA MAY: As I said last week none of your business.
  (The Guardian, May 2019)

- CHT:

  (3) A: What's dolly's name?
  B: *It's raining.* **[BNC: KD4, 110-111]**

KAT: You're amazingly self-assured. Has anyone ever told you that?

PATRICK: *Go to the prom with me!* (Cornell Movie Corpus, m6, 839-840)

- DPR:
  - (4) A: When's the first consignment of Scottish tapes?
    B: *Erm <pause> don't know.*
  - (5) A: Why?
    B: *I'm not exactly sure.*
- Ignore:
  - (6) A: So does that mean that the ammeter is not part of the series, just hooked up after to the tabs?

B: *Let's take a step back.*

(7) DINO VELVET : Mister Welles ...would you be so kind as to remove any firearms from your person?

WELLES: What are you... ?

DINO VELVET : *Take out your gun!* (Cornell Movie Corpus, 6840-6842)

The Corpus Study: corpora used I

- The data for English comes from the BNC, BEE, the MapTask corpora, and the Cornell movie corpus (Burnard, 2000; Rosé, Eugenio and Moore, 1999; Anderson et al., 1991; Danescu-Niculescu-Mizil and Lee, 2011).
- The BNC data covers mainly topically unrestricted conversations; BEE contains contains tutorial dialogues from electronics courses; MapTask consists of dialogues recorded for a direction–providing task, Cornell movie corpus consists of fim scripts.
- 641 Q-R turns were taken from the BNC, 262 Q-R turns from BEE, 460 Q-R turns from the MapTask, and 911 from the Cornell movie corpus.
- Starting points: random turn selection of turn units ending with a '?'. tag questions and turns with missing text were eliminated.

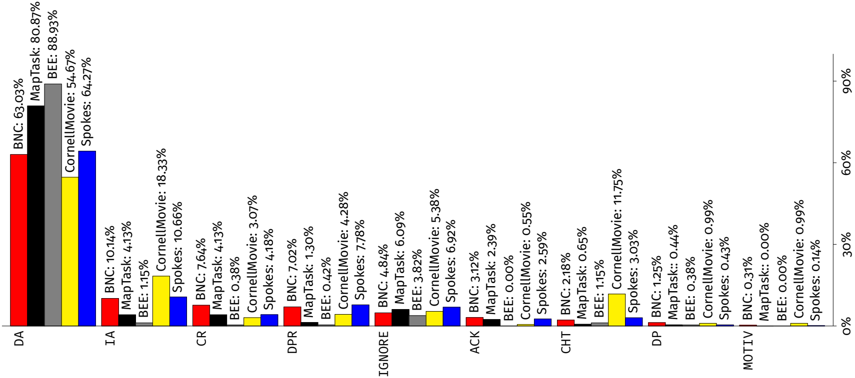
The Corpus Study: corpora used II

- Data from Polish drawn from the Spokes corpus (Pęzik, 2014).
- The corpus currently contains 247,580 utterances (2,319,291 words) in transcriptions of spontaneous conversations.
- For the study 25 files were selected from the corpus (96,296 words, 1,424 turns)
- 694 Q-R pairs for the study.

The Corpus Study: Results I

- In all cases, the OTHER class is less than .5%, hence coverage is above 99%.
- The most frequent classes of responses in all corpora in English are direct answers (DA);
- in the BNC and and CornellMovie the next largest are indirect answers, whereas for BEE and MapTask the second largest are IGNORE.
- For Polish the two most frequent classes of responses for Spokes are answers: direct ones (DA=64.2%) and—much smaller—indirect ones (IA=10.66%).
- The next two most frequent classes are DPR (stating that it is difficult to provide an answer to the question, IDK=7.78%) and utterances ignoring the question asked (questions and declaratives, IGNORE=6.92%).

The Corpus Study: Results II



The most frequent responses types (BNC, n=506; BEE, n=256; MapTask, n=467; CornellMovie, n=678; Spokes, n=694)

Short digression on Austinian propositions and questions I

- We assume for a view of questions as propositional abstracts, for extensive motivation see (Ginzburg and Sag, 2000; Krifka, 2001)—this means that questions can be used to *underspecify* answerhood.
- Propositions are construed as typing relations between records (situations) and record types (situation types), or Austinian propositions (Austin, 1961; Barwise and Etchemendy, 1987), more recent linguistic motivation (Ginzburg, 2011).

(8) a. Propositions are records of type

$$\text{Prop} = \begin{bmatrix} \text{sit} & : \textit{Rec} \\ \text{sit-type} & : \textit{RecType} \end{bmatrix}.$$

b. $p = \begin{bmatrix} \text{sit} & = \text{s} \\ \text{sit-type} & = \text{T} \end{bmatrix}$ is true iff $p.sit : p.sit - type$ i.e., $s : T$

—the situation s is of the type T.

(9) exemplifies the denotations (contents) we can assign to a unary, binary *wh*-interrogative and to polar questions.

- The unary question ranges over instantiations by persons of the proposition "x runs in situation r_{ds}".
- The binary question ranges over pairs of persons x and things y that instantiate the proposition "x touches y in situation r_{ds}":

(9) a. who ran $\mapsto$

$$\lambda r{:}\begin{bmatrix} \text{x:Ind} \\ \text{rest:person(x)} \end{bmatrix} \left(\begin{bmatrix} \text{sit} & = & r_{ds} \\ \text{sit-type} & = & \begin{bmatrix}\text{c:run}(r.\text{x})\end{bmatrix} \end{bmatrix} \right)$$

b. who touched what $\mapsto$

$$\lambda r{:}\begin{bmatrix}\text{x:Ind}\\ \text{rest1:person(x)}\\ \text{y:Ind}\\ \text{rest2:thing(y)}\end{bmatrix}\left(\begin{bmatrix}\text{sit} & = & r_{ds}\\ \text{sit-type} & = & \begin{bmatrix}\text{c:touch}(r.\text{x},r.\text{y})\end{bmatrix}\end{bmatrix}\right)$$

c. Did Bo run $\mapsto$

$$\lambda r{:}Rec\left(\begin{bmatrix}\text{sit} & = & r_{ds}\\ \text{sit-type} & = & \begin{bmatrix}\text{c} & : & \text{run(bo)}\end{bmatrix}\end{bmatrix}\right)$$

d. Didn't Bo run $\mapsto$

$$\lambda r{:}Rec\left(\begin{bmatrix}\text{sit} & = & r_{ds}\\ \text{sit-type} & = & \begin{bmatrix}\text{c} & : & \neg\text{run(bo)}\end{bmatrix}\end{bmatrix}\right)$$

Short digression on Austinian propositions and questions IV

- Polar questions are analyzed, following an initial proposal of Ginzburg and Sag, 2000, as 0-ary abstracts, which in TTR is a question whose domain is the empty record type [·].
- This makes a 0-ary abstract a constant function from the universe of all records.
- It allows to distinguish the denotations of positive and negative polar questions, as exemplified in (9c,d) and as motivated by a variety of linguistic phenomena (Hoepelmann, 1983; Cooper and Ginzburg, 2012).

Short digression on Austinian propositions and questions V

- At the same time, it ensures that the answerhood relations they give rise to are (truth conditionally) equivalent, given that the *simple answerhood* relations they give rise to are equivalent and other answerhood relations are defined in terms of these.
- Simple answerhood is the range of the propositional abstract, plus their negations.
- We exemplify what this amounts to for some cases in (10), using as we do mostly in the sequel familiar λ-notation for wh-questions and p?-notation for polar questions, rather than the official TTR notation above:

(10) a. AtomAns(p?) = $\{p\}$
b. AtomAns($\neg p$?) = $\{\neg p\}$

Short digression on austinian propositions and questions VI

c. AtomAns($\lambda x.P(x)$) = $\{P(a), P(b), \ldots, \}$
d. NegAtomAns(q) = $\{p | \exists p_1 \in AtomAns(q), p = \neg p_1\}$
e. SimpleAns(q) = AtomAns(q) $\cup$ NegAtomAns(q)

Formal Analysis: the classes DirectAns, DependentQuestion, IndirectAns I

- The most basic notion of answerhood—*simple answerhood* (Ginzburg and Sag, 2000)—is the range of the propositional abstract, plus their negations.

  (11) a. SimpleAns($\lambda\{\ \}p$) = $\{p, \neg p\}$;

  b. SimpleAns($\lambda x.P(x)$) = $\{P(a), P(b), \ldots, \neg P(a), \neg P(b) \ldots\}$

- In fact, *simple answerhood*, though it has good coverage, is not sufficient.
- We suggest that the semantic notion relevant to direct answerhood is the relation *aboutness* (Ginzburg, 1995; Ginzburg and Sag, 2000).

Formal Analysis: the classes DirectAns, DependentQuestion, IndirectAns II

- *Aboutness* must be sufficiently inclusive to accommodate conditional, weakly modalized, and quantificational answers, all of which are pervasive in actual linguistic use (Ginzburg and Sag, 2000):

(12) a. Christopher: Can I have some ice-cream then?
Dorothy: you can do if there is any. (BNC)

b. Anon: Are you voting for Tory?
Denise: I might. (BNC, slightly modified)

c. How many players are getting these kind of opportunities to develop their potential? Not many. (The Guardian, Nov 2, 2018)

d. Dorothy: What did grandma have to catch?
Christopher: A bus. (BNC, slightly modified)

e. Elinor: Where are you going to hide it?
   Tim: Somewhere you can't have it.

- Informally, Aboutness can be characterized by being a proposition that entails a disjunction of simple answers.
- and Direct answerhood by being a proposition entailed by either
  1. the conjunction of the positive atomic answers
  2. the conjunction of the negative atomic answers

(13) For $p = \begin{bmatrix}\text{sit} = s_1 \\ \text{sit-type} = T_1\end{bmatrix}$: Prop, q = (r : T_2) $\begin{bmatrix}\text{sit} = s_1 \\ \text{sit-type} = T_2\end{bmatrix}$: Question,

a. $About(p,q)$ holds iff $\bigvee(\{T | \exists p[p : Prop \wedge SimpleAns(p,q) \wedge T = p.\text{sit-type}\} \sqsubseteq T_1$

b. $DirectAns(p,q)$ holds iff $About(p,q)$ and either

(i) $T_1 \sqsubseteq \bigwedge(AtomAns(q))$,

or

(ii) $T_1 \sqsubseteq \bigwedge(NegAtomAns(q))$

Formal Analysis: the classes DirectAns, DePend-entQuestion, IndirectAns V

- Whether a response is pragmatically exhaustive (or *goal fulfilling*) can determine whether the response will be accepted or require a follow up query.
- Hence, the need for a finer–grained subdivision of the answer categories, which we assume in the paper:
  1. no/yes answer to polar questions;
  2. simple answers to wh-questions;
  3. partial polar answers;
  4. partial wh-question answers.
- Given a notion of aboutness and some notion of (partial) exhaustiveness, one can then define question dependence (needed for the class DePQuest), though various alternative definitions have been proposed (Groenendijk and Stokhof, 1997; Wiśniewski, 2013):

(14) $q1$ depends on $q2$ iff any proposition p such that p resolves $q2$, also satisfies p entails r such that r is about $q1$. Ginzburg, 2012, (61b), p. 57

- With notions of aboutness and dependency in hand, one can define update rules licensing such responses.
- First, one adding a question as the maximal element of QUD following a query:

(15) Ask QUD-incrementation:

$$\left[\begin{array}{ll} \text{pre} & : \left[\begin{array}{ll} \text{q} & : \text{Question} \\ \text{LatestMove} = \text{Ask(spkr, addr, q)} & : \text{LocProp} \end{array}\right] \\ \text{effects} & : \left[\text{QUD} = \left\langle \text{q, pre.QUD} \right\rangle : \text{poset(Question)}\right] \end{array}\right]$$

- Then Gricean relevance:

(16) QSPEC: If *q* is the question under discussion, respond with an utterance *r* which is *q*–specific: About(r,q) or Depends(q,r)

(17)

QSPEC (Relevance)

$$\begin{bmatrix} \text{pre}: \begin{bmatrix} \text{QUD} = \left\langle \text{q}, \text{Q} \right\rangle : \text{poset(Question)} \end{bmatrix} \\ \text{effects}: \\ \boxed{\dot{\wedge}} \begin{bmatrix} \text{r} : \text{Question} \vee \text{Prop} \\ \text{R} : \text{IllocRel} \\ \text{LatestMove} = \text{R(spkr, addr, r)} : \text{LocProp} \\ \text{c1} : \text{Qspecific(r, q)} \end{bmatrix} \end{bmatrix}$$

Formal Analysis: the classes ClarifReq, Acknowledgement I

- MetaCommunicative utterances, including acknowledgements, Clarification responses (CRs) and (metacommunicative) corrections are challenging for most existing frameworks for dialogue semantics.
- For a start, given the mismatch they reveal between the dialogue interlocutors, they require a *distributed* approach to context.
- This rules out accounts where all semantic rules are assumed to apply to the common ground, made prominent in the view of QUD due to Roberts, 1996.
- For a more refined stack–based discourse model, which distinguishes distinct participants' *commitments* see D. F. Farkas and K. B. Bruce, 2010.

Formal Analysis: the classes ClarifReq, Acknowledgement II

- This was also the case for the view of discourse structure in earlier work in SDRT (e.g., Nicholas Asher and Alex Lascarides 1998; Nicholas Asher and Alex Lascarides 2003). In more recent work (e.g., A. Lascarides and N. Asher 2009), SDRT adopts a view advocated in KoS and also in the framework of PTT (Poesio and Rieser, 2010) that associates a distinct contextual entity with each conversational participant.
- A deeper challenge is that the analysis/generation of metacommunicative utterances requires access to the entire sign associated with a given interrogative utterance.
- Any constituent, certainly down to the word level can be the object of an acknowledgement and a clarification response:

(18) a. [George] Galloway [MP] is recorded reassuring his Excellency [Uday Hussein] that ‘I’d like you to know we are with you ‘til the end.’ Who did he mean by ‘we’? Who did he mean by ‘you’? And what ‘end’ did he have in mind? He hasn’t said. (From a report in the *Cambridge Varsity* by Jon Swaine, 17 February 2006)

b. Is The War Salvageable? That depends on what we mean by ‘the war’ and what we mean by ‘salvage’. (Andrew Sullivan’s Blog *The Daily Dish*, Sept, 2007)

- Moreover, there are a variety of parallelism constraints relating to the form of such utterances that require reference to the non-semantic representation of the utterance:

Formal Analysis: the classes ClarifReq, Acknowledgement IV

(19) a. A: Do you fear him? B: Fear? (=What do you mean by ‘fear’ or Are you asking if I *fear* him) / #Afraid? / What do you mean ‘afraid’?

b. A: Are you afraid of him? B: Afraid? (=What do you mean by “afraid”? or Are you asking if I am **afraid** of him) / #Fear?/What do you mean ‘fear’?

- This issue rules out the lion’s share of logic–based frameworks where reasoning about coherence operates solely at the level of content.

Formal Analysis: the classes ClarifReq, Acknowledgement V

- For instance, in SDRT the semantics/pragmatics interface has no access to linguistic form, but only to a partial description of the content that is derived from linguistic form. This has been argued to be necessary to ensure the decidability of SDRT's glue logic (see e.g., Nicholas Asher and Alex Lascarides 2003, p. 77).

- In order to accommodate this class of utterances, it is crucial that the cognitive states keep track of the utterance associated with the question.
- In KoS this is handled via the field PENDING whose type (*LocProp*) is a proposition, one instantiated by an utterance token u, the other by an utterance type T_u (the sign classifying u).

Formal Analysis: the classes ClarifReq, Acknowledgement VII

(20)

$$\left[\begin{array}{l} \text{sit} = \left[\begin{array}{l} \text{phon} = \texttt{dijoliv} \\ \text{cat} = \text{V[+fin,+root]} \\ \text{constits} = \left\{\text{di,jow,liv}\right\} \\ \text{dgb-params} = \left[\begin{array}{l} \text{so} = \text{sito} \\ \text{to} = \text{timeo} \\ \text{j} = \text{jo} \\ \text{c3} = \text{c3o} \end{array}\right] \\ \text{cont} = ([\,])\left[\begin{array}{l} \text{sit} = \text{so} \\ \text{sit-type} = \text{Leave(j,to)} \end{array}\right] \end{array}\right] \\ \text{sit-type} = \left[\begin{array}{l} \text{PHON} : \texttt{did jo leave} \\ \text{CAT} = \text{V[+fin,+root]} : \text{syncat} \\ \text{constits} = \left\{\text{did, jo, leave}\right\} : \text{set(sign)} \\ \text{DGB-PARAMS} : \left[\begin{array}{l} \text{so: SIT} \\ \text{to: TIME} \\ \text{j: IND} \\ \text{c3: Named(j,jo)} \end{array}\right] \\ \text{cont} = ([\,])\left[\begin{array}{l} \text{sit} = \text{so} \\ \text{sit-type} = \text{Leave(j,to)} \end{array}\right] : \text{Questn} \end{array}\right] \end{array}\right]$$

- This allows *inter alia* access to the individual constituents of an utterance.

(21) *DGBType* $\mapsto$

$$\begin{bmatrix} \text{spkr} & : \mathit{Ind} \\ \text{addr} & : \mathit{Ind} \\ \text{utt-time} & : \mathit{Time} \\ \text{c-utt} & : \text{addressing(spkr,addr,utt-time)} \\ \text{facts} & : \mathit{Set}(\mathit{Prop}) \\ \textbf{pending} & : \mathit{List}(\mathit{LocProp}) \\ \text{moves} & : \mathit{List}(\mathit{IllocProp}) \\ \text{qud} & : \mathit{poset}(\mathit{Question}) \end{bmatrix}$$

Formal Analysis: the classes ClarifReq, Acknowledgement IX

- Ginzburg and Cooper, 2004; Purver, 2004; Ginzburg, 2012 show how to account for the main classes of CRs using rule schemas of the form:
  “if *u* is the interrogative utterance and *u*0 is a constituent of *u*, allow responses that are *co-propositional* with the clarification question $CQ^i(u0)$ into QUD.”, where ‘$CQ^i(u0)$’ is one of the three types of clarification question (repetition, confirmation, intended content) specified with respect to *u*0.
- *CoPropositionality* for two questions means that, modulo their domain, the questions involve similar answers: for instance ‘Whether Bo left’, ‘Who left’, and ‘Which student left’ (assuming Bo is a student.) are all co-propositional.

- Responses such as (18b) can be explicated in terms of the schema in (22):

  (22) if A's utterance *u* is yet to be grounded and *u*0 is a sub-utterance of *u*, QUD can be updated with the question *What did A mean by u0*

- Assuming a propositional function view of questions, CoPropositionality allows in propositions from the range of *Range*(*q*0) and questions whose range intersects *Range*(*q*0).
- Since CoPropositionality is reflexive, this means in particular that the inferred clarification question is a possible follow up utterance, as are confirmations and corrections, as exemplified in (24).

(23) Parameter identification:

$$\left[\begin{array}{ll} \text{pre} & : \left[\begin{array}{l} \text{MaxPENDING} = \left[\begin{array}{l} \text{sit = u} \\ \text{sit-type =}\text{T}_u \end{array}\right] : \text{LocProp} \\ \text{A = u.dgb-params.spkr : IND} \\ \text{u0 : sign} \\ \text{c1 : Member(u0,u.constits)} \end{array}\right] \\ \text{effects} & : \left[\begin{array}{l} \text{MaxQUD} = \lambda\text{xMean(A,u0,x) : Question} \\ \text{LatestMove : LocProp} \\ \text{c1: CoPropositional(LatestMove.cont,MaxQUD)} \end{array}\right] \end{array}\right]$$

(24) a. $\lambda x.Mean(A, u0, x)$

b. ?Mean(A,u0,b) (‘Did you mean Bo’)

c. Mean(A,u0,c) (‘You meant Chris’)

Formal Analysis: the classes Motiv, Difficult-ProvAns, ChangeTopic, Ignore I

- A quick reminder of the different evasion responses:
  - MOTIV:

    (25)

    REPORTER: Who did you back prime minister?
    THERESA MAY: As I said last week none of your business. [The Guardian, May 2019]
  - Difficult To Provide A Response:

    (26) A: When's the first consignment of Scottish tapes?
    B: *Erm <pause> don't know.* [BNC: FM2, 1061–1062]
  - Change the Topic:

    (27) A: When are you going to respond to the allegations?
    B: Anyway, when are we going to get credit for our world leading vaccination program?

Formal Analysis: the classes Motiv, DifficultProvAns, ChangeTopic, Ignore II

- Ignore:

(28) DINO VELVET : Mister Welles . . . would you be so kind as to remove any firearms from your person?
WELLES: What are you... ?
DINO VELVET : *Take out your gun!* [Cornell Movie Corpus, 6840–6842]

Formal Analysis: the classes Motiv, Difficult-ProvAns, ChangeTopic, Ignore III

- Łupkowski and Ginzburg, 2017 suggest that common to all classes of evasion utterances is a **lack of acceptance of $q1$ as an issue to be discussed**:
  - In MOTIV-type responses the need/desirability to discuss $q1$ is explicitly posed,
  - in CHT-type responses there is an implicature that $q1$ is of lesser importance/urgency than r_2 (expressing either a proposition or a question),
  - whereas for IGNORE type responses there is an implicature that q1 as such will not be addressed.

Formal Analysis: the classes Motiv, DifficultProvAns, ChangeTopic, Ignore IV

- Łupkowski and Ginzburg, 2017 also note that whereas q_1 is not accepted for discussion, it remains implicitly in the context. In (29), where move (2) could involve either a MOTIV query (2a), or a CHT query (2b), the original question has definitely *not* been re-posed and yet B still has the option to address it, which s/he should be unable to do if it is not added to his/her context before (29(2)):

(29)

A: Who are you meeting next week?
B(2)**:** (2a) What's in it for you? / (2b) Who are *you* meeting next week?
A: I'm curious.
B: Aha.
A: Whatever.
B: Oh, OK, Jill.

Formal Analysis: the classes Motiv, Difficult-ProvAns, ChangeTopic, Ignore V

A: When are you leaving? B: I don’t know. A: Come on! B: Well, perhaps next week.

Formal Analysis: the classes Motiv, DifficultProvAns, ChangeTopic, Ignore VI

- This basic characteristic can be captured in the cognitive state architecture discussed above, given that QUD is assumed to be partially ordered;
- this is a crucial difference from a view of QUD as a stack or similar (Roberts, 1996; D. Farkas and K. Bruce, 2010).
- A bit more concretely, Łupkowski and Ginzburg, 2017 proposed to handle *metadiscursive* utterances such as MOTIV by viewing them as responses specific to the issue ?Wish-Answer(B,q) for a given question *q* which a conversational participant *B* can introduce as a response.

- This same approach can be applied to DPR, assuming that these involve responses specific to the issue

$$?\text{Know-Answer}(\{A, B, \ldots\}, q);$$

 we formulate this issue to address the knowledge of A, B and maybe others given that a possible response along these lines is 'Sam knows' or 'Go ask Sam'.

- In both cases, in line with the fact that q remains accessible, as exemplified in (29), QUD is specified to include both q and the pertinent 'metaquestion'.

Formal Analysis: the classes Motiv, DifficultProvAns, ChangeTopic, Ignore VIII

- In order to develop our analysis we will define a single type EvasiveResp that encompasses the commonalities between the four classes.
- Each class will then be specified by merging EvasiveResp with information specific to that particular class.
- In all cases, in line with the fact that *q* remains accessible, as exemplified in (29), QUD is specified to include both q and a pertinent 'metaquestion'.
- An additional commonality for all except DPR is turn change, underspecified for QSPEC given that for the latter it is not required, whereas in these cases it is more or less essential for coherence; this specification will be defused for DPR by using asymmetric merge.

(30) EvasiveResp=

$$\begin{bmatrix} \text{pre} : \begin{bmatrix} \text{QUD} = \left\langle \text{q1, Q} \right\rangle : \text{poset(Question)} \end{bmatrix} \\ \text{effects} : \begin{bmatrix} \text{spkr} = \text{pre.addr} : \text{Ind} \\ \text{addr} = \text{pre.spkr} : \text{Ind} \\ \text{r} : \text{Question} \vee \text{Prop} \\ \text{q2} : \text{Question} \\ \text{R: IllocRel} \\ \text{Moves} = \left\langle \text{R(spkr,addr,r)} \right\rangle \bigoplus \text{pre.Moves} : \text{list(LocProp)} \\ \text{c1} : \text{Qspecific(R(spkr,addr,r),q2)} \\ \text{QUD} = \left\langle \begin{matrix} \text{Max} = \left\{ \text{q2,q1} \right\}, \\ \text{Q} \end{matrix} \right\rangle : \text{poset(Question)} \end{bmatrix} \end{bmatrix}$$

- Given this, MOTIV and DPR are specified as follows:

(31) a. MOTIV = EvasiveResp $\dot{\wedge}$

$$\left[\text{effects} : \left[\text{q2} = \text{?WishDiscuss(spkr,pre.MaxQUD)} : \text{Question}\right]\right]$$

b. DPR = EvasiveResp $\boxed{\dot{\wedge}}$

$$\left[\text{effects} : \begin{bmatrix} \text{spkr} = \text{pre.spkr} \vee \text{pre.addr} : \text{Ind} \\ \text{addr} : \text{Ind} \\ \text{c}_{addr} : \neq\text{(addr,spkr)} \\ \text{q2} = \lambda\text{xKnow(x,pre.MaxQUD)} : \text{Question} \end{bmatrix}\right]$$

- The simplest analysis for IGNORE would make the pertinent meta-question be an arbitrary question about entities in the visual situation.
- Similarly, for CHT the simplest analysis would involve allowing a response specific to an arbitrary question.

Formal Analysis: the classes Motiv, DifficultProvAns, ChangeTopic, Ignore XI

- The obvious problem this would raise in both cases is massive ambiguity since many responses from other classes would be analyzable in such terms.
- To avoid this problem, we need to introduce an additional restriction, lack of coherence with the current context.
- What would this amount to?
- Being neither QSpecific with respect to q_1 uttered by A to B, nor being co-propositional with a clarification question generated by q_1's utterance, nor QSpecific with respect to ?WishDiscuss(B,q1) or λxKnowAnswer(x,q1).
- Putting these conditions together amounts to the IrRel relation of Ginzburg, 2012, which holds between an utterance and a DGB.

- Given this, we formulate the rules for CHT and IGNORE as in (32a) and (32b).
- The fact that in both cases the topic addressed is IrRel to the (precondition) DGB in the sense just discussed captures a similarity between the two.
- At the same time, there is also a significant difference in that IGNORE intrinsically uses material from the DGB, namely at least one entity from the visual situation as a constituent of the propositional nucleus of the question to establish coherence with the question posed.
- A further difference between the two is an emergent presupposition in the case of CHT that the responder does not wish to discuss q_1.

(32) a. CHT = EvasiveResp $\dot{\wedge}$

$$\left[\begin{array}{ll} \text{effects}: & \left[\begin{array}{l} \text{q2 : Question} \\ \text{c3 : IrRel(q2,pre)} \\ \text{Facts = pre.Facts} \cup \\ \left\{\neg\ \text{WishDiscuss(spkr,pre.MaxQUD)}\right\} \end{array}\right] \end{array}\right]$$

b. IGNORE = EvasiveResp $\dot{\wedge}$

$$\left[\begin{array}{ll} \text{effects}: & \left[\begin{array}{l} \text{a : Ind} \\ \text{c4 : In(VisSit,a)} \\ \text{G1 : Type} \\ \text{P : (Ind)RecType} \\ \text{q2 = (G1)} \left[\begin{array}{l} \text{sit =s} \\ \text{sit-type = } \left[\text{c : P(a)}\right] \end{array}\right] \text{: Question} \\ \text{c3 : IrRel(q2,pre)} \end{array}\right] \end{array}\right]$$

1. Corpus study for English (Fernández and Ginzburg, 2002a)
2. Propositional NSUs
3. Short answers
4. metacommunicative NSUs

- treat 'yes' as an adverb (English: intransitive, and as IC[+] (i.e., restricted to matrix clauses))

(33)
$$\begin{bmatrix} \textsc{phon} : \text{yes} \\ \textsc{cat} = \textit{adv[+ic]} : \text{syncat} \\ \textsc{dgb-params.max-qud} : \text{PolQuestion} \\ \textsc{cont} = \text{max-qud}(\boxed{}) : \text{Prop} \end{bmatrix}$$

(34) a. A: Did Jo visit? B: Yes.

b. As a result of A's utterance:
MAX-QUD = ?Visit(j) : PolQuestion;

c. B's utterance:

$$\begin{bmatrix} \text{CAT} = \textit{adv[+ic]} : \text{syncat} \\ \text{DGB-PARAMS.MAX-QUD} = \text{?Visit(j)} : \text{PolQuestion} \\ \text{CONT} = \text{max-qud}(\begin{bmatrix}\end{bmatrix}) \mapsto \text{Visit(j)} : \text{Prop} \end{bmatrix}$$

(35) a. A: Bo is leaving. B: Yes.
b. A: Is Bo leaving? B: Yes.
c. A: Bo is leaving. B: I see.
d. A: Bo is leaving, ♯I see.
e. A: Bo is leaving, right?. B: Right/Yes /♯I see.
f. A: Bo is leaving. B: Really?/♯Right?
g. A: Bo is leaving, ♯really?
h. A: Bo is leaving, is he?
i. A: Bo is leaving. B: Is he?

(36)
$$\begin{bmatrix} \text{phon} : \texttt{right} \\ \text{cat.head} = \text{interj} : \text{syncat} \\ \text{dgb-params} : \begin{bmatrix} \text{spkr} : \text{IND} \\ \text{addr} : \text{IND} \\ \text{utt-time} : \text{TIME} \\ \text{LatestMove.content} = \\ \text{Assert(spkr,addr,p)} : \text{IllocProp} \end{bmatrix} \\ \text{cont} = \text{Check(spkr,addr,utt-time,p?)} : \text{IllocProp} \end{bmatrix}$$

(37)
$$\begin{bmatrix} \text{phon} : \texttt{really} \\ \text{cat.head} = \text{interj} : \text{syncat} \\ \text{dgb-params} : \begin{bmatrix} \text{spkr} : \text{IND} \\ \text{addr} : \text{IND} \\ \text{utt-time} : \text{TIME} \\ \text{LatestMove.content} = \\ \text{Assert(addr,spkr,p)} : \text{IllocProp} \end{bmatrix} \\ \text{cont} = \text{Doubt(spkr,addr,utt-time,p?)} : \text{IllocProp} \end{bmatrix}$$

A corpus study of NSUs

- Corpus study of NSUs in the BNC (Fernández and Ginzburg, 2002b; Fernández, 2006). A randomly selected section of 200-speaker-turns from 54 BNC files. The examined sub-corpus contains 14,315 sentences.
- Subsequently adapted to Chinese (Wong, 2018), French (Guida, 2013; Filtopoulos, 2015), Spanish (Marchena, 2015).

NSU class	**Example**	**Total**
Plain Acknowledgement	*A: … B: mmh*	599
Short Answer	*A: Who left? B: Bo*	188
Affirmative Answer	*A: Did Bo leave? B: Yes*	105
Repeated Ack.	*A: Did Bo leave? B: Bo, hmm.*	86
C(larification) E(llipsis)	*A: Did Bo leave? B: Bo?*	79
Rejection	*A: Did Bo leave? B: No.*	49
Factive Modifier	*A: Bo left. B: Great!*	27
Repeated Aff. Ans.	*A: Did Bo leave? B: Bo, yes.*	26
Helpful Rejection	*A: Did Bo leave? B: No, Max.*	24
Sluice	*A: Someone left. B: Who?*	24
Check Question	*A: Bo isn't here. Okay?*	22
Filler	*A: Did Bo … B: leave?*	18
Bare Mod. Phrase	*A: Max left. B: Yesterday.*	15
Propositional Modifier	*A: Did Bo leave? B: Maybe.*	11
Conjunction + frag	*A: Bo left. B: And Max.*	10
Total dataset		**1283**

Focus establishing constituents

- In all the cases we have considered so far, the NSU can be described completely on the basis of the fragment's own grammatical characteristics and MAX-QUD (MAX-PENDING in the case of acknowledgements.).
- One additional contextual parameter to track, an antecedent sub-utterance (of utterance which is MAX-QUD).
- Intuitively, this parameter provides a partial specification of the focal (sub)utterance, and hence it is dubbed the *focus establishing constituent* (FEC)
- Varying roles played by the FEC: in some cases it is crucial for the semantic composition, in others it plays a disambiguating role via morphosyntactic or phonological parallelism.

(38) a. B: Two baguettes.

b. Context: A: What did you buy in the bakery?
Content: I bought two baguettes in the bakery.

c. Context: [A: smiles at B, who has become the next customer to be served at the bakery.]
Content: I would like to buy two baguettes.

d. Context: A: Dad bought two bagets.
Content: You mean that Dad bought two baguettes.

e. *Declarative-fragment-clause*:
Cont = DGB.MaxQUD(u-frag.cont) : Prop

f. **Content**: MAX-QUD is the predicate and the bare NP fragment is the argument:
Content = MAX-QUD(NP.content)

- B’s utterance in 38a can receive a variety of contents, depending on the context in which it is uttered and the intonation contour it receives:
  - it can be interpreted as a *short answer*, as in 38b;
  - it can be interpreted without any prior utterance, as in 38c, though in such a case various paraphrases are possible, depending on the conversational genre;
  - it can also be interpreted as the (‘metalinguistic’) correction in 38d.
- The different mechanisms underlying these resolutions can be uniformly described by the schema in 38e.

Decl-frag-cl

$$\begin{bmatrix} \text{cat} = v : \text{syncat} \\ \text{dgb-params.max-qud} : \begin{bmatrix} \text{q} : \text{UnaryWhQuestion} \\ \text{fec} : \text{LocProp} \end{bmatrix} \\ \text{cont} = \text{max-qud.q(hd-dtr.cont.x)} : \text{Prop} \end{bmatrix}$$

$$\text{hd-dtr} : \begin{bmatrix} \text{cat} = \text{max-qud.fec.cat} : \text{Syncat} \\ \text{cont} : \begin{bmatrix} \text{x: IND} \end{bmatrix} \end{bmatrix}$$

Metacommunicative NSUs I

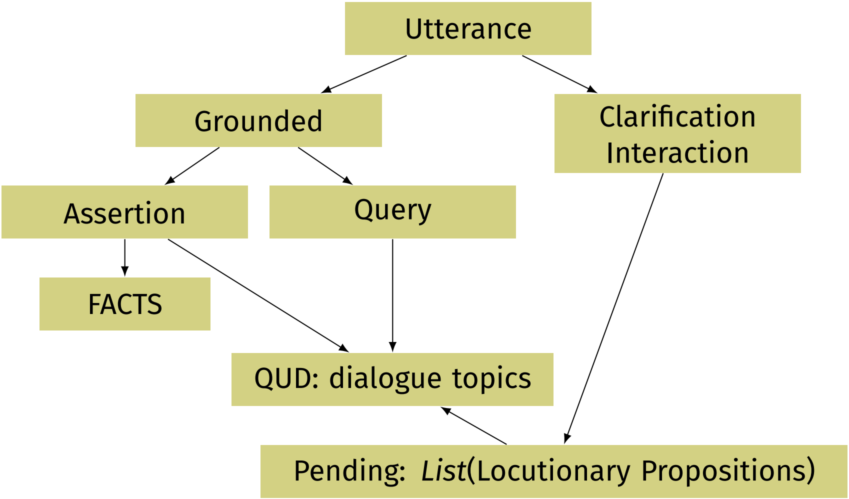
- The final type we will discuss are metacommuncative NSUs.

  (39) A: Do you fear him? B: Fear? (=What do you mean by 'fear' or Are you asking if I *fear* him) / #Afraid? / What do you mean 'afraid'?

- Here the basic idea is to use the conversational rules we discussed earlier in establishing the coherence of metacommunicative utterances as a context for their interpretation.
- Just as a quick reminder our conversational rule from before.

(40) Parameter identification:

$$\begin{bmatrix} \text{pre} & : & \begin{bmatrix} \text{MaxPENDING} = \begin{bmatrix} \text{sit} = \text{u} \\ \text{sit-type} = \text{T}_u \end{bmatrix} : \text{LocProp} \\ \text{A} = \text{u.dgb-params.spkr} : \text{IND} \\ \text{u0} : \text{sign} \\ \text{c1} : \text{Member(u0,u.constits)} \end{bmatrix} \\ \text{effects} & : & \begin{bmatrix} \text{MaxQUD} = \lambda x \text{Mean(A,u0,x)} : \text{Question} \\ \text{LatestMove} : \text{LocProp} \\ \text{c1: CoPropositional(LatestMove.cont,MaxQUD)} \end{bmatrix} \end{bmatrix}$$


Utterance
Grounded
Clarification Interaction
Assertion
Query
FACTS
QUD: dialogue topics
Pending: *List*(Locutionary Propositions)

(41) a. A: Did Bo leave? B: Bo?

b. Are you asking if BO (of all people) left?

- The FEC becomes available in a different way for clausal readings of RF.
- parameter focussing is a CCUR that given a to be clarified sub-utterance u_1 of u_0 whose contextual parameter is i, specifies the context as having the question $\lambda i[u_0.cont]$ as MAX-QUD ; u_1 is now designated as the FEC of that context.

(42) a. A: Did Bo leave? B: Bo?

b. Are you asking if BO (of all people) left?

- B uses parameter focussing to build a context in which:

(43) a. MAX-QUD: $\lambda x.Ask(A, B, ?leave(x))$;FEC : A's utterance 'Bo'

S

$$\left[\begin{array}{l} \textit{polarization} \\ \text{CONT} = \text{?hd-dtr.cont} = \text{?Ask(A,B,?leave(b))} : \text{Questn} \end{array}\right]$$

NP

$$\left[\begin{array}{l} \textit{decl-frag-cl} \\ \text{maxqud} = \left[\begin{array}{l} \text{q} = \lambda x\ \text{Ask(A,In(lo,x))} : \text{Questn} \\ \text{fec} = \text{p2} : \text{LocProp} \end{array}\right] : \text{InfoStruc} \\ \text{hd-dtr} : \left[\begin{array}{l} \text{cont} : \left[\text{x} : \text{Ind}\right] \\ \text{cat} = \text{fec.cat} : \text{syncat} \end{array}\right] \\ \text{cont} = \text{maxqud.q(hd-dtr.cont.x)} \end{array}\right]$$

BO

Intended Content readings for RF I

- Intended Content readings involve a complex mix of a *prima facie* non-transparent semantics and phonological parallelism.

  (44) A: Did Bo leave? B: Bo (=Who do you mean 'Bo'?)

- Independently of constituent readings of RF we need to capture the utterance anaphoricity of 'quotative' utterances such as (45):

  (45) a. A: Bo is coming. B: Who do you mean 'Bo'?
  b. A: We're fed up. B: Who is we?
  c. D: I have a Geordie accident. J: 'accident' that's funny.

- We assume the existence of a grammatical constraint allowing reference to a sub-utterance under phonological parallelism. (See lecture 5 as the initial phrasal type in child language)

(46) a. *utt-anaph-ph*

$$\begin{bmatrix} \text{tune} = \text{max-qud.fec.sit-type.phon} : \text{Type} \\ \text{phon} : \textit{tune} \\ \text{cat} : \text{syncat} \\ \text{max-qud} : \text{info-struc} \\ \text{hd-dtr} : \textit{lex} \\ \text{cont} = \text{max-qud.fec.sit} : \text{Rec} \end{bmatrix}$$

- One way of achieving this is to posit a new phrasal type, *qud-anaph-int-cl*. This will encapsulate the two idiosyncratic facets of such utterances, namely the MAX-QUD/CONTENT identity and the HD-DTR being an *utt-anaph-ph*:

(47) *qud-anaph-int-cl* =

$$\begin{bmatrix} \textsc{max-qud} : \text{InfoStruc} \\ \text{cont=max-qud.q:Question} \\ \text{hd-dtr: } \textit{utt-anaph-ph} \end{bmatrix}$$

- Given this, we can offer the following analysis of (48):

(48) a. A: Did Bo leave? B: Bo?

b. B lacks referent for ‘Bo’; uses parameter identification to update MAX-QUD and FEC accordingly.

c. B uses parameter identification to build a context in which MAX-QUD: ?x.Mean(A,‘Bo’,x);FEC : A’s utterance of ‘Bo’.

d. Using *qud-anaph-int-cl* yields: cont = ?x.Mean(A,‘Bo’,x), given the phonological parallelism between fragment and FEC

Intended Content readings for RF

(49)

S

$$\begin{bmatrix} \textit{qud-anaph-int-cl} \\ \text{maxqud} = \begin{bmatrix} \text{q} = \lambda x \ \text{Mean(A,p2,}x\text{) : Questn} \\ \text{fec = p2 : LocProp} \end{bmatrix} \text{: InfoStruc} \\ \textsc{cont} = \text{maxqud.q} \end{bmatrix}$$

|

NP

$$\begin{bmatrix} \textit{utt-anaph-ph} \\ \text{bu = max-qud.fec.sit-type.phon : Type} \\ \text{phon : bu} \end{bmatrix}$$

|

BO

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