Projection and Probability

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Summary I

- Goal: discuss recent unifying theories of projective meaning.
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- Projective meaning: this part of coded or contextually inferred information that can be preserved under operators that affect the truth-conditional status of non-projective meaning.
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- Projective meaning: this part of coded or contextually inferred information that can be preserved under operators that affect the truth-conditional status of non-projective meaning.

- Typical case: presupposition.
Summary I

- Goal: discuss recent unifying theories of projective meaning.
- Projective meaning: this part of coded or contextually inferred information that can be preserved under operators that affect the truth-conditional status of non-projective meaning.
- Typical case: presupposition.
- But extends to implicatures (conventional and conversational).
Summary II

- Map
Summary II

- Map
  1. Facts (projection + attachment).
Summary II

- Map
  1. Facts (projection + attachment).
  2. The QUD theory.
Summary II

- Map
  1. Facts (projection + attachment).
  2. The QUD theory.
  3. The attachment theory.
Summary II

Map

1. Facts (projection + attachment).
2. The QUD theory.
3. The attachment theory.
Summary III

- Main claim:
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  - Beaver et al. (2010): only what does not address the Question Under Discussion (< Roberts) can project (projects $\Rightarrow$ does not address the QUD).
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- Present proposal: only what can project can ignore the QUD (can ignore the QUD ⇒ ability to project).
Summary III

- Main claim:
- Beaver et al. (2010): only what does not address the Question Under Discussion (< Roberts) can project (projects ⇒ does not address the QUD).
- Present proposal: only what can project can ignore the QUD (can ignore the QUD ⇒ ability to project).
- Something could address the QUD and project.
Summary IV

<table>
<thead>
<tr>
<th>MC</th>
<th>NMC</th>
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<tbody>
<tr>
<td>MC</td>
<td>NMC</td>
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</table>

biblio
Summary IV

MC  NMC

MC  NMC

biblio
Summary IV
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The lines are relevance discourse relations.
Summary I

- How come that Beaver et al. are very often right (robustness)?
Summary I

- How come that Beaver et al. are very often right (robustness)?
- Correlation between answering the QUD and modifying the probability of possible answers.
Projection I

- See Tonhauser et al. (2011) for an analysis of projection tests.
Projection I

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- Presuppositions (PPs) project through negation, interrogation and some ‘modal’ operators.
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(1) a. Paul stopped smoking
Projection I

- See Tonhauser et al. (2011) for an analysis of projection tests.
- Presuppositions (PPs) project through negation, interrogation and some ‘modal’ operators.

(1) a. Paul stopped smoking
b. \{\textit{smoke}-\textit{before}(t), \neg \textit{smoke}-\textit{after}(t)\}
## Projection II

<table>
<thead>
<tr>
<th>Paul didn’t stop smoking</th>
<th>Did Paul stop smoking?</th>
<th>Mary hopes that Paul stopped smoking</th>
</tr>
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<tbody>
<tr>
<td>$\not\Rightarrow -\text{smoke-after}(t)$</td>
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Projection III

- Extends to conventional implicatures (CI’s) (Potts 2005).
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Projection IV

(2) a. It is not true that my stupid neighbour voted for Smith
⇒ my neighbour didn’t vote for Smith
⇔ my neighbour is stupid.
Projection IV

(2)  
a. It is not true that my stupid neighbour voted for Smith  
⇒ my neighbour didn’t vote for Smith  
⇒⇒ my neighbour is stupid.  
b. Did Paul almost hit the target?  
⇒⇒ Paul didn’t hit the target
Projection V

- Extends to conversational implicatures (ci’s).
Projection V

- Extends to conversational implicatures (ci’s).

(3) Simons’ (2005) example (27)

Q – Are we going on a picnic?
A1 – It’s raining
A2 – It’s not raining / Is it raining?
\[\sim \] rain makes picnic less probable
Refutation I

- Direct refutation of PPs targets the non-PP by default (Erteschik-Shir & Lappin 1979, von Fintel 2004).
Refutation I

- Direct refutation of PPs targets the non-PP by default (Erteschik-Shir & Lappin 1979, von Fintel 2004).
- Extends to CI’s (Jayez & Rossari 2004, Potts 2005) and to ci’s.
Refutation II

(4) A – Paul has stopped smoking
    B – No / It’s false / You’re wrong / You lie
    ¬¬ He still smokes, ∨ He didn’t smoke before
Refutation II

(4) A – Paul has stopped smoking
B – No / It’s false / You’re wrong / You lie
\( \neg \) He still smokes, \( \neg \) He didn’t smoke before
A – Fortunately, Paul has stopped smoking
B – No / It’s false / You’re wrong / You lie
\( \neg \) He still smokes, \( \neg \) He didn’t smoke before, \( \neg \) It is unfortunate that Paul has stopped smoking
Refutation II

(4) A – Paul has stopped smoking
B – No / It’s false / You’re wrong / You lie
\( \sim \) He still smokes, \( \not \) He didn’t smoke before
A – Fortunately, Paul has stopped smoking
B – No / It’s false / You’re wrong / You lie
\( \sim \) He still smokes, \( \not \) He didn’t smoke before, \( \not \) It is unfortunate that Paul has stopped smoking
A – Paul answered some questions
B – No / It’s false / You’re wrong / You lie
\( \sim \) He didn’t answer any question, \( \not \) He answered all of them
Attachment I

- Ducrot (1972) observed that it is difficult to connect to presuppositions (*loi d’enchaînement*).
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- Ducrot (1972) observed that it is difficult to connect to presuppositions (loi d’enchaînement).
(5)  a. ?? Paul stopped smoking because he liked that
\[\not\Rightarrow \text{Paul smoked because he liked that}\]
(5)  a. ?? Paul stopped smoking because he liked that
   \(\Rightarrow\) Paul smoked because he liked that

   b. My stupid neighbour had an accident although my sister thinks he is smart
   \(\Rightarrow\) He is stupid although my sister thinks he’s smart
Attachment II

(5)  

a. ? ? Paul stopped smoking because he liked that
   ↳ Paul smoked because he liked that
   b. My stupid neighbour had an accident although my sister thinks he is smart
   ↳ He is stupid although my sister thinks he’s smart
   c. A – Is David Beckham a great player?  
   B – ? ? He’s a good player*. Still, he was nominated for the Golden Ball
   ↳ DB is not a great player although he was nominated for the Golden Ball

* Elaboration of an example of Hotze Rullmann.
Intermediate conclusion

- All projective phenomena share a common profile (refutation + attachment).
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- All projective phenomena share a common profile (refutation + attachment).
- This raises the question of a possible ‘unifying theory’.
The QUD theory I

- Proposed in Roberts et al (2009) and Beaver et al. (2010).
The **QUD** theory I

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- The intuition: only things that are not interpreted as related to the **QUD can** project.
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- The intuition: only things that are not interpreted as related to the QUD can project.
- Projection is not automatic (see the literature on PPs).
The QUD theory II

▶ $p$ is related to a QUD $q =_{df} ?p$ if $?p$ has an answer that contextually entails a partial or complete answer to $q$. 
The QUD theory II

- $p$ is related to a QUD $q =_{df} ?p$ has an answer that contextually entails a partial or complete answer to $q$.
- The speaker can reasonably expect the addressee to recognise her intention to address the QUD with $p$. 
The QUD theory II

- $p$ is related to a QUD $q =_{df}$ if $?p$ has an answer that contextually entails a partial or complete answer to $q$.
- The speaker can reasonably expect the addressee to recognise her intention to address the QUD with $p$.
- I represent the QUD as a belief state $\mathcal{Q}$. $C = \text{context}$. $\exists r (p \models_C r \land \mathcal{Q} \oplus r \subset \mathcal{Q})$ or $\exists r (\neg p \models_C r \land \mathcal{Q} \oplus r \subset \mathcal{Q})$
A – What most surprised you about the first graders?
B – They didn’t know that you can eat raw vegetables.
(Beaver et al. 2010 ex. 15)
The QUD theory III

(6) A – What most surprised you about the first graders?
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- The PP is not a plausible answer to the QUD ⇒ it can (and does) project.
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▶ \( p = FG \) know that you can eat raw vegetables.
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▶ \( Q \) What most..FG? \( \oplus \neg p \subset Q \) What most..FG?
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▶ The PP is not a plausible answer to the QUD ⇒ it can (and does) project.
▶ $p = \text{FG know that you can eat raw vegetables}$.
▶ $p \models c \ p, \ \neg p \models c \ \neg p$.
▶ $Q^{\text{What most..FG?}} \oplus \neg p \subset Q^{\text{What most..FG}}$.
▶ So $p = \text{‘FG know ... vegetables’ cannot project and is wiped out by negation}$.
The QUD theory IV

- The reasoning might sound strange: it is because $p$ cannot project that negation applies to it.
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- The reasoning might sound strange: it is because $p$ cannot project that negation applies to it.
- But, intuitively, it is really $\neg p$ that addresses the QUD.
- In (7), $p$ = ‘they know that . . .’.
  1. $p$ addresses the QUD ($\Rightarrow$ can’t project).

(7) A – What most surprised you about the first graders?
B – I had not realised they didn’t know that you can eat raw vegetables.
The QUD theory IV

- The reasoning might sound strange: it is because $p$ cannot project that negation applies to it.
- But, intuitively, it is really $\neg p$ that addresses the QUD.
- In (7), $p$ = ‘they know that . . .’.
  1. $p$ addresses the QUD ($\Rightarrow$ can’t project).
  2. But $p$ is not influenced by the negation of the matrix clause.

(7) A – What most surprised you about the first graders?
B – I had not realised they didn’t know that you can eat raw vegetables.
The **QUD** theory (developments) V

- In some cases, something projects although it should not.

(8) A – What’s the weather like?
B – ?? Bob realizes / doesn’t realize that it’s raining.
(Beaver et al. 2010, ex. 20)
The QUD theory (developments) V

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- Without projection : (either it is raining and Bob does not realize it) or it is not raining.
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- Explanation of Beaver et al. : two possible interpretations, with or without projection.

- Without projection : (either it is raining and Bob does not realize it) or it is not raining.

- Does not address the QUD.
The **QUD theory (developments)** VI

- “another (where the presupposition projects) which provides an answer to the QUD, but requires a mis-match between projection and at-issueness.” (p. 11)
The QUD theory (developments) VI

▶ “another (where the presupposition projects) which provides an answer to the QUD, but requires a mis-match between projection and at-issueness.” (p. 11)

▶ Reasoning: the answer is infelicitous because it forces us to make something that should not project.
The QUD theory (developments) VI

- “another (where the presupposition projects) which provides an answer to the QUD, but requires a mis-match between projection and at-issueness.” (p. 11)

- Reasoning: the answer is infelicitous because it forces us to make something that should not project.

- Why does it project in the first place?
The QUD theory (developments) VI

- “another (where the presupposition projects) which provides an answer to the QUD, but requires a mis-match between projection and at-issueness.” (p. 11)
- Reasoning: the answer is infelicitous because it forces us to make something that should not project.
- Why does it project in the first place?
- Also, what about (9) (≈ (7)), see (Jayez 2011)?

(9) Q : What’s the weather like?
A1 : I have just realised that it’s raining.
A2 : I had not realised it was raining

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The QUD theory (developments) VII

- How to cope with (10)?

(10) Q : Why aren’t you inviting any boys from your class to the party?
A : I don’t like the boys in my class.
(Beaver et al. ex. 25)
The QUD theory (developments) VII

- How to cope with (10)?
- *the boys* presuppose that there are boys (*p*).

(10) Q : Why aren’t you inviting any boys from your class to the party?
A : I don’t like the boys in my class.
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The QUD theory (developments) VII

- How to cope with (10)?
- *the boys* presuppose that there are boys (*p*).
- ¬*p* is a direct answer to the QUD, so it should not project.

(10)  

_Q_ : Why aren’t you inviting any boys from your class to the party?  
_A_ : I don’t like the boys in my class.  
(Beaver et al. ex. 25)
The QUD theory (developments)

- Solution:
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1. What is at-issue cannot project.
The QUD theory (developments)

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2. $p$ is at-issue = $p$ or $\neg p$ contextually entails an answer to the QUD (as above).
The QUD theory (developments)

Solution:
1. What is at-issue cannot project.
2. $p$ is at-issue = $p$ or $\neg p$ contextually entails an answer to the QUD (as above).
3. In (10), the linguistic marking indicates by default that the speaker does not intend to address the QUD with $p$. 
But what about (11)?

(11) Context : Mary doesn’t like linguists
Q : Mary was incredibly tense!
A : Had she noticed the linguists in the back?
But what about (11)?

The existence of linguists is relevant to the QUD and the speaker is aware of that.

(11) Context: Mary doesn’t like linguists
Q: Mary was incredibly tense!
A: Had she noticed the linguists in the back?
The QUD theory (developments) VIII

- But what about (11)?
- The existence of linguists is relevant to the QUD and the speaker is aware of that.
- Yet, it had better to project.

(11) Context: Mary doesn’t like linguists
Q: Mary was incredibly tense!
A: Had she noticed the linguists in the back?
The **QUD** theory (developments) IX

- Examples of non-projection due to addressing the QUD.
The QUD theory (developments) IX

Examples of non-projection due to addressing the QUD.

(12) Q1 : Does France have a king?
A1 : Well, the king of France didn’t attend the opening of Parliament
\[\rightsquigarrow\] If France had a king, he would have attended the ceremony
Q2 : Is Harry dating Sally?
A2 : Bill doesn’t know that he is.
\[\rightsquigarrow\] If Harry dated Sally, Bill would know it
A much less felicitous variant of (12) : (13).

(13) Q2 : Is Harry dating Sally?
A2 : ? Bill doesn’t regret that he is.
̄ If Harry dated Sally, Bill would regret it
The QUD theory (developments) XI

- A simple explanation: $\text{regret}(x, y)$ asserts that $x$ has a negative attitude towards $y$. 
The QUD theory (developments) XI

- A simple explanation: \( \text{regret}(x, y) \) asserts that \( x \) has a negative attitude towards \( y \).
- Not regretting \( \sim \) not having a negative attitude (but knowing).
The QUD theory (developments) XI

- A simple explanation: regret($x, y$) asserts that $x$ has a negative attitude towards $y$.
- Not regretting $\sim$ not having a negative attitude (but knowing).
- If Harry dated Sally, Bill would see it unfavourably.
The QUD theory (developments) XI

- A simple explanation: \( \text{regret}(x, y) \) asserts that \( x \) has a negative attitude towards \( y \).
- Not regretting \( \sim \) not having a negative attitude (but knowing).
- If Harry dated Sally, Bill would see it unfavourably.
- ? If Bill does not see it unfavourably, Harry does not (probably) date Sally.
The attachment theory I

- (Jayez 2010): emerged as a criticism of the QUD theory.
The attachment theory I

- (Jayez 2010) : emerged as a criticism of the QUD theory.
- Argument 1 : there is an asymmetry between the M(ain) C(ontent) and the N(on) M(ain) C(ontent) (= projective content = PP’s + CI’s + ci’s).
The attachment theory I

- (Jayez 2010) : emerged as a criticism of the QUD theory.
- Argument 1 : there is an asymmetry between the M(ain) C(ontent) and the N(on) M(ain) C(ontent) (= projective content = PP’s + CI’s + ci’s).
- Attachment to the MC is obligatory, attachment to the projective content is not (although a combined attachment may be ‘preferred’).
The attachment theory II

(14)

a. Paul stopped smoking because it’s bad for health

⇝ Paul does not smoke because it’s bad for health
The attachment theory II

(14)

a. Paul stopped smoking because it’s bad for health
   ~ Paul does not smoke because it’s bad for health
b. Paul stopped smoking because he liked that
   ℮ Paul smoked because he liked that
c. My stupid neighbour married because he fell in love
d. ?? My stupid neighbour married although his wife thinks he’s smart
The attachment theory II

(14) a. Paul stopped smoking because it’s bad for health
   \[\sim Paul\ does\ not\ smoke\ because\ it’s\ bad\ for\ health\]
b. Paul stopped smoking because he liked that
   \[\nabla Paul\ smoked\ because\ he\ liked\ that\]
c. My stupid neighbour married because he fell in love

d. ?? My stupid neighbour married although his wife thinks he’s smart
   A – Is David Beckham a great player?
   B1 – He’s a good player although he was not nominated for the Golden Ball
   B2 – ?? He’s a good player although he was nominated for the Golden Ball
The attachment theory III

- Argument 2: sometimes, something that should not project does.
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- The version in (Jayez 2010) is (interestingly) flawed. (15): A-B1 (not a projective environment).

(15) A – Does Paul have a strong will?
B1 – Yes, he has stopped smoking for instance.
The attachment theory III

- Argument 2: sometimes, something that should not project does.

- The version in (Jayez 2010) is (interestingly) flawed. (15): A-B1 (not a projective environment).

- The A-B2 versions make the point (☞ an intention of addressing the QUD may be safely ascribed to B1 and B2).

(15) A – Does Paul has a strong will?  
B1 – Yes, he has stopped smoking for instance  
A – Does Paul has a strong will?  
B2 – No, he has not stopped smoking for instance  
B2 – Well, are you aware that he is a chain-smoker?
The attachment theory III

▶ Argument 2: sometimes, something that should not project does.

▶ The version in (Jayez 2010) is (interestingly) flawed. (15): A-B1 (not a projective environment).

▶ The A-B2 versions make the point (☞ an intention of addressing the QUD may be safely ascribed to B1 and B2).

▶ See also (7), (9), (11).

(15) A – Does Paul has a strong will?
B1 – Yes, he has stopped smoking for instance
A – Does Paul has a strong will?
B2 – No, he has not stopped smoking for instance
B2 – Well, are you aware that he is a chain-smoker?
The attachment theory IV

- Objections.
The attachment theory IV

- Objections.
- Objection 1: the NMC alone can address the QUD: (16).

(16) A – Do you think Mary is clever?
B1 – Her husband regrets every day that she is
The attachment theory IV

- Objections.
- Objection 1: the NMC alone can address the QUD: (16).
- Answer: Mary is so intelligent that she’s a problem for her husband: the MC is involved. Compare to the B2 version.

(16)  
A – Do you think Mary is clever?  
B1 – Her husband regrets every day that she is  
B2 – ??? Her husband forgot that she is
The attachment theory V

▶ In general, the ‘transparency’ of MC is eliminated by adding a negation or question.
The attachment theory V

- In general, the ‘transparency’ of MC is eliminated by adding a negation or question.
- The detective discovered that Mary had cashed the check, so she must be the culprit.
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- In general, the ‘transparency’ of MC is eliminated by adding a negation or question.
- *The detective discovered that Mary had cashed the check, so she must be the culprit.*
- Who cares about the detective discovery? Mary cashed the check $\neg$ she is the culprit.
The attachment theory V

- In general, the ‘transparency’ of MC is eliminated by adding a negation or question.
- The detective discovered that Mary had cashed the check, so she must be the culprit.
- Who cares about the detective discovery? Mary cashed the check \( \leadsto \) she is the culprit.
- ??The detective did not discover that Mary had cashed the check, so she must be the culprit.
The attachment theory VI

- Same problem for ‘metalinguistic’ examples (17-a).

(17)  

a. Since Paul has divorced, he was married  
b. Since Paul has stopped smoking, he has been smoking  
c. Paul is not divorced since he never married
The attachment theory VI

- Same problem for ‘metalinguistic’ examples (17-a).
- The MC content involves the *assertability* of a sentence (Horn Dummett-like terminology).

(17)

a. Since Paul has divorced, he was married
b. Since Paul has stopped smoking, he has been smoking
c. Paul is not divorced since he never married
The attachment theory VI

- Same problem for ‘metalinguistic’ examples (17-a).
- The MC content involves the assertability of a sentence (Horn Dummett-like terminology).
- Try to force a causal relation: ?? Paul has divorced. This explains why he was married and is not anymore.

(17) a. Since Paul has divorced, he was married
    b. Since Paul has stopped smoking, he has been smoking
    c. Paul is not divorced since he never married
The attachment theory VII

- Similar examples with ci’s: A1 objects to the form of words and to the implicature, not to the implicature alone (cf. A2)
The attachment theory VII

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(18) A – Is David Beckham a great player?
Similar examples with ci’s: A1 objects to the form of words and to the implicature, not to the implicature alone (cf. A2)

(18) A – Is David Beckham a great player?
    B – He is a good player.
    A1 – Oh come on, he was nominated for the Golden Ball
The attachment theory VII

- Similar examples with ci’s: A1 objects to the form of words and to the implicature, not to the implicature alone (cf. A2)

(18) A – Is David Beckham a great player?
B – He is a good player.
A1 – Oh come on, he was nominated for the Golden Ball
A2 – ?? It’s false, he was nominated for the Golden Ball
The attachment theory VIII

- Examples like (18) point to a general problem.
The attachment theory VIII

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The attachment theory VIII

- Examples like (18) point to a general problem.

(19) a. Did Paul marry?, coz I’d like to know where he spent his honeymoon.
   b. ?? Did Paul divorce?, coz I’d like to know where he spent his honeymoon.
The attachment theory IX

- Objection 2: the asymmetry examples in (14) involve a mismatch: the PC is attached although it does not normally address the QUD.
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- This amounts either to admitting an attachment constraint or ...
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- This amounts either to admitting an attachment constraint or . . .
- to relaxing the constraint on projection by including non-projective environments.
The attachment theory IX

Objection 2: the asymmetry examples in (14) involve a mismatch: the PC is attached although it does not normally address the QUD.

This amounts either to admitting an attachment constraint or...

to relaxing the constraint on projection by including non-projective environments.

In that case, (15A-B1) is a counterexample to the QUD theory.
The attachment theory X

- Interestingly, Beaver et al. are tempted to include non-projective environments.
The attachment theory X

- Interestingly, Beaver et al. are tempted to include non-projective environments.

(20) Beaver et al. (2010), ex. 19
A – Are there any boys in your class?
B – # I (don’t) like the boys in my class.
C – There are boys in my class and/but I don’t like them [added by myself]
The attachment theory XI

- Objection 3 (lethal).
The attachment theory XI

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- The obligatory/preferred attachment to the MC depends on discourse relations.
The attachment theory XI

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- Winterstein (2010) shows that too and aussi (French) can connect to the NMC.
The attachment theory XI

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- Winterstein (2010) shows that *too* and *aussi* (French) can connect to the NMC.
- This is true for Elaboration (without discourse marker).
The attachment theory XI

- Objection 3 (lethal).
- The obligatory/preferred attachment to the MC depends on discourse relations.
- Winterstein (2010) shows that *too* and *aussi* (French) can connect to the NMC.
- This is true for Elaboration (without discourse marker).

(21) a. Paul knows that Harry is dating Sally, he is dating her too. (Addition)
    b. Paul knows that Harry is dating Sally, it started in June. (Elaboration)
The attachment theory XII

- The DRs that are problematic are things like Explanation, Justification, Opposition, etc.
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- Their common property: relevance relation between propositions.
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- Merin’s (1999) *relevance*: 
The attachment theory XII

- The DRs that are problematic are things like Explanation, Justification, Opposition, etc.
- Their common property: relevance relation between propositions.
- Merin’s (1999) relevance:

\[(22)\] \( p \) is positively (negatively) relevant to another proposition \( p' \) whenever updating the current belief state \( S \) with \( p \) results in a state \( S \oplus p \) where \( p' \) is more (less) probable than it was in the initial state \( S \).
The attachment theory XIII

- Several different cases for $A R B$. 
The attachment theory XIII

- Several different cases for $A R B$.
  1. $A \xrightarrow{+/-} B$
The attachment theory XIII

- Several different cases for $A R B$.
  1. $A \overset{+/−}{\sim} B$
  2. $B \overset{+/−}{\sim} A$
The attachment theory XIII

- Several different cases for $A R B$.
  1. $A \sim^{+/-} B$
  2. $B \sim^{+/-} A$
  3. $A \sim^{+/-} C$, $B \sim^{+/-} C$
The idea I

- Languages allow users to mark the ‘central’ or ‘peripheral’ status of different pieces of information (MC /NMC)
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- Corresponds to the communicated expectations of the speaker concerning the probable modifications triggered by her discourse.
  1. Every participant is equipped with a probabilistic network and is likely to *adjust* it with the content of the speaker’s intention (= the goal or *point* of the speech act, see Searle).
The idea I

- Languages allow users to mark the ‘central’ or ‘peripheral’ status of different pieces of information (MC /NMC)
- Corresponds to the communicated expectations of the speaker concerning the probable modifications triggered by her discourse.

1. Every participant is equipped with a probabilistic network and is likely to *adjust* it with the content of the speaker’s intention (= the goal or *point* of the speech act, see Searle).
2. The adjustment *must* take the MC into account, assuming shared linguistic conventions.
The idea I

- Ingredient 1: adjustment of networks.
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- Common representation: Bayesian network = DAG with variables as nodes.
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- Each variable has a finite domain of mutually exclusive values (often called ‘states’).
The idea I

- Ingredient 1: adjustment of networks.
- Common representation: Bayesian network = DAG with variables as nodes.
- Nodes may stand for attitudes or actions.
- Each variable has a finite domain of mutually exclusive values (often called ‘states’).
- Conditional probability: $\Pr(X = x|Y_1 = y_1 \ldots Y_n = y_n)$ (X a node with parents $Y_1 \ldots Y_n$).
The idea II

- Adjustment: $\mathcal{U}_x \otimes \phi$. Three possible scenarios.
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  1. Assign values (exploit the network).
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  1. Assign values (exploit the network).
  2. Change probability tables (revise the network).
The idea II

- **Adjustment**: \( \mathcal{U}_x \otimes \phi \). Three possible scenarios.
  1. Assign values (exploit the network).
  2. Change probability tables (revise the network).
  3. Change connectivity (revise the network).
The idea II

- **Adjustment**: $\mathcal{U}_x \circ \phi$. Three possible scenarios.
  1. Assign values (exploit the network).
  2. Change probability tables (revise the network).
  3. Change connectivity (revise the network).

- Here, just exploitation.
The idea III

- An example: the speaker makes manifest her intention that $\alpha$. 
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- The possibility that the $\text{Int}(\text{speaker})$ variable is in the state $\alpha$ ($\text{Int}(\text{speaker}) = \alpha$) is assigned a probability.
The idea III

- An example: the speaker makes manifest her intention that $\alpha$.
- The possibility that the $\text{Int}(\text{speaker})$ variable is in the state $\alpha$ ($\text{Int}(\text{speaker}) = \alpha$) is assigned a probability.
- Not necessarily 1 (reliability of the speaker, anticipations of consequences by the addressee).
The idea IV

$$m_1|a > b \& \text{Cont}(m_1) = I_a \alpha$$

$$Bel_b \alpha \text{ requires } \beta_b$$

$$m_2|b > a \& \text{Cont}(m_2) = \neg I_b \beta_b$$

$$Bel_b \text{ feasible}(\beta_b)$$

$$I_b \beta_b$$

$$\beta_b$$

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The idea IV

\[ m_{1[a>b]} \& \text{Cont}(m_1) = I_{a\alpha} \]

\[ Ib_{βb} \]

\[ Bel_{βa} \text{ requires } β_{b} \]

\[ Bel_{b} \text{ feasible}(β_{b}) \]

\[ m_{2[b>a]} \& \text{Cont}(m_2) = \neg I_{b} β_{b} \]
The idea IV

\[ m_1[a > b] \& \text{Cont}(m_1) = I_\alpha \]

\[ Bel_\alpha \text{ requires } \beta_b \]

\[ I_b \beta_b \]

\[ Bel_b \text{ feasible}(\beta_b) \]

\[ \beta_b \]

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\[ I_b β_b \]

\[ β_b \]

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The idea IV

Bel_bα requires β_b

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β_b
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\[ Bel_{b} \text{ feasible}(\beta_{b}) \]

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The idea IV

- \( m_1[α>b] & \text{Cont}(m_1) = I_α \)
- \( I_b β_b \)
- \( β_b \)
- \( m_2[β>a] & \text{Cont}(m_2) = ¬I_b β_b \)
- \( \text{Bel}_b \) requires \( β_b \)
- \( \text{Bel}_b \) feasible(\( β_b \))
The idea IV

\[ b \text{ feasible } (\beta_b) \]

\[ m_1[a > b] \& \text{Cont}(m_1) = I_a \alpha \]

\[ \beta_b \]

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The idea V

- Complex networks (attitudes + actions) correspond to observed regularities.
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  1. Doxastic goals (Sweetser’s belief dimension) : \( I_a \text{Bel}_b \phi \).
The idea V

- Complex networks (attitudes + actions) correspond to observed regularities.
- I consider only what is useful for relevance.
  1. Doxastic goals (Sweetser’s belief dimension) : $I_a \text{Bel}_b \phi$.
  2. Intentional goals : $I_a I_b \alpha$ (Sweetser’s speech act dimension).
The idea VI

- Ingredient 2: contribution of a message = raise the probability of some event(s) or state(s) (Skyrms 2010).
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- Here, event = point
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- General form: $\Pr_{\mathcal{U}_x \otimes m}(A)$ compared to $\Pr_{\mathcal{U}_x}(A)$. 
The idea VI

- Ingredient 2: contribution of a message = raise the probability of some event(s) or state(s) (Skyrms 2010).
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- General form: \( \Pr_{U_x \ast m}(A) \) compared to \( \Pr_{U_x}(A) \).
  1. Message \( m \) from \( a \) to \( b \): can modify the probability that \( b \) will entertain some belief or intention
The idea VI

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- General form: $\Pr_{\mathcal{U}_x \otimes m}(A)$ compared to $\Pr_{\mathcal{U}_x}(A)$.
  1. Message $m$ from $a$ to $b$: can modify the probability that $b$ will entertain some belief or intention
  2. The NMC alone does not carry any significant contribution.

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The idea VII

▶ $m_a > b$. 
The idea VII

- $m_{a>b}$.

- A message $m$ may be represented as a typed feature structure (intonation, gestures, MC, NMC): $\text{aspects}_m$. 
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- A message $m$ may be represented as a typed feature structure (intonation, gestures, MC, NMC) : $\text{aspects}_m$.
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- \( m_{a>b} \) with goal \( Bel_b \phi \).
  \[ \Pr_{\mathcal{U}_b \otimes \text{aspects}_m} (Bel_b \phi) \neq \Pr_{\mathcal{U}_b} (Bel_b \phi) \Rightarrow MC(m) \in \text{aspects}_m. \]
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- $m_{a \succ b}$.
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- $m_{a \succ b}$ with goal $\text{Bel}_b \phi$.
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  \Pr_{\mathcal{U}_b \otimes \text{aspects}_m}(\text{Bel}_b \phi) \neq \Pr_{\mathcal{U}_b}(\text{Bel}_b \phi) \Rightarrow \text{MC}(m) \in \text{aspects}_m.
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  \]
- Does not entail that there is no ‘update’ with the NMC.
The idea VIII

- Ingredient 2: relevance relation = a change in the probability of an object $A$ makes the probability of some object $B \neq A$ change.
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- Structure of (23):

(23) A – Paul has changed his car for a brand-new Mercedes  
B – Wow! (So) He must have taken a loan
The idea VIII

- Ingredient 2: relevance relation = a change in the probability of an object $A$ makes the probability of some object $B \neq A$ change.

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  - $m_{A>B} : \Pr(Bel_B [Mercedes])$
  - $m'_{B>A} : \Pr(Bel_A [loan])$

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  - Structure of (23):
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- Signals that $[Mercedes] \sim [loan]$.

(23) A – Paul has changed his car for a brand-new Mercedes
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The idea IX

▶ The rise of the probability of $Bel_b$ [Mercedes] after a’s message makes the probability of $Bel_b$ [loan] rise.
The idea IX

- The rise of the probability of $\text{Bel}_b$ [Mercedes] after $a$’s message makes the probability of $\text{Bel}_b$ [loan] rise.
- Does that entail that $b$ actually believes that [Mercedes]?
The idea IX

- The rise of the probability of $Bel_b$ [Mercedes] after $a$’s message makes the probability of $Bel_b$ [loan] rise.
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- No, $b$ could *simulate* a probability rise based on the initial message.
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1. What happens: $\Pr_{U_b \otimes aspects_{m > b}} (Bel_b[Mercedes]) \simeq \Pr(Bel_b[Mercedes])$. 
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2. Simulation: $\Pr_{\mathcal{U}_b \otimes \text{aspects}_{m_{a>b}}} (\text{Bel}_b[\text{Mercedes}]) > \Pr(\text{Bel}_b[\text{Mercedes}]).$
The idea IX

- The rise of the probability of $Bel_b[\text{Mercedes}]$ after $a$’s message makes the probability of $Bel_b[\text{loan}]$ rise.
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1. What happens : $\Pr_{U_b \otimes \text{aspects}_{m_a > b}}(Bel_b[\text{Mercedes}]) \simeq \Pr(Bel_b[\text{Mercedes}])$.
2. Simulation : $\Pr_{U_b \otimes \text{aspects}_{m_a > b}}(Bel_b[\text{Mercedes}]) > \Pr(Bel_b[\text{Mercedes}])$.
3. Result of simulation : $\Pr_{U_b \otimes \text{aspects}_{m_a > b}}(Bel_b[\text{loan}]) > \Pr(Bel_b[\text{loan}])$. 
Direct consequences I

- Relevance DR require that we consider adjustments triggered by messages (actual or simulated).
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- Adjustments with the NMC alone are evanescent according to basic linguistic conventions.
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- Adjustments with the NMC alone are evanescent according to basic linguistic conventions.
- The speaker: attachment to NMC alone ⇒ manifest incoherence.
- The addressee: may choose to deviate from speaker’s expectations. But can hardly do it implicitly (like strong incongruence in question-answer pair).
Some consequences I

- The proposal is Gricean (!).
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  1. It preserves the central vs. peripheral distinction of SA's, Grice 1989, p. 121, p. 362, see also Jayez & Rossari (2004).
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- Only a very basic adjustment hierarchy ⇒ no type mismatch (≠ Potts) ⇒ attachment to both MC and NMC is possible.
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- Only a very basic adjustment hierarchy ⇒ no type mismatch (≠ Potts) ⇒ attachment to both MC and NMC is possible.
- Paul has a strong will because he stopped smoking (‘because MC and NMC’).
- Explains why the QUD theory is empirically robust: strong correlation between answering the QUD and exploiting relevance.

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Some consequences II

▶ Why does projective meaning project? At least four cases.
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1. Elements of meaning that are not truth-conditional (typically interjections).
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  1. Elements of meaning that are not truth-conditional (typically interjections).
  2. Background knowledge implicatures (Simons), which are not even articulated.
  3. NMC and MC orthogonal (≈ Potts for CI’s).
  4. Falsity of NMC can affect MC: projection preferred but not automatic.
Some consequences III

- Why is projection preferred?
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- The NMC may be (presented as) off / secondary w.r.t. the discourse track.
Some consequences III

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- The NMC may be necessary to construct a correct interaction with the MC.
- Why are PP’s so often associated with common ground?
Some consequences III

- Why is projection preferred?
- The NMC may be (presented as) off / secondary w.r.t. the discourse track.
- The NMC may be necessary to construct a correct interaction with the MC.
- Why are PP’s so often associated with common ground?
- Peripheral information should be non-controversial or non-significant (= easily accommodated).
Thank you!
References


References II