Notes on Chapter 3 of Beaver (2001)

And a Glimpse of Chapter 4

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1 The Big Picture

- Why do *we* care about presupposition?
  - Presumably because it's connected to important issues in the science of language, communication and meaning
- Beaver (2001) is dedicated to theories of **presupposition projection**:
  - How are the presuppositions of an *utterance* of a sentence S calculated from the presuppositions of S's constituents?
- If you're in a divisive mood, you might think there are two very different kinds of answers to this question:

  Pragmatic Answers The presuppositions of an utterance of S are determined both by what speakers tend to take for granted when they utter sentences with S's constituents as well as certain independently motivated generalization about communication. (Stalnaker 2002: 703, among others)

  Semantic Answers The presuppositions of S are compositionally determined from S constituents just as S's meaning is. The presuppositions may be themselves part of the meaning (hence the compositional isomorphism) or computed in a 'separate dimension' parallel to the computation of the non-presuppositional component.

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2 Filtration & Cancellation Theories of Presupposition

- Karttunen's (1973) analysis is an example of

  Local Filtering (Bottom-Up)
  For each subsentence of S consisting of an operator embedding further subsentences as arguments, S not only carries its own potential presuppositions, but also inherits a subset of the potential presuppositions of the arguments

- On the other hand, Gazdar (1979); Mercer (1987, 1992) and van der Sandt's (1988) analyses are examples of

  Global Cancellation (Top-Down)
  Pragmatic principles determine a function from tuples consisting of the context, the set of potential presuppositions, the assertive content of the sentence, and (except in van der Sandt's theory) a set of Gricean implicatures of the sentence, to that subset of the potential presuppositions which is projected

2.1 Filtration: Karttunen 1973

- Terminology:

  Plugs predicates which block off all of the presuppositions of the complement sentence, e.g. *say*, *mention*, *tell*, *ask*

  Holes predicates or connectives which let all the presuppositions of the complement sentence become presuppositions of the matrix sentence, e.g. *know*, *regret*, *understand*, *be possible*, *not*, *realize*

  Filters predicates or connectives which, under certain conditions, cancel some of the presuppositions of the arguments, e.g. *if then*, *either or*, *and*

- The Theory:

  Definition 7 (Beaver 2001: 56)
  - $\pi(\mathsf{S})$ is the set of **potential presuppositions** of S
  - F is a possibly null set of **contextually assumed facts** (sentences)
  - $P_F(\mathsf{S})$ maps S to the set of **sentences it presupposes** relative to F

  1. $P_F(\mathsf{S}) = \pi(\mathsf{S})$ — if S is simple
  2. $P_F(\mathsf{S}) = P_F(\mathsf{S}_1) \cup \pi(\mathsf{S})$ — if S contains a hole predicate embedding S_1
  3. $P_F(\mathsf{S}) = \pi(\mathsf{S})$ — if S contains a plug predicate embedding any sentence
  4. $P_F(\mathsf{S}) = P_F(\mathsf{S}_1) \cup \{p \in P_F(\mathsf{S}_2) \mid (F \cup \{\mathsf{S}_1\}) \nvDash p\}$ — if S = 'If S_1 then S_2' or S = 'S_1 and S_2'
  5. $P_F(\mathsf{S}) = P_F(\mathsf{S}_1) \cup \{p \in P_F(\mathsf{S}_2) \mid (F \cup \{\neg\mathsf{S}_1\}) \nvDash p\}$ — if S = 'Either S_1 or S_2'

- An example:
  (1) If [$_{\mathsf{A}}$Kay's dog is dead] then [$_{\mathsf{B}}$Dee doesn't realize Kay's dog is dead]
  - Let C = 'Dee does realize [$_{\mathsf{A}}$Kay's dog is dead]' and $F = \varnothing$
  - Observation (given by the grammar):

$$\pi(\mathsf{A}) = \{\textit{Kay has a dog}\} \quad (2)$$
$$\pi(\mathsf{B}) = \{\textit{Kay has a dog, Kay's dog is dead} = \mathsf{A}\} \quad (3)$$
$$\pi(\mathsf{C}) = \{\textit{Kay has a dog, Kay's dog is dead} = \mathsf{A}\} \quad (4)$$

  - Let's first find $P_F(\mathsf{B})$:

$$\begin{aligned} P_F(\mathsf{B}) &= P_F(\mathsf{C}) \cup \pi(\mathsf{B}) && \text{(by D7.2)} \\ &= (P_F(\mathsf{A}) \cup \pi(\mathsf{C})) \cup \pi(\mathsf{B}) && \text{(by D7.2)} \\ &= (\pi(\mathsf{A}) \cup \pi(\mathsf{C})) \cup \pi(\mathsf{B}) && \text{(by D7.1)} \\ &= \{\textit{Kay has a dog, Kay's dog is dead}\} && \text{(by (2)-(4))} \\ &= \pi(\mathsf{B}) && \text{(by 3)} \quad (5) \end{aligned}$$

  Now we find $P_F((1))$:

$$\begin{aligned} P_F((1)) &= P_F(\mathsf{A}) \cup \{p \in P_F(\mathsf{B}) \mid (F \cup \{\mathsf{A}\}) \nvDash p\} && \text{(by D7.4)} \\ &= P_F(\mathsf{A}) \cup \{p \in \pi(\mathsf{B}) \mid (\varnothing \cup \{\mathsf{A}\}) \nvDash p\} && \text{(by (5), } F = \varnothing) \\ &= P_F(\mathsf{A}) \cup \varnothing && \text{(by (3), } \mathsf{A} \vDash \textit{Kay has a dog}) \quad (6) \\ &= \pi(\mathsf{A}) \cup \varnothing && \text{(by D7.1)} \\ &= \{\textit{Kay has a dog}\} \quad \checkmark && \text{(by (2))} \quad (7) \end{aligned}$$

  - So (1) is predicted to presuppose *Kay has a dog* in F
  - Does A entail *Kay has a dog* or merely presuppose it?
    - ▷ It seems like we have to take a stand on this in step (6)
    - ▷ In this case, it didn't matter, but it could've
    - ▷ Should this whole system be stated on a semantic level rather than on a syntactic one?
- Another example:
  (8) Either [$_{\mathsf{A}}$Geraldine is not a Mormon] or [$_{\mathsf{B}}$she has given up wearing holy underwear]
  - The data: (8) does not presuppose that Geraldine is a Mormon
  - Yet, if $F = \varnothing$ Karttunen predicts that (8) presupposes that *Geraldine wore holy underwear at some past time*
    - ▷ By D7.5, each presuppositions of B project to (8) unless $\neg\mathsf{A}$ or F entail it
    - ▷ $\pi(\mathsf{B}) = \{\textit{Geraldine wore holy underwear at some past time}\}$
    - ▷ $\neg\mathsf{A}$ = *Geraldine is a Mormon* does not entail *Geraldine wore holy underwear at some past time*
    - ▷ So, the latter projects when $F = \varnothing$

    - ▷ However, if you stipulate $F = \{\textit{All Mormons have worn holy underwear at some past time}\}$, then the entailment goes through and the troubling presupposition is blocked
    - ▷ This is Karttunen's way of getting the correct prediction for (8)
- Yet another example:
  (9) [$_{\mathsf{A}}$ Jay doesn't regret writing a boring dissertation], because he didn't write a dissertation
  - According to Karttunen's analysis:
    - ▷ $P_F(\mathsf{A}) = \pi(\mathsf{A}) = \{\textit{Jay wrote a boring dissertation}, \ldots\}$, since *not* is a hole and *Jay does regret writing a boring dissertation* seems to presuppose *Jay wrote a boring dissertation*
  - But this alleged presupposition is denied in the *because*-clause of (9), which you shouldn't be able to do if it's genuinely a precondition for A's truth
  - (9) is an example of **presupposition denial** (Levinson 1983: 194-195)
  - As Beaver (2001: 70) notes, Karttunen's filtration theory does not make the correct prediction on presupposition denial cases without stipulating that there are two *not*'s, one that's a plug and one that's a hole
    - ▷ Fine if you can motivate it, but there's no known independent evidence for it
- Questions:
  - Where does F come from?
  - What kinds of facts do the clauses in Definition 7 represent?
- Cancellation theories offer improvements on both of these fronts

2.2 Cancellation Theories

2.2.1 Gazdar (1979)

- Gazdar (1979) also considers it crucial to calculate presuppositions in context
  - For Gazdar, a context C seems to be an agent's representation of the conversational participants' knowledge
- However, Gazdar aims to give a quasi-Gricean analysis of presupposition
  - He aims to reduce presupposition projection to more general processes of reasoning
    - ▷ More specifically, the processes of reasoning involved in maintaining a representation of what the speakers in a conversation have committed themselves to knowing
  - Gazdar uses Hintikka's (1962) logic of knowledge and belief (LKB) to represent these knowledge committments
  - This approach is Gricean in that it aims to ground presupposition projection in general processes of reasoning about our interlocutor's mental states
  - What's not clearly Gricean about the picture is that these processes of reasoning may

not be justified by their contribution to successful co-operation, but rather by standards of rationality that apply to agents in isolation

- Let's talk about this after we see the theory, but I want everyone to keep it in mind as we work through it

- For Gazdar the presuppositions of an utterance of S in context C are calculated as follows:
  - S is translated into LKB
    - Let α be this translation
  - $\mathsf{K}(\alpha)$ is added to C (C is a set of LKB wffs); call the result C'
    - $\mathsf{K}(\alpha)$ means the speaker knows that α
    - K satisfies necessitation: $\mathsf{K}(\phi) \vDash \phi$
  - C' is then updated with every **potential implicature** of S that does not introduce inconsistency; call the result C''
    - $\iota(\mathsf{S}) :=$ The set of each potential implicature of S translated into LKB
  - Last, C'' is updated with every **potential presupposition** of S that does not introduce inconsistency
    - $\pi(\mathsf{S}) :=$ The set of potential presuppositions of S translated into LKB
    - Presuppositions are represented epistemically, so that if S 'presupposes' ϕ then $\mathsf{K}(\phi) \in \pi(\mathsf{S})$
      - Similar to Stalnaker's (2002) idea that presupposing is a propositional attitude, except Stalnaker goes for a more plausible logic, the logic of *common belief* (Fagin *et al.* 1995), but does the *Stalnaker shuffle* when it comes to developing a formally explicit and concrete proposal about how projection might work

- The effect of updating with implicatures before presuppositions is that if a presupposition conflicts with an implicature, the presupposition is cancelled

- To make this calculation precise, Gazdar gives a definition of what it is to add all of the presuppositions or implicatures that do not **introduce inconsistency**
  - This is his notion of **satisfiable incrementation**

- For any sets X, Y, Z of LKB wffs:

Definition 8 (Consistency, Satisfiable Incrementation)

$$\begin{aligned} cons(X) &\iff X \nvDash \bot \\ X \cup\!! Y &= X \cup \{y \in Y \mid \forall Z \subseteq (X \cup Y) : cons(Z) \Longrightarrow cons(Z \cup \{y\})\} \\ &= X \cup \text{ every } y \in Y \text{ that preserves consistency when added to any consistent subset of } X \cup Y \end{aligned}$$

- Given this, the calculation of S's presuppositions in C can be defined as follows, where S's LKB translation is α:

Definition 9 (Gazdarian Update)

$$C' = ((C \cup \{\mathsf{K}(\alpha)\}) \cup !\iota(\mathsf{S})) \cup !\pi(\mathsf{S})$$

+Assertion

+Implicature

+Presupposition

- An example:

(10) If Mary is sleeping then Fred is annoyed that she is sleeping

  - Let $C = \varnothing$, $\alpha = \mathsf{Sleeping(m)} \rightarrow \mathsf{Annoyed(f, Sleeping(m))}$

$$\iota((10)) = \left\{ \begin{array}{cc} \neg\mathsf{K(Sleeping(m))}, & \neg\mathsf{K(\neg Sleeping(m))}, \\ \neg\mathsf{K(Annoyed(f, Sleeping(m)))}, & \neg\mathsf{K(\neg Annoyed(f, Sleeping(m)))} \end{array} \right\} \quad (11)$$

$$\pi((10)) = \{\mathsf{K(Sleeping(m))}\} \quad (12)$$

- Calculate the assertion and implicatures first:

$$\begin{aligned} (C \cup \{\mathsf{K}(\alpha)\}) \cup !\iota((10)) &= \{\mathsf{K}(\alpha)\} \cup !\iota((10)) && (C = \varnothing) \\ &= \text{Every } p \in \{\mathsf{K}(\alpha)\} \cup \iota((10)) \text{ consistent} \\ &\quad \text{with every consistent subset of } \{\mathsf{K}(\alpha)\} \cup \iota((10)) && \text{(by D8)} \\ &= \{\mathsf{K}(\alpha)\} \cup \iota((10)) && (13) \\ &=: I && \text{(intro. notation)} \quad (14) \end{aligned}$$

  - We get (13) since every subset of $\{\mathsf{K}(\alpha)\} \cup \iota((10))$ is consistent and every $p \in \iota((10))$ is consistent with every subset of $\{\mathsf{K}(\alpha)\} \cup \iota((10))$
    - It's tedious to show this in full detail, but is fairly clear from looking at (10)
      - No two implicatures are inconsistent, no implicature is inconsistent with $\mathsf{K}(\alpha)$, and no implicature or implicatures entail something inconsistent when taken with $\mathsf{K}(\alpha)$, so clearly every subset of $\{\mathsf{K}(\alpha)\} \cup \iota((10))$ is consistent and every element of such a subset is consistent with every other subset

- Now calculate the presuppositions:

$$\begin{aligned}((C \cup \{\mathsf{K}(\alpha)\}) \cup !\iota((10))) \cup !\pi((10)) &= I \cup !\pi((10)) && \text{(by (13), (14))}\\ &= I \cup !\{\mathsf{K}(\mathsf{Sleeping}(\mathsf{m}))\} && \text{(by (12))}\\ &= I && (15)\end{aligned}$$

  - The move to (15) is justified by the following:
    - ▷ There's only one $p \in \{\mathsf{K}(\mathsf{Sleeping}(\mathsf{m}))\}$: $\mathsf{K}(\mathsf{Sleeping}(\mathsf{m}))$
    - ▷ But $\mathsf{K}(\mathsf{Sleeping}(\mathsf{m}))$ is not consistent with every consistent subset of $I \cup \{\mathsf{K}(\mathsf{Sleeping}(\mathsf{m}))\}$
    - ▷ Since $\neg\mathsf{K}(\mathsf{Sleeping}(\mathsf{m})) \in I$, just consider $\{\neg\mathsf{K}(\mathsf{Sleeping}(\mathsf{m}))\}$
    - ▷ So by D8, $I \cup !\{\mathsf{K}(\mathsf{Sleeping}(\mathsf{m}))\} = I \cup \varnothing = I$
  - Intuitively, the one potential presupposition of (10), $\mathsf{K}(\mathsf{Sleeping}(\mathsf{m}))$, conflicts with one of it's genuine implicatures: $\neg\mathsf{K}(\mathsf{Sleeping}(\mathsf{m}))$
    - ▷ But, implicatures get priority, so the presupposition gets cancelled
- Comments:
  - Unlike F in Karttunen's theory, it's clear where C comes from; it's maintained dynamically as the discourse unfolds
  - Projection facts are not primitive, as they are in Karttunen's theory
  - Projection patterns are taken to arise from a general process of rational context maintenance
  - Unlike Karttunen's theory, Gazdar's theory can correctly predict presupposition denial cases like (9) (homework [hint: the problematic presupposition gets cancelled by an implicature])
- But, there are some significant challenges for Gazdar's theory, both theoretical and empirical
  - Unlike, Karttunen's theory, Gazdar's theory makes the incorrect prediction for:

    (16) If none of Mary's friends come to the party, she'll be surprised that her best friends aren't there

    - ▷ The consequent introduces the potential presupposition that the speaker knows that Mary's best friends aren't at the party
      - ▶ The relevant clausal implicature introduced by the antecedent is that the speaker does not know whether or not **none** of Mary's friends are coming to the party
      - ▶ But this isn't strong enough to cancel the presupposition, since it's consistent with it being known that just Mary's **best** friends aren't coming
    - ▷ So Gazdar's theory predicts that (16) presupposes that Mary's best friends aren't coming to her party, which is clearly incorrect
    - ▷ On the other hand, Karttunen gets it right, since (by D7.4) the only presuppositions that project from the consequent are those not entailed by the antecedent
      - ▶ *None of Mary's friends come to the party* entails *Mary's best friends don't come to the party*
      - ▶ So, the latter does not project

- Questions:
  - Why is it rational to update contexts according to Definition 8?
    - ▷ Satisfiable incrementation involves consistency preservation, which is rational regardless of whether or not you are taking part in a collaborative exchange
    - ▷ But, satisfiable incrementation also involves adding as much information as possible
      - ▶ Why is this rational?
    - ▷ More interestingly, why are implicatures added before presuppositions?
      - ▶ Without this feature of the theory, nothing is achieved
  - Where does the set of potential implicatures, $\iota(\mathsf{S})$, come from?
    - ▷ One relevant detail: $\iota(\mathsf{S})$ is taken to represent something like the hearer's hypotheses about the implicatures of S
    - ▷ How stable are these hypotheses and what resources are used to generate them? It doesn't seem to be plausible that our knowledge of grammar provides it, and that's the only *we can take them as given* strategy that seems coherent
    - ▷ Whatever the answer is, it seems like there has to be a lot more to Gazdar's theory than we've been given here

2.2.2 Mercer (1987; 1992)

Mercer (1987, 1992)

2.2.3 van der Sandt (1982; 1988)

van der Sandt (1982, 1988)

2.3 Combination Theories

- Given the complementarity of Karttunen's theory and Gazdar's theory, one might try to combine them
- The least intelligent way to achieve this is by running both theories on a sentence and taking the intersection of their predicted presuppositions, since each theory alone has been shown to **overgenerate**
- Maybe some hybrid can be formed?
- Maybe, but it would still face major difficulties based on the following examples

2.4 Quantification & Conditionals

- Consider:

  (17) Exactly one woman realized that if her watch was slightly wrong, she'd be in danger of shooting the wrong man

  - What (17) presupposition is triggered by *her watch*?
    - ▷ Intuitively, *the woman having the realization has a watch*
    - ▷ But what do Karttunen and Gazdar predict?
    - ▷ watch(x), where x has the effect of universal quantification?
      - ▶ No, the relevant presupposition should be restricted to some salient set of women
    - ▷ λx.watch(x)
      - ▶ No, because that would not project out of the antecedent (on either theory)
      - ▶ It would predict that the assertion of (17) amounts to *exactly one woman came to believe that if she owned a watch and that watch watch was slightly wrong then she would be in danger of shooting some wrong man*
      - ▶ But this misses the fact that (17) seems to entail/presuppose that the woman mention actually does own a watch!

- Also consider:

  (18) If LBJ appoints J. Edgar Hoover to the cabinet, he will regret having appointed a homosexual

3 Dynamic Theories of Presupposition

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