Lexical Semantics
Review: Inference types

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1 Three ways of conveying information

Language encodes and conveys information in a variety of different ways. Consider the following dialogue:

(1) A: How was your doctor's appointment?
B: Well, I decided to stop smoking.

What do we learn – what can we *infer* – based on B's answer?

(2) a. *Infer:* B decided to stop smoking.
b. *Infer:* Prior to the appointment (or the point of utterance), B was a smoker
c. *Infer:* The doctor's appointment did not go well.

(2)a-(2)c are all valid inferences from B's response in the context in (1), but they are NOT conveyed in the same way.

Assertion, presupposition, implicature:

1. (2)a is an **entailment** of B's response:
   - it belongs to asserted content: B has intentionally and directly conveyed this information
   - asserted content is **explicitly added** or mentioned by the speaker
   - consequently, it can't be denied
   - if I utter (1)B but I don't intend to stop smoking, I'm **lying**
   - (1)B is true if and only if it's asserted content/entailment (2)a is true
2. (2b) is a **presupposition** of B's response:
   - B takes this information for granted in his/her utterance
   - denying it makes the utterance nonsensical
   - if I utter (1)B, but I don't smoke and never have, it becomes impossible to understand what I'm trying to say – I stop making sense
   - (1)B is interpretable if and only if (2b) holds

3. (2c) is an **implicature** of B's response *in the context of (1)A's question*

   - implicated content is not directly conveyed, but it is part of intended meaning – in this case, the speaker expects the listener to 'deduce' implicatures from context using the Gricean principles of conversation (the speaker's word or tone choice is often in aid of this deductive process)
   - if I utter (1)B in context (1), but I don't intend my audience to decide (1)A, then I'm being misleading (intentionally or otherwise)

When we recognize some information as being conveyed by an utterance, we can use different kinds of tests to determine what kind of inference or meaning it is.

1.1 Entailment/assertion

Some ways of characterising entailments:

(3) A sentence S entails a sentence S' (write: $S \vdash S'$) if:
   a. the information conveyed by S is contained in the information conveyed by S' (i.e., S does not convey anything that S' does not also convey)
   b. any situation that can be described by S can also be described by S'
   c. there is no possible context in which S is true, but S' is false

- the *entailment* relation holds between two sentences but can be triggered by (associated with) specific words:

   (4) a. George Mallory managed to reach the top of Mount Everest.
   b. $\vdash$ George Mallory reached the top of Mount Everest.

   (5) a. Mallory failed to reach the top of Mount Everest.
   b. $\vdash$ Mallory did not reach the top of Mount Everest.

- negating an entailment is **contradictory:**

   (6) Mallory managed to reach the top of Mount Everest, #but he did not reach the top of Mount Everest.

   So, if S entails S': S *and not-*S' will be a contradiction

Contradiction test for entailments

Let S be a sentence (utterance), and I an inference conveyed by S. To test if I is **entailed** by S, add the negation of I to the original utterance:

$$S \text{ and/but not } I \tag{1}$$

- if (1) is contradictory, this shows that I has to be true when S is true, and so I is **entailed** by S
- if (1) is not contradictory (even if it is odd for some other reason), I is not an entailment of S and must be conveyed by S in some other way

1.2 Presupposition

A sentence S has a presupposition P if P must be true for S to 'make sense' (be appropriate or interpretable)

(7) ?The King of Canada is bald.

(7) doesn't make sense, because there is no King of Canada.

- we can think of sentences with presuppositions as placing requirements on the context of utterance
- as a result, they can also tell us something about the context:

  (8) My sister finally stopped smoking.

  - even if you don't know my sister (or anything about her), you can conclude that she used to smoke
  - if you know she never smoked, (6) doesn't make sense
  - note that presuppositions are often tied to certain lexical items
- presuppositions are like 'hidden' content; you can't directly agree or disagree with them

  (8) A: My sister finally stopped smoking.
  a. B: No, she didn't. I saw her smoking five minutes ago.
  b. B: No, she didn't. ??She never smoked in the first place.
- presuppositions have certain **projection** properties:
  - we can use projection through negation to test for presupposition:

    (9) a. Mallory realised he was talking to the Prime Minister.
    → Mallory was talking to the P.M.
    b. Mallory did not realise he was talking to the Prime Minister.
    → Mallory was talking to the P.M.

Negation test for presupposition

Let S be a sentence (utterance), and I an inference conveyed by S. To test if I is **presupposd** by S, we check if I still follows as an inference from the negation of S

- if *not* S still conveys I, then I is a **presupposition** of S
- if *not* S does not convey I, then I is either asserted or implicated, but is NOT presupposed by S
- (instead of negation, you can also test for presupposition by turning S into a question, preserving as much of the original lexical material as possible)

We've seen a whole class of verbs with presupposed content/felicity conditions:

- Fillmore's verbs of judging usually convey two kinds of information: a value judgement and an assignment of responsibility
- they differ in which of these pieces of information is asserted (entailed), and which is presupposed)

Fillmore's lexical entries for *accuse, criticize*:

(10) ACCUSE [Judge, Defendant, Situation]

i. *Primary meaning:* SAY [Judge, 'X', Addressee] (verb of saying)
X = RESPONSIBLE [Situation, Defendant]

ii. *Presupposition:* BAD [Situation]

(11) CRITICIZE [Judge, Defendant, Situation]

i. *Primary meaning:* SAY [Judge, 'X', Addressee] (verb of saying)
X = BAD[Situation]

ii. *Presupposition:* RESPONSIBLE [Situation, Defendant]

iii. *Presupposition:* ACTUAL [Situation]

1.3 Implicature

Implicatures are context-dependent

- if S *implicates* S', there may be contexts in which S is true but S' does not follow

(12) a. Some of the explorers reached the South Pole.
b. $\rightsquigarrow$ Not all of the explorers reached the South Pole.

- if S implicates S', then S conveys S' (as part of what the speaker intends), but S is also consistent with *not* S'
- implicatures are **defeasible** or cancellable: S *and not-*S' is not necessarily contradictory (though it might be surprising)

(13) Some of the explorers reached the South Pole; actually, all of them did!

1.3.1 Grice on pragmatic inference

The cooperative principle: "Make your conversational contribution such as is required, at the stage at which it occurs, by the accepted purpose or direction of the talk exchange in which you are engaged." Grice, *Logic and conversation*

- idea: in conversation, we tailor our contributions to drive forward the purpose or aims of the interaction, in accordance with our understanding of what those shared goals are

- Grice breaks down the cooperative principle into a number of **maxims**, all of which potentially generate pragmatic inferences
  - maxims are *not* inviolable rules
  - instead, apparent violations of cooperative behaviour leads to reasoning that enriches or supplements lexical meaning
  - for this to work, we need to mutually agree on contextual information (background, conversational aims, politeness standards, etc) as well as on lexical meaning and potential alternatives

Gricean maxims:

(14) **Quality:** Try to make your contribution one that is true.
  a. Do not say what you believe to be false.
  b. Do not say that for which you lack adequate evidence.[1]

(15) **Quantity:**
  a. Make your contribution as informative as is required
  b. Do not make your contribution more informative than is required.

(16) **Relevance:** Be relevant

(17) **Manner:** Be perspicuous
  a. Avoid obscurity of expression
  b. Avoid ambiguity
  c. Be brief
  d. Be orderly

An example using **relevance:**

(18) a. A: Do you want to go out for lunch today?
  B: I have a dentist's appointment.
  b. At face value, B's response doesn't have anything to do with having lunch. But if we assume B is attempting to be relevant, we can draw the conclusion that the dentist appointment may somehow interfere with having lunch (maybe B isn't supposed to eat for a couple of hours before the appointment, or maybe the appointment is at lunchtime). From this, we can draw the conclusion that B is saying no to the question of lunch, because of this other commitment.

The inference in (12) is an example of a **scalar implicature**, driven by the **Quantity** maxim:

- scalar implicatures are based on a strength/informativity ordering between lexical items:
  - the informativity contrast between *all* and *some* allows us to infer from the use of the less informative (weaker) alternative, *some*, that the speaker does not intend to use the more informative (stronger) item, *all*
  - this allows us to strengthen the interpretation of *some* to *some but not all*

[1] Note that this is what eliminates the implicature in (16); the grader's failure to use *all* isn't because she knows it to be false, but instead because she doesn't have enough information yet to decide.

- there are two important aspects to a scalar inference
  i. the reasoning goes ahead on the assumption that the speaker wants to be maximally informative, while still observing Quality
  ii. a strict strength-based ordering between the two alternative lexical choices allows us to strengthen the use of the weaker one to exclude the meaning of the stronger one
- the maxim that generates scalar implicatures is **Quantity**, although other facets of cooperative behavior are also invoked. Let's see how it applies to a case like (19):

(19) a. Instructor: How did the students do on the exam?
Grader: Some of them passed.
b. Grader has said "Some of the students passed."
c. Grader could have said "All of the students passed," which would be strictly stronger than his actual utterance, in that it informs us directly about the status of every student, and thus might be a sensible contribution (since the instructor asked about the students in general)
d. "Some of the students passed" and "All of the students passed" are basically equal in length/complexity, so it couldn't have been a desire for brevity that favoured "some"
e. If Grader had said "Some of the students passed" while knowing that all of them did, s/he would be violating the Quantity maxim – s/he wouldn't have made his contribution as informative as is required.
f. Therefore, it is likely that Grader intends Instructor to infer that Grader knows that not all of the students passed (or, at least does not have sufficient information to claim that all of the students passed).

2 Identifying meaning types

Consider the examples from Assignment 4:

(20) Some politicians failed to meet with their constituents.

(21) Many of the trees on campus have already lost their leaves.

(22) Pierre managed to apologize for having a noisy party.

(23) Pierre blamed the loud music on his neighbors.

1. **Information conveyed by (20):**

(20) Some politicians failed to meet with their constituents
a. *Infer:* Some politicians did not meet with their constituents
b. *Infer:* The politicians were supposed to/expected to meet with their constituents
c. *Infer:* Not all of the politicians failed to meet with their constituents/Some politicians met with their constituents

- only (20a) passes the contradiction test:

  (24) Some politicians failed to meet with their constituents, #but they met with their constituents

- (20b) is odd under the contradiction test, but not contradictory:

  (25) Some politicians failed to meet with their constituents, ?but the politicians were not supposed to meet with their constituents.

  – the negation test shows that this is a presupposition, instead:

  (26) Some politicians did not fail to meet with their constituents.
  a. *Infer:* The politicians were supposed to/expected to meet with their constituents

- the negation of (20c) is consistent with (20), suggesting that it is an implicature, rather than an entailment:

  (27) Some politicians failed to meet with their constituents, and some politicians did not meet with their constituents

  – (20c) involves the lexical item *some* and the consideration of *all* as an alternative and is thus recognizable as a scalar inference

2. **Information conveyed by (21):**

(21) Many of the trees on campus have already lost their leaves.
  a. *Infer:* Many of the trees on campus do not have leaves
  b. *Infer:* Many of the trees on campus had leaves
  c. *Infer:* Not all of the trees on campus have lost their leaves

- (21a) is an entailment:

  (28) Many of the trees on campus have already lost their leaves, #but those trees have leaves.

- (21b) is a presupposition, associated with the word *lost* (you have to have something before you can lose it):

  (29) a. Contradiction test:
  Many of the trees on campus have already lost their leaves, ??but those trees did not have leaves [not contradictory]
  b. Negation test:
  Many of the trees on campus have not already lost their leaves. *Infer:* Those trees had/have leaves

- (21c) is an implicature: *many* and *all* are alternatives in the same way as *some* and *all*

3. **Information conveyed by (22):**

(22) Pierre managed to apologize for having a noisy party.

a. *Infer:* Pierre apologized for having a noisy party

b. *Infer:* It was difficult for Pierre to apologize for having a noisy party

c. *Infer:* Pierre was responsible for having a noisy party

d. *Infer:* It was bad that Pierre had a noisy party

- (22a) is an entailment:

  (30) Pierre managed to apologize for having a noisy party, #but he did not apologize for having a noisy party

- (22b) is a presupposition associated with *manage*:

  (31) a. Contradiction test:
  Pierre managed to apologize for having a noisy party, ??but it was not difficult for Pierre to apologize for ...

  b. Negation test:
  Pierre did not manage to apologize for having a noisy party.
  Infer: It was difficult for Pierre to apologize

  – we know this is associated with *manage*, because the impression of difficulty goes away if we leave *manage* out:

  (32) Pierre apologized for having a noisy party.
  $\not\rightarrow$ It was difficult for Pierre to apologize ...

- (22c-d) are both presuppositions associated with *apologize*:
  – Fillmore's entry for *apologize*:

APOLOGIZE [Defendant, Affected (to), Situation (for)] (Performative)
Meaning: SAY [Defendant, 'X', Addressee]
X = REQUEST [Defendant, 'FORGIVE [Victim, Defendant, Situation]']
Presupposition: BAD [Situation]
Presupposition: RESPONSIBLE [Defendant, Situation]
Presupposition: ACTUAL [Situation]

4. **Information conveyed by (23):**

(23) Pierre blamed the loud music on his neighbors.

a. *Infer:* Pierre said his neighbors were responsible for the loud music

b. *Infer:* It was bad to play loud music

c. *Infer:* The neighbors were not responsible for the loud music

- using Fillmore's $blame_1$, (23)a is an entailment associated with *blame*, and (22b-c) are presuppositions

– you could argue for one of the other lexical entries, but in the context of (22), $blame_1$ seems most likely

BLAME$_1$ [Judge, Defendant, Situation (for)]
Meaning: SAY [Judge, 'X', Addressee]
X = RESPONSIBLE [Defendant, Situation]
Presupposition: BAD [Situation]
Presupposition: NOT (RESPONSIBLE [Defendant, Situation])
Presupposition: Defendant $\neq$ Addressee
Presupposition: Judge $\neq$ Defendant

BLAME$_2$ [Judge, Defendant, Situation]
Meaning: THINK [Judge, 'X']
X = BAD [Situation]
Presupposition: RESPONSIBLE [Defendant, Situation]
Presupposition: ACTUAL [Situation]

BLAME$_3$ [Judge, Defendant, Situation]
Meaning: THINK [Judge, 'X']
X = RESPONSIBLE [Defendant, Situation]
Presupposition: BAD [Situation]
Presupposition: ACTUAL [Situation]

– how do the tests work here?
– how do the inferences change if you select one of the other *blames*?