Lexical Semantics
Week 7: Pragmatic enrichment and scalar implicature

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1 Implications and types of meaning

Recall: Grice (1957) on **non-natural meaning**

(1) a. Those three rings on the bell mean that the bus is full.
b. That remark 'Smith kicked the bucket,' means that Smith died.

- meaning$_{NN}$ exists/is valid regardless of truth or falsity:

  (2) Those three rings mean that the bus is full, but it's actually empty.

- meaning$_{NN}$ is separable from its sign or signal:

  (3) What was meant by 'Sam kicked the bucket' is that Sam died.

- meaning$_{NN}$ works on the basis of established and shared **conventions**

One of our aims is to uncover the non-natural meaning of words and expressions:

- how does this meaning arise?
- what form (decomposable or otherwise) does it take?
- how do different components and types of non-natural meaning relate to one another?

Lexical items (words, phrases) and sentences give rise to three main types of implication:

1. **Entailments**

   - relates sentences to one another: A entails B if any context where A is true is necessarily also one where B is true
   - can't be cancelled or contradicted
   - arise on the basis of **primary meaning**

     (4) The policeman accused me of taking a bribe.
     a. primary meaning of *accuse*: SAY[judge, RESP(situation, defendant)]
     b. *entails:* The policeman said that I took a bribe.
     c. *check:* The policeman accused me of taking a bribe, #but he never said that I took a bribe.

2. **Presuppositions:**

   - conditions that must hold for a sentence to be evaluated as true or false
   - remain constant under negation
   - as inferences, arise on the basis of **felicity conditions**:

     (5) Mayor Daley accused me of saving his life.
     a. felicity conditions for *accuse*: THINK[judge, BAD(situation)]
     b. *presupposes:* Mayor Daley thinks that it's bad that his life was saved.
     c. *check:* Mayor Daley didn't accuse me of saving his life
     → *Mayor Daley thinks that it's bad that his life was saved.*

3. **Implicature:**

   - cancellable or **defeasible**
   - affected by negation, but (cf. Horn 1984), in varied ways
   - crucially, arise on the basis of:
     – lexical meaning (and contrasts)
     – context and/or shared assumptions between interlocutors
     – assumptions about convention and **cooperative behaviour**

2 Enrichments to lexical meaning

Quantifiers (*every, no, some*) play role in determining entailment relationships between sentences involving hypo- and hypernyms:

(6) a. car $\sqsubset$ vehicle
b. Larry bought a car $\vdash$ Larry bought a vehicle.

The direction of entailment depends on the quantifier:

(7) a. poodle $\sqsubset$ dog
b. Larry did not buy a dog. $\vdash$ Larry did not buy a poodle.

We also find certain kinds of relationships between sentences involving quantifiers:

(8) a. John bought every car.
b. John bought a car.
c. *Relationship:*

(9) a. John bought some car.
b. John bought a car.
c. *Relationship:*

(10) a. John bought every car.
b. John bought many cars.
c. *Relationship:*

(11) a. John bought no car.
b. John bought few cars.
c. *Relationship:*

These relationships hold because of the (functional) meanings of these quantifiers.

2.1 Exploiting lexical meaning for enrichments:

Something different is happening in the following examples:

(12) "I'm a superstitious man. If some unlucky accident should befall him ... if he should get shot in the head by a policeman ... or if he's struck by a bolt of lightning, then I'm going to blame **some** of the people in this room."

a. $\rightsquigarrow$ **some but not all** of the people in this room

(13) A: The cookie jar is empty! Who ate the cookies?
B: I ate a few.

a. $\rightsquigarrow$ I ate **a few but not all** of the cookies.

- these inferences relate quantifiers in a different way than the inferences in (8)-(11)

But this isn't consistent or universal:

(14) "Senator Carly apologized for not coming personally ... he said you'd understand. Also, **some** of the judges apologized. They've all sent gifts."

a. $\rightsquigarrow$ **some and perhaps all** of the judges apologized

Context matters:

(15) *Instructor:* How did the students do in the exam?
Grader: Some of them did very well!
$\rightsquigarrow$ Not all of the students did well.

(16) Context: the grader is in the process of marking exams
Grader: Some of the students did well on the exam!
$\not\rightsquigarrow$ Not all of the students did well.

Question: is *some* ambiguous between *some but not all* and *some and maybe all*?

- what's happening here is **pragmatic enrichment**
- we're using information about the meaning of *some* and *all*, **relative to one another**, to infer something from the choice of one word over the other
- the logic for (15) goes something like this:

(17) a. *Some* is compatible with two different scenarios: one in which all of the students did well, and one in which some but not all of the students did well.

b. If all of the students had done well, there would be no reason for the grader to say *some*: *all* is only compatible with one possible scenario, removing ambiguity – so it would be a stronger, more informative thing to say

c. Since the grader didn't say *all*, we can rule out the scenario in which *all* holds

d. Thus, we go from the grader's use of *some* to the (pragmatically) strengthened meaning "Some but not all of the students did well."

- (the inference vanishes in (16), because the grader has another reason for avoiding *all*)
- the same kind of thing can happen with other quantifiers:

(18) a. A: How did the race end?
B: Few people finished.
b. *Inference(s):*

(19) a. A: We should make the driving test harder next time.
B: Why?
A: Many people said it was too easy.
b. *Inference(s):*

- all of these inferences are based on lexical meaning:
  - the inferences in (8)-(11) are based on the literal, uncancellable meanings of particular words
  - the **pragmatic** inferences in (12)-(19) follow from reasoning about how language users will exploit the lexical, uncancellable meanings of words

3 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
- e.g., in an exchange like (15), we assume that the grader isn't needlessly being ambiguous, since she was asked for information about the students' performance
- 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:

(20) **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]

[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.

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

(22) **Relevance:** Be relevant

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

An example using **relevance:**

(24) 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.

4 Scalar implicatures

- inferences like the one from *some* to *not all* are known as **scalar implicature**
- 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*
- there are two important aspects to a scalar inference
  i. the reasoning outlined in (17) 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 (10):

(25) a. A: How did the students do on the exam?
   B: Some of them passed.
   b. B has said "Some of the students passed."

c. B 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 A 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 B had said "Some of the students passed" while knowing that all of them did, he would be violating the Quantity maxim – he wouldn't have made his contribution as informative as is required.

f. Therefore, it is likely that B intends A to infer that B knows that not all of the students passed (or, at least does not have sufficient information to claim that all of the students passed).

Question: Are maxims other than Quantity playing a role here? Where, and how?

The reasoning in (25) is essentially the same as in (17), but it allows us to provide a more general framework for what a **scalar implicature** is.

- it involves (at least) two alternative utterances, ordered in a strength relationship (in this case via entailment)
- it involves reasoning from the use of the weaker alternative to the negation of the stronger.
- Levinson (1983) provides the following framework:

(26) a. S has said p

b. There is an available expression q, which is more informative than p, which might be desirable as a contribution to the current purposes of the exchange. (Relevance)

c. q is of roughly equal brevity to p, so S did not say p rather than q simply to be brief. (Manner)

d. Since if S knew that q holds but still uttered p he would be in breach of the injunction to make his contribution as informative as is required, S must mean the addressee to infer that S knows that q is not the case (or at least that he does not know that q is the case).

4.1 Scalar implicatures with content words

- quantifiers are ordered by entailment relationships
- informativity orderings are often referred to as **Horn scale** (Horn 1972, Hirschberg 1985)
  - the item on the right in each pair is stronger/more informative than the one on the left
  - this allows us to reason from the use of the left elements to the speaker's intended negation of the right element.

(27) Some Horn scales:

a. ⟨ some, all ⟩
some $\rightsquigarrow$ *not all*

b. ⟨ few, none ⟩
few $\rightsquigarrow$ *not none*

c. ⟨ many, all ⟩
many $\rightsquigarrow$ *not all*

We also have entailment relationships (via hypernymy and hyponymy) for content words.

(28) A: Did Sally finally manage to buy a car?
B: Well, she bought a vehicle.

How would you describe the inference generated here along the lines of (14)?

- in addition to nouns, we can get these kind of relationships – and therefore scalar inferences – with verbs and adjectives as well:

(29) A: John was worried he was going to bomb the exam.
B: Well, he failed.

(30) A: How did you like Jessica's experimental muffins?
B: They were alright.

(31) A: Do you think Bond will be able to complete the mission?
B: It's going to be very difficult.

- what items are being contrasted here?
- in what contexts do the inferences go away?

A few different scales (see also van Tiel et al 2014).

Category	Examples	
Adjectives	⟨ intelligent, brilliant ⟩	⟨ difficult, impossible ⟩
Adverbs	⟨ sometimes, always ⟩	⟨ possibly, necessarily ⟩
Determiners	⟨ some, all ⟩	⟨ few, none ⟩
Nouns	⟨ mammal, dog ⟩	⟨ vehicle, car ⟩
Verbs	⟨ might, must ⟩	⟨ pass, ace ⟩

4.2 Informativity orderings

Entailment is one way we can measure strength via informativity, but it's not the only way. Orderings that give rise to scalar implicatures can be highly context-sensitive:

(32) Suppose movie tickets cost $10, and A and B are standing outside the movie theater:
A: Can you buy your own ticket?
B: I have 8 dollars.

(33) Suppose instead tickets cost $8:
A: Can you buy your own ticket?
B: I have 8 dollars.

(34) Tickets still cost $8, but the machine only takes exact change:
A: Can you buy your own ticket?
B: I have a ten.

- the reasoning involved with scales relies heavily on what is a sensible or relevant alternative utterance, given the goals of conversation
- the context-dependence of scales can involve different kinds of alternatives and different kinds of cultural conventions:
  - *wicked* might be a weaker alternative to *evil* if we're talking about morality, but if you're from Maine, it might be a weaker alternative to *unbelievable* (in a good sense).

4.3 Markedness and conventionality

Horn (1984) points out that there are often conflicts or clashes between what maxims predict:

- we can make sense of these if we recognize that the speaker and hearer have 'economy' principles that push in different directions
  - if the speaker had her own way, then she would say extremely little to avoid effort
  - if the hearer had his way, everything would be made explicit to minimize interpretive effort
- we end up in the middle because speakers operate as hearers and vice versa
- conflicts are often resolved by reasoning about what's marked, special, or unconventional:

(35) John did not get a dog.
a. To a friend: $\rightsquigarrow$ John did not get a female dog.
b. To a dog breeder: $\not\rightsquigarrow$ John did not get a female dog.
c. $\rightsquigarrow$ John did not get a dalmation.
d. ? $\rightsquigarrow$ John did not get a puppy.

- the maxims are a descriptive version of a fluid, negotiable process, in which the speaker (as both a hearer and a speaker) tries to balance these conflicting goals

(36) **Minding our Qs and Rs**
a. **Q principle** (hearer-based):
Make your contribution sufficient (cf. Quantity 1)
Say as much as you can (given R)
Lower-bounding principle, induces upper-bounding implicatures
b. **R principle** (speaker-based):
Make your contribution necessary (cf. Relation, Quantity 2, Manner)
Say no more than you must (given Q)
Upper-bounding principle, inducing lower-bounding implicatures

- Example: **conditional perfection**
  - Geis & Zwicky (1971) point out that conditional (*if . . . then*) statements are often interpreted as if they are biconditional (*if and only if*):

    (37) If you mow the lawn, I'll give you 10 dollars.
    $\rightsquigarrow$ *If and only if you mow the lawn, will I give you 10 dollars*

  - *if and only if* statements are more informative than *if . . . then* statements, so a normal scalar implicature would lead from the use of *if . . . then* to the NEGATION of the *if and only if* statement
  - that's exactly the opposite of what happens!
  - we can resolve this if we notice that this interpretation happens when the speaker/hearer are interested primarily in the truth of the *then*-part (the consequent)

    (38) A: Will Robin come to the party?
    B: If there's vegetarian food, Robin will come.

    1. A wants to get Robin to come to the party: they need information that's enough to resolve this issue
    2. if B is cooperating, then she should provide all information relevant for figuring out whether Robin will come or not
    3. if vegetarian food isn't a necessary condition as well as a sufficient one, then B hasn't fully resolved the open question
    4. so, unless the context establishes that B doesn't have the relevant information, we assume that she provides A with all of the necessary conditions
    5. . . . leading to the inference that Robin will come to the party if and only if there is vegetarian food
    6. thus, balancing the speaker/hearer needs provides a way of maximizing informational content without forcing the speaker to be completely explicit at the literal level

5 References

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