

Lign 160: Pragmatics

Suhas Arehalli

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1 Implicature

A Key distinction is made between what is **said** and what is **meant**. What is said is truth-conditional, and is the domain of **semantics**. What is meant is not truth-conditional, and is what we study in **pragmatics**.

One of these inferences is that of *Implicature*. First let's discuss **Grice's Cooperative Principle**.

1.1 Grice's Maxims

Quantity Concerning the amount of information presented:

1. Be as informative as the conversation requires.
2. Don't be more informative than required.

Quality Concerning the quality of information presented:

1. Don't say what you believe to be false
2. Don't say that for which you lack evidence

Relevance Be relevant (to the conversation at hand)

Manner Be...

1. unobscure - avoid obscure language
2. unambiguous - use the most clear language possible
3. brief - prefer shorter phrasing
4. orderly - if there is a semantic ordering to items, order them syntactically

Grice's formulation of implicature is derived directly from these rules. We begin with the assumption that all interlocutors naturally follow these maxims of conversation. Thus, given an utterance, we can apply the maxims in "reverse" to license an inference, which we call an *implicature*.

For example, **Scalar Implicatures** are licensed using *Quantity 1*. These are formed when a speaker uses a term that belongs in a **Horn Scale**. A Horn Scale, denoted as $\langle w_1, \dots, w_n \rangle$, is a sequence of words where

1. For a sentence frame A , $A(w_i)$ entails $A(w_{i+1})$ for all $1 < i < n$.
2. All $\{w_i\}$ are equally lexicalized (similar syntactic properties).
3. All $\{w_i\}$ are from the same semantic field (similar meaning).

An item in a Horn Scale, as an extension of property 1, entail everything to their right, and, due to scalar implicature, implicate that everything to that item's left is **not** true. For example, consider the Horn Scale

$\langle all, most, many, some \rangle$.

If I say "*Many X are Y*", that entails that (1) some X are Y, and (2) that all X are *not* Y and further that most X are *not* Y.

We get scalar implicatures because Grice's Quantity 1 tells us that the utterance given is as informative as it can be (given the conversation's needs). If it were true that a stronger item in our Horn Scale could be used (and given Horn Scale constraints 2 and 3, it can be swapped without disturbing syntactic properties), it would be more informative to use those, so we can infer, as the listener, that the speaker would have used them, but was unable to because they were false, leading to scalar implicature.

For each of the maxims, we can do four things, which each license their own kind of implicatures.

1. **Observe** Play by the rules, and follow the maxims. From this we can just reason backwards, as in the scalar implicature example.
2. **Violate** Ignore maxims with the intention of deceiving the listener. This is lying, etc. We usually don't care about these instances, since most speakers are cooperative.
3. **Flout** Ignore maxims with the intention of creating a different inference on the part of the listener. Here, the we as the listener acknowledge that the utterance does not literally follow the maxims, so we ask what nonliteral interpretation of the utterance would allow it to follow the maxims.

- 4. Opt Out** Explicitly announce that your utterance does not follow the maxims, and that no inferences should be inferred.

We can test to see if it's an implicature by looking for several properties that all implicatures carry.

Cancellation Adding a statement that negates the inference should not be contradictory.

i.e. Maria washed the car and painted the wall. The wall had to be done before sundown, so she did that first. The implicature is that she washed the car first, but is cancelled by the second sentence.

Reinforcement Adding a statement that asserts the inference should not be redundant.

i.e. Many, but not all, students will pass the class. The implicature is that not all students will pass, and that is reinforced by the "but not all" clause.

Suspension You should be able to assert that you do not know anything about the inference.

i.e. She painted the house a light red. It may have been pink. The implicature is that the color was not pink (light red is both longer and more obscure than pink), but that is suspended when the speaker explains that they aren't sure.

Implicatures can belong to one of 2 classes:

Generalized implicatures Those in which context is not needed to form the implicature, but can cancel it.

i.e. Scalar implicatures, things attached to linguistic form.

Particularized implicatures Those in which specific contexts allow the implicatures to be formed.

i.e. "It was Christmas Eve. Della counted \$1.87. She flopped onto the couch and howled." The implicature that she can't afford a gift and is frustrated emerges from trying to reinterpret the sentences with regard to relevance, and is quite dependent on the context. Changing "Christmas Eve" to "A day after payday" changes the inference completely.

There are also Neo-Gricean accounts of implicature that streamline the maxims. Here is Horn's

Q Principle Say as much as you can.

R Principle Say no more than you need.

This is based on **Zipf's Division of Pragmatic Labor**, which states that the 2 competing forces in language are the listener's need to understand what is being conveyed, and the speaker's preference for saying as little as they can get away with. These are directly encoded into these maxims.

We draw **Q Implicatures** when a speaker chooses to say something unconventional or marked, or rather *not* say something canonical and unmarked. In this case, we assume that the canonical statement is simply not true, because if it was, they would have said it was true. For example, Scalar implicatures are Q implicatures. If the stronger form was true, they would have said it.

We draw **R Implicature** when a speaker chooses to use the canonical and unmarked phrasing, and infer that anything unsaid follows from the canonical situation. For example, John was able to fix the broken hinge is a canonical phrasing, and the canonical situation is that John actually fixed the hinge. For example, John was able to fix the broken hinge is a canonical phrasing, and the canonical situation is that John actually fixed the hinge.

2 Reference

A **referring expression** is a linguistic form that corresponds to some discourse entity and brings it to mind for the listener.

The most basic example of reference is **anaphora**, the use of an expression that references a previously occurring discourse entity. Note that anaphora is **NOT** text substitution. Split antecedents ("X does A, and Y does B. They do C") make this unlikely, and inferred referents ("John bled so much it bled though his shirt") make it impossible. Now, there are several forms of reference, and according to Gundel et al, each of them has an associated cognitive state that is required for that form to be used. They forms and their associated states are:

Indefinite a	Type Identifiable	Just a member of a class of objects, not special
Indefinite this	Referential	Unknown to listener, but a specific member of it's class, may be referenced again
Definite the	Uniquely Identifiable	A uniquely identifiable based on the nominal
Familiar that	Familiar	Known to the listener
Demonstrative this, that	Activated	Known to listener and mentioned previously
Pronouns	In Focus	Known and highly salient in this conversation

Typically, these form an implicational hierarchy, with stronger cognitive statuses entailing the weaker. Thus all forms can be used to refer to entities that are in a stronger state. However, the only case in which this actually happens is with "the," which commonly refer to referents with stronger cognitive statuses than uniquely identifiable. Gundel et al appeal to Grice's Quantity, but these appeals are mostly unsatisfactory, as the cognitive statuses are not semantically similar enough to form a Horn Scale.

Now let's discuss some complexities of a and the NPs

Inferrables Listeners can accomodate the existence of certain referents based on certain other referents in the discourse that could allow for the existence of the inferred referent. If that made no sense, that's ok. It didn't make sense to me either. Take this example: I bought a car and the engine was super noisy. Which engine is "the engine"? The one supposed to exist based on the referring expression "a car".

Weak Definites We can say "The corner of the intersection" when there are 4 corners at every intersection and "He went to the the hospital" even though you were never told which hospital.

Metonymy Referring to something by one of it's parts or something related to it. "I'm parked out back" and "The university would never approve that."

Con conversationally Relevant Description "A jogger was hit by a car" vs "the rapper was hit by a car"

And weird stuff related to pronouns and demonstrative this/that:

Cataphora Anaphora in reverse: "According to his book, Dick Cheney..." is fine even though the referent comes after the referring expression.

Pronouns of Laziness "The student who revised his paper did better than the one who handed it in as is."

Anaphoric Islands "Do parental reactions affect their children?" vs "Fritz is a cowboy. He says they can be hard to look after"

Deixis Expressions whose meaning depends on the surrounding context. "I'll buy you a donut tomorrow" is meaningless if you don't know when it was said, who was speaking, or who they were talking to.

3 Presupposition

Some utterances can only be uttered if some proposition is true. That proposition is **presupposed**.

Here are some examples.

Definite Descriptions "The dog ran" presupposes the existence of the dog.

Factive Verbs "He noticed that the donut was eaten" presupposes that the donut was eaten.

Change of State Verbs "He stopped doing drugs" presupposes that he was doing drugs previously.

Iteratives "She ate another donut" presupposes she ate a donut before.

Clefts "It was John who ate the donuts" presupposes someone ate the donuts, and "What caused the riot was Andy's drinking" presupposes that something caused the riot.

The key property of presuppositions is that they cannot be cancelled like implicatures, and further that they can't be negated like entailments. A common test for a presupposition is **Invariance under Negation**: test whether the proposition remains invariant under negation.

For example, "The King of France is bald" presupposes a King of France exists, and negating the sentence creates "The King of France isn't bald" still presupposes the King of France exists.

Presuppositions can only be cancelled using **Metalinguistic Negation**. For example, the sentence "Andy regrets doing his PhD" presupposes he did

a PhD. To metalinguistically negate this, we create a sentence like "Andy doesn't regret doing his PhD, because he never did one." They negate the presupposition by explicitly claiming it's false, and can only be used felicitously in certain situations (namely, correcting someone else's false presupposition). Other presuppositions can be metalinguistically negated in more odd ways: "Sue cried before finishing her PhD" vs "Sue died before finishing her PhD."

Presuppositions can, however, be suspended: "Norman stopped doing crack, if, in fact, he ever did to begin with."

Now how do presuppositions interact with complex sentences?

3.1 Presupposition Projection

Holes Sentence constructions that allow presuppositions from one clause to project to the full sentence while entailments do not project.

i.e. "The two thieves were caught again last night" entails that they were caught last night and presupposes that they've been caught before. "If they two thieves were caught again last night, X" presupposes that the two thieves were caught before, but doesn't entail that they were caught last night, so the "If X, then..." construction is a hole.

Plugs Plugs are constructions that work the other way around. Presuppositions do not project and entailments do.

i.e. "Nixon regrets not knowing his subordinates broke the law" presupposes that Nixon didn't know, while "Nixon announced he regrets not knowing his subordinates broke the law" doesn't.

Filters Holes and plugs are usually case specific. The constructions are rarely consistent. Conditionals and disjunctions follow certain rules, however. According to Karttunen (1973),

Given a sentence " p then q " the presupposition of the parts will project unless q presupposes r and p entails r (the presupposition in q is already justified by the conditional).

Given a sentence " p or q " the presupposition of the parts will project unless q presupposes r and $\neg p$ entails r . (disjunctions " p or q " are equivalent to "if $\neg p$, q , and then follow above).

Finally, presuppositions must be in the common ground to be inferred. However, if the presupposition is reasonable, listeners can **accommodate** the

presupposition, and assume it was in common ground even if it wasn't.

4 Information Structure

In all languages, we have numerous syntactic forms we can use to describe the same proposition. Why? because each of them conveys something more than the proposition - namely, the structure of the information within the proposition. Because of this, certain constructions are felicitous when others aren't even though they all express the same proposition. For example,

- (1) Who bought the donuts?
- (2) Jason bought them
- (3) # *It was the donuts that Jason bought.*

The following are a few partitions of the information that syntactic forms create:

Given-New It is typically more felicitous to choose syntactic constructions that put Given information before New information.

Focus-Presupposition Syntactic forms separate propositions into a presupposition taking the form of an open proposition and a Focus that fill the hole in the open proposition. The focus is nearly always the syntactic constituent that receives accent. For example, in

- (4) JOHN broke the plate.
- (5) It was the PLATE that John broke.

In (1) "John" is the focus with "X broke the plate" the open proposition presupposed. In (2), while the same proposition is expressed, "The plate" is the focus with "John broke X" being the presupposed open proposition.

Question-Answer Congruence Given an implicit or explicit Question Under Discussion, the focus must be a direct answer to the question. This explains the motivating example: The QUD was "Who bought the donuts," and "Jason bought them" has Jason as the focus, while "It was the donuts..." has the donuts as the focus.

5 Discourse Coherence

The motivating question of discourse coherence is what makes a discourse different from a group of statements? What relationships must they have?

The answer is recursive. A sentence is a valid discourse. 2 discourses form a large discourse if there is a **Coherence Relation** formed between them. There are 3 categories of these relations:

5.1 Cause-Effect Relations

Suppose we infer P_1, P_2 from discourses S_1, S_2 . Then S_1, S_2 form a discourse if

Result $P_1 \rightarrow P_2$, " P_1 , then P_2 "

Explanation $P_2 \rightarrow P_1$, " P_1 because P_2 "

Violated Expectation $P_1 \rightarrow \neg P_2$, " P_1 , but still P_2 "

Denial of Preventer $P_2 \rightarrow \neg P_1$, " P_1 , even though P_2 "

5.2 Contiguity

Suppose we infer P_1, P_2 from discourses S_1, S_2 . Then S_1, S_2 form a discourse if

Occasion It is reasonable to infer a change of the state of affairs from the final state of P_1 to the initial state of P_2 .

5.3 Resemblance

Parallel If we infer $p(a_1, \dots), p(b_1, \dots)$ from discourses S_1, S_2 , for a common open proposition p , then S_1, S_2 form a discourse.

Contrast Parallel, except that OP is negated. e.g., if we infer $p(a_1, \dots)$ and $\neg p(b_1, \dots)$

Exemplification Parallel, but b_i is a member or subset of a_i .

Generalization Parallel, but a_i is a member or subset of b_i . Exemplification reversed.

Exception Contrast, but b_i is a member or subset of a_i or vice versa.

Elaboration infer $p(a_1, \dots)$ from both S_1, S_2 . Multiple sentences describe the same eventuality.

We can derive these propositional statements from axioms we draw from world knowledge. For example, given

(6) Andy is travelling to Philadelphia. He wants to visit family.

and the following world knowledge axioms

1. If person X wants to do action A, it is reasonable that X does A.
2. If person X is going to visit people Y, X must go to the location of Y.

Then it seems like we can use the Explanation relation to explain the coherence of (1). However, in order to do so, we must **accomodate** the inference that Andy's family lives in Philadelphia. Since, it is typically assumed that interlocutors form coherent discourses, barring any knowledge to the contrary, it is reasonable to accomodate that.

This assumption of coherence is important, since it licenses pragmatic inferences and enrichments, similar to the way the assumption of cooperativity gives rise to implicatures. In fact, in some theories, pronoun resolution can be explained through these coherence inferences. For example, if we say,

(7) Jason gave Rick candy. He hates sweets

Then, if we adopt the axiom

1. If person X hates Y, it is reasonable that X gives away Y.

To arrive at coherence for the two sentences, we must further reason that X is Jason and X is "he", thus he refers to Jason. If we instead did this with the second sentence being "He loves sweets" and form the appropriate axiom, we'd find that he refers to Rick instead.

6 Speech Acts

When we speak, we perform action, sometimes more than merely saying something. Actions include

1. Asserting something
2. Asking a question

3. Requesting something
4. Promising something
5. Ordering someone to do something
6. etc...

Some special actions occur merely by saying they are true. These are called **performatives**.

For example, saying "I name this boat Felicity" or a judge saying "I sentence you to death" makes the statement true by virtue of being said. You can test if a verb is a performative by modifying it with the adverb "hereby": i.e. I hereby dub thee Prince Andy.

However, note that I had to say that a judge said "I sentence you to death." **Performatives are only felicitous if the speaker has the authority to perform the action they attempt to perform.**

The actions a speaker performs that are beyond saying a statement are called the **Illocutionary Act**, as opposed to the **locutionary act** or saying the statement. Certain forms are canonically associated with certain illocutionary actions. Declarative forms state things, Imperative forms request or demand things, and interrogative forms ask questions. Using a form to conduct its canonical action creates a **Direct Speech Act**.

However, you can sometimes use a statement to perform a noncanonical action. In these cases, you are performing an indirect speech act. For example,

- (8) Can you get me a donut?

Takes an interrogative form, and is canonically supposed to ask a question. However, it typically functions as a request, and thus represents an indirect speech act. Searle proposes that indirect speech acts are a form of conversational implicature: namely that if the locutionary and canonical illocutionary acts are not conversationally relevant, then the illocutionary act must be the speech act that is the most relevant.

7 Dialogue Coherence

We discussed how monologues can be coherent with Coherence Relations, but what about dialogues? They exhibit a few properties different than monologues. Namely, **Turn-Taking Behavior**. Basically

1. The current speaker speaks.

2. When we reach a point where the speaker is finished, and they have not selected the next speaker (by mentioning them), then any other speaker may take the next turn and restart.
3. If no new speaker takes the next turn, the current speaker may continue.

Another property is **Grounding**. In dialogue, it is critical that all interlocutors establish common ground. Thus speakers require evidence that they have succeeded in performing their speech act, and that the information conveyed is in common ground. Grounding is the act of communicating that to the speaker.

Positive Grounding Acknowledgement that the speech act was successfully executed. It can range from something as simple as maintaining eye-contact to repeating statements verbatim.

Negative Grounding Informing the speaker that they did not succeed, and communicating a *request for repairs*.

Conversational Tracks When a request for repairs is made, the topic of conversation becomes the communicative act that triggered that request rather than the topic previous to that request. Clark proposes that that forms a new track of metacommunicative acts, which can nest further. Once the act on the previous track is repaired, we fall back to the previous track and continue.

Let's look at an example:

- (9)
1. A: Do you have anchovy donuts?
 2. B: **mumble**
 3. A: What was that?
 4. B: I said, anchovy?
 5. A: Yeah, anchovy.
 6. B: No, we don't

Track 1, about whether there are anchovy donuts, consists of only 1 and 6. Track 2, concerning A's speech act in 1, consists of 2 and 4. Track 3, concerning the speech act in 2, consists of 3 and 4.

7.1 Beliefs, Desires, and Intentions (BDI) Models

If someone asks a supermarket employee where they can buy freshly baked donuts, and the employee responds with "How many do you want," it seems

odd from the view of pragmatics we've developed so far. In what way is the response relevant to the conversation?

To understand this, we must understand the concept of Gricean Cooperation more fundamentally. All of the maxims are understood in relation to the direction of the conversation, and the direction is shaped by the intentions of the interlocutors. Thus we must not only consider what they said, but reason about why they said what they said. The customer's goal was presumably to purchase the baked donuts, and the employee, knowing the donuts were not directly accessible to customers, reasons that the best way to satisfy that goal is to get the donuts themselves. However, in order to do that, they must know how many donuts to get for the customer, and asks to get that information.

We formalize this notion by introducing **Plan-Based Action Schemas**. These consist of a set of **preconditions**, which must be true before this action can be performed, **effects** which become true after the action is performed, and a series of steps that make up the **body** of the action.

We first reason about an interlocutor's goals, and then find a schema that has that as an effect. Then we work backwards trying to satisfy preconditions until we arrive at schemas with preconditions that are satisfied. Then execute the actions in reverse order, building up until the goal is satisfied. This process is **plan-based analysis** of dialogue using a **BDI model**

Relevance and Quantity judgements as now formulated in terms of this model. For example, consider

(10) Where is the nearest Krispy Kreme?

(11) Down the street.

When the Krispy Kreme down the street is closed. While we would claim this violates the Relevance Maxim before, we can now formally say why.

One can easily reason that the speaker in (10) has the intention of purchasing donuts. Thus the speaker in (11) must produce a speech act that in some way furthers the progression towards that goal. However, while they answer truthfully, the speech act in (11) does not further the goal since the Krispy Kreme is closed. Thus, we claim it is infelicitous and violates the Maxim of Relevance.