

1.3. Saying and suggesting: implication and implicature

1.3.0. Overview

Our study of logic will be limited to deductive logic; and, even within those bounds, we will consider only the logical forms that are part of first-order logic. These limits imply some others that deserve consideration in their own right: although our study of deductive logic can be seen as the study of meaning, we will not study all aspects of meaning.

1.3.1. Three complications

The simple picture of language outlined in section 1.2.4 is too simple in many respects, but three are especially important for our purposes. One is that sentences are not used only to convey information.

1.3.2. Indexicality and vagueness

Even when a sentence conveys information, the information that is conveyed will usually depend on the context in which the sentence is used.

1.3.3. Implication and implicature

Communication often exploits the assumption that what a speaker says is not only true but satisfies certain other requirements.

1.3.4. Presupposition

Another way of conveying information rests on the possibility of sentences not having truth values at all.

Glen Helman 25 Aug 2005

1.3.1. A simple picture and three complications

In 1.2.4, we considered a simple picture of the operation of language. According to this picture, each sentence has truth conditions that are determined by the semantic rules of the language. These truth conditions settle the truth value of the sentence in each possible world and thus determine the proposition it expresses. Language is used to convey information by way of the propositions expressed by sentences. To have information is to be able to locate the actual world within some region in the space of all logically possible worlds. If I assert a sentence, I commit myself to its truth and thus to the actual world being one of the possibilities it leaves open; equivalently, I commit myself to the actual world not being one of the worlds it rules out. So someone may garner information from my assertion by accepting it as true and using the line it draws between the possibilities it leaves open and those it rules out to further pin down the location of the actual world.

Probably no one ever believed that things were quite that simple, but this picture or something like it was, until recently, the working model most logicians used for thinking about the function of language. Around 50 years ago, philosophers became interested in a number of features of language that suggest this picture is inadequate; and, in the last several of decades, these features have been incorporated into a number of richer models of language. The norms of deductive logic that we will study do not rest on the richer structure of these new models, so we will not consider them in detail. But some of the further features of language that they attempt to capture are intertwined with those we will study, so we need to take some time now to disentangle ourselves from a few of these features once and for all and to lay the groundwork for disentangling ourselves from others at later points in the course.

The complicating phenomena that we need to consider have come to be studied under the rubric of *pragmatics*. This term was originally introduced (by Charles Morris) as an alternative to *semantics* in order to distinguish issues concerning the relation between language and its users from the issues concerning the relation between language and what is spoken of. Its meaning is now less closely tied to this definition than to commonly agreed

examples of pragmatic phenomena, including the following.

1) *Sentences are not always used to convey information.* When a sentence is used to convey information, the question of the truth value of information conveyed is a significant one. But not all sentences have truth values or raise questions of truth values. And even when a sentence does have a truth value, its truth value may be irrelevant for its use. Clear cases of a lack of truth value are questions and imperatives, but truth values may be beside the point for declarative sentences, too. The sentence *I apologize for what I said* is not said because it is true; rather, under the right circumstances, it is true because it is said. The moral: there are many ways of using sentences, many **speech acts**, besides assertion.

2) *The information conveyed by a sentence (and thus its truth value) may vary with the context in which it is used.* For example, there is no way to judge the truth value of a sentence like *I put that here yesterday* when it is taken out of context. This dependence on context is due to various phenomena known collectively as **indexicality** or **deixis** (some of which concern the role of the words *I*, *that*, *here*, and *yesterday*).

3) *The information we derive from the use of sentences is not limited to the propositions they express.* Further information is provided by the phenomena of **implicature** and **presupposition** (examples of which will be discussed below).

To disentangle ourselves from the variety of speech acts, it is enough to say that we are concerned only with assertion. So, when we consider sentences, we will limit ourselves to declarative sentences used assertively. Of course, there is a sense in which conclusions can be drawn from apologies and promises, but we will have a broad enough range of study without attempting to deal with such reasoning. Moreover, many accounts of speech acts other than assertion treat propositions as important components of their meaning, and this gives the logic of assertions a central place in the logic of all speech acts.

While this is enough to settle the relation of our study of logic to the variety of speech acts, the other two sorts of complication will require more detailed consideration.

1.3.2. Indexicality and vagueness

While we can avoid the complications posed by the variety of speech acts by limiting the uses of language that we will study, the phenomena of indexicality or deixis cannot be handled in the same way because most sentences have indexical features. In particular, time reference through the use of tense is usually indexical. Still, we will be able to sidestep most of the problems raised by indexicality.

These problems derive from the consideration that, if the propositions expressed by sentences vary with the context in which they are used, the logical properties and relations of these sentences (which we trace to the propositions they express) may vary as well. The proposition expressed by the sentence *I am here* will depend on the speaker and the speaker's location (and also the time of utterance). And this sentence may express the same proposition as the sentence *You are there* when the latter is used by a second speaker in an appropriately related context. However, the two sentences would not express the same proposition when they are used by a single speaker. So it seems that whether or not two sentences express the same proposition depends on who is using them as well as on many other features of the context of use. But sentences are supposed to be logically equivalent when they express the same proposition, so how can we determine sentences themselves, considered without any information about the contexts in which they are used, are or are not equivalent? Analogous questions arise for entailment and the other deductive properties and relations we will consider.

Our way of dealing with indexicality is to assume that, when we consider a sentence, we consider it as used in a particular context; and, when we consider several sentences in relation to one another, we consider them all as used in the same context—by the same speaker, at the same place and time, etc. The claims we will make about equivalence, entailment, and other deductive properties and relations derive from very general principles and hold for any single context of use, so we will never need to specify just what the context is. It will be enough to assume that there is a context and that it is kept fixed when comparing sentences.

Indeed, we could attribute to a sentence in its own right, and to a

group of sentences in relation to each other, only those properties that do not vary with changes in the context. That is, we would not say that the relation between the sentences *I am here* and *You are there* described above is a relation between the sentences themselves since it holds only for certain uses of them. The term **statement** has sometimes been used to speak of a particular use of a sentence. If we were to adopt this convention, we might say that the relation holds between certain statements made using these two sentences. But, in any case, we can say that the entailment *I am here* \Rightarrow *I will always have been here* is a relation between sentences because it holds whenever they are used in the same context—no matter what this context is. And all the features of interest to us will be of this latter sort.

Since we will assume that sentences are always considered in some fixed context, we will always be in fact considering statements in the sense mentioned above. As a result, the ability to ascribe properties and relations to sentences themselves has no special benefits for us in the case of indexicality. However, it does provide a way of handling the phenomenon of **vagueness**.

One way of understanding vague terms is to suppose that their significance varies with the context of use but is not completely determined by it. The meaning of the word *large*, for example, depends on the line to be drawn between what is and what is not large. This line is settled to some degree by features of the context of its use—whether the word appears in a discussion of molecules or of galaxies, for example—and some contexts will pin it down more precisely than others. But there is usually, and perhaps always, some indeterminacy remaining, and this means that we have fewer options for discussing vague sentences than we do for sentences exhibiting ordinary forms of indexicality. We understand the entailment *I am here* \Rightarrow *I will always have been here* to hold because the propositions expressed by the two sentences are related in a certain way in every context of use. But we cannot understand the entailment

Crawfordsville is small \Rightarrow *Crawfordsville is not large*

to hold for the same reason because the sentences involved may not express definite propositions in any context of use.

Still, there is a way of comparing the two claims of entailment.

We can understand each to hold because of the relation between the propositions that *would be* expressed by the sentences if certain factors were specified. In the first case, these factors, the speaker and location and time of utterance, specified by any actual context of use. In second case, the relevant factors are precise delineations of the terms *small* and *large*. The latter are not provided by an actual context of use, but we can still say that the propositions expressed by the sentences would represent a case of entailment no matter how these factors were specified.

That is, we have two ways of understanding the claim that a pair of sentences stand in the relation of entailment. According to one, we say this is so because of a constant relation that holds between the propositions the two sentences *do* express, whatever these propositions are. In the second way of speaking, we do not assume that the sentences actually express propositions and say that they are related because of a constant relation between the propositions they *would* express given the specification of further factors, no matter how these factors are specified. The second way of understanding *entails* is the more general one, and it is the one we will use when speaking carefully. However, it will sometimes be convenient to speak as if propositions are in fact expressed by the sentences in question in cases when this is not really accurate (as in the second example above). When doing this, we will be speaking as if we had fixed not only a context of use but also any further factors required for the sentences to express definite propositions.

Glen Helman 25 Aug 2005

1.3.3. Implication and implicature

The third sort of complication mentioned in 1.3.1 was that information is often conveyed by sentences using devices other than the expression of propositions. We will not be able to set aside this feature of language once and for all. Instead, we will now begin to develop means for dealing with it, and we will apply and further extend these ideas at several points later in the course.

In cases where a conclusion is drawn from a single assumption, the term *implies* serves as a good ordinary English synonym for our technical term *entails*. Thus we can say that the sentence *My class was taught this morning* implies *A class was taught*. The philosopher H. Paul Grice employed the term *implicates* to capture a different idea that is sometimes expressed by the ordinary use of the term *implies*. It is not uncommon for information to be suggested by a sentence even though it is not entailed and thus is not part of what the sentence literally says. For example, my assertion of the sentence *My class was taught this morning* would, in most contexts, suggest that I did not teach the class myself. However, this is not part of what I said, so *My class was taught this morning* implicates *I did not teach my class this morning* but does not imply it.

The term *suggest*, which is used here as a contrast to *say*, could be misleading. It is not intended to convey the idea of subjective association. What a sentence implicates can be as much the product of rules of language as what it implies; but the rules leading to implicature are not (or are not only) rules assigning truth conditions. To see what they might be, let us consider an extension of our simple model of language use that accommodates implicature; in its outlines, it is due to Grice.

Although we are often exhorted to listen critically, language would scarcely serve us if we did not assume in most cases that people know what they are talking about and that they speak honestly. To employ a term that has come to be used in this connection, we *accommodate* our beliefs to what people say. For example, according to the model of language described in 1.2.4, when someone makes an assertion, we assume that the actual world is among the possible worlds in which that assertion is true. To account for implicature, we extend the scope of accommodation

to include not only the truth of assertions but also other features assertions ought to have. The maxim *Speak the truth!* is no doubt the key rule governing assertions, but other maxims, such as *Be informative!* and *Be relevant!*, also play a role. Someone who assumed I was obeying all maxims of this sort when I said, “My class was taught this morning,” might reason as follows:

Although Helman’s assertion *My class was taught this morning* would be perfectly true if he had taught his class, it would be a strange thing to say. The proposition expressed by *I taught my class this morning* would have contained more information and information that is equally relevant. So if he had taught his class, he ought to have said so; and I will therefore assume he did not teach the class.

Let us adopt some further current terminology and say that an assertion is **appropriate** when it is in accord with all maxims governing language use and that it is otherwise **inappropriate**. An assertion could be inappropriate even though true, and we usually accommodate our beliefs about the world to the assumption that the assertions others make are not only true but appropriate for the context in which they are made.

These ideas can be used to state contrasting definitions for implication and implicature. We know already how to define implication because we know how to define entailment. Applying our definition of entailment to the case of a single premise and restating it somewhat to help in giving a parallel definition of implicature, we have this:

ϕ implies ψ if and only if ϕ cannot be true when ψ is false.

To define implicature, we employ the more general concept of appropriateness.

ϕ implicates ψ (in a given sort of situation) if and only if ϕ cannot be appropriate (in that sort of situation) when ψ is false.

That is, while implications are conditions necessary for truth, implicatures are conditions necessary for appropriateness. (Here we follow the grammatical pattern of *implication* and use the term *implicature* for the things a sentence implicates as well as for the

relation between a sentence and these things.) When it is defined as it is above, implicature subsumes implication: a sentence implicates whatever it implies though it may implicate things that it does not imply. This is a convenient way of relating the two ideas, but there is no consensus about using the terms in this way. Many would use *implicature* more narrowly to cover only those conditions necessary for appropriateness that are *not* necessary for truth.

In the example used to introduce the idea of implicature, the implicature was a product of the context in which the sentence was used. For, if it was well known that I had made a bet that I could avoid using the word *I* for the next 24 hours, no one would have been misled by my failure to refer to myself as the teacher of the morning’s class. But there are cases where the implicature attaches to particular words in a way that makes it unavoidable. Consider, for example, this bit of dialogue:

Q: *Was the movie any good?*

A: *Yes. Even John was laughing.*

The assertion *Even John was laughing* has a number of implicatures that depend on the conversational setting (e.g., that John was at the movie and, perhaps, that it was a comedy), but it also has one that derives from presence of the word *even*. This implicature is easier to recognize than to state, but it comes to something like the claim that it is hard to make John laugh.

Implicatures attaching to particular words can be especially troublesome because they have the same sort of independence of context that holds for the implications we want to study. One test that can be used to distinguish them from implications is to ask a *yes-no* question. When asked *Was even X laughing?* about someone *X* who had laughed at the movie but who laughed easily, we would not answer with a simple “No” but rather say something like, “Yes, but he’ll laugh at anything.” Such *yes-but* answers indicate that the sentence we were asked about is true but inappropriate. Other qualified affirmative answers can play a similar role and we will refer to them also as *yes-but* answers. To simply answer “Yes” in cases where a sentence is true but has a false implicature could mislead our audience into thinking that the sentence is entirely appropriate and thus that the implicature is

true. Indeed, a true sentence with a false implicature could be described as “true but misleading.” *Yes-but* answers acknowledge the truth of such a sentence while correcting its misleading suggestions. (There are further tests that can be used to distinguish implicatures and implications, and we will consider some others in 4.1.2.)

Glen Helman 25 Aug 2005

1.3.4. Presupposition

There are cases where both an affirmative sentence and the corresponding denial seem equally inappropriate assertions. For example, consider the sentences

John's car is green
John's car is not green

in a context where we are speaking of someone who does not own a car at all. In such a case, we would be at a loss to answer the corresponding *yes-no* question *Is John's car green?* directly. This is usually explained by saying that the question **presupposes** that John owns a car and has no appropriate direct answer when this presupposition does not hold. And we can say the same thing about the declarative sentences above, which correspond to affirmative and negative answers to the question, respectively.

This relation of presupposition might be regarded as a sort of implicature, with John owning a car constituting a necessary condition for the assertion of either sentence to be appropriate. But many logicians have held that the declarative sentences above have no truth value at all in contexts where John owns no car. This means that what is missing in such cases is not some quality like informativeness or relevance that we expect in addition to truth but instead something that is a precondition for either truth or falsity. Something that must be the case in order for a sentence to have any truth value is a **semantic presupposition**. If John having a car is a semantic presupposition of the two sentences above, it is easy to see why they seem equally inappropriate when John has no car: they would be in the same position as regards truth and falsity since neither would have a truth value.

Semantic presupposition represents another way that information could be derived from an assertion. A basic way of accommodating our beliefs to what others assert is to assume that their assertions have truth values, but a semantic presupposition is not an implication that must hold in order for a sentence to be true *rather than* false or an implicature that must hold in addition to conditions for truth in order for a sentence to be appropriate. It comes in at an earlier stage, as a precondition for the sentence having a truth value at all. Semantic presupposition is unlike the other complicating phenomena we have considered also in

requiring changes to the simple model of language that are not simply additions to it. This model is built around the assumption that a sentence has a truth value in every possible world, and dropping this assumption would force radical changes. Because there is no consensus, even among logicians who accept the idea of semantic presuppositions, about the exact form such changes should take, we will not attempt to incorporate failures of truth value in our model of language.

In part, we will treat semantic presupposition as we do the variety of speech acts: by not considering the examples where it may be held to occur. But we cannot avoid all the difficult cases in this way. The classic examples of semantic presupposition are sentences containing phrases employing the definite article *the* to refer to something by way of a description of it. Such phrases, which logicians classify as **definite descriptions**, cause problems because their success in referring depends on the existence of objects satisfying the descriptions they offer. For example, both the sentence *The building between Center Hall and Sparks Center is occupied* and the sentence *The building between Center Hall and Sparks Center is unoccupied* seem inappropriate when no such building exists because the definite description *the building between Center Hall and Sparks Center* has nothing to refer to. And definite descriptions that refer contingently are so common that we cannot simply avoid all sentences containing them.

The approach we will take in such cases employs elements of the different ways we handle implicatures and vagueness. First, just as we do not attempt to capture relations of implicature in our study of logic, we will not attempt to capture relations of presupposition. So, for the most part, we will consider no special logical relation of presupposition between a sentence containing a definite description *the X* and sentences—such as *Some X exists*—which might be taken to express presuppositions of it. But we will not go quite so far as to consider no logical relations at all between such sentences. The line between implication and presupposition is controversial, and relations between sentences like *The building between Center Hall and Sparks Center is occupied* and *There is a building between Center Hall and Sparks Center* fall in the disputed area. These questions have been discussed for nearly a century (though not always in these terms) with strong arguments

on both sides, and at one point in a later chapter we will consider an account of definite descriptions according to which sentences like these are related by implication.

Although we will not attempt to capture semantic relations of presupposition as such, we will need to apply our general account of logical properties and relations to sentences that may have such presuppositions. And we can do this only if we guard against the failures of truth value that are supposed to result when semantic presuppositions are false. First of all, we will continue to assume that every sentence has a truth value under all possibilities but, since we will eventually analyze sentences into component terms, we must do more. We will treat any term which ought to refer as having a reference but allow this reference to be either an actual object or an **empty or nil reference value**. We will make a distinction between the empty or nil reference value and actual objects only when we consider definite descriptions in the last chapter, so, for the most part, we will merely assume the every term has been somehow given a reference and every sentence a truth value. This is analogous to the way we handle vagueness, where we speak as if contexts of use were supplemented by precise delineations of vague terms. And, as in the case of vagueness, we will consider only logical properties and relations that hold no matter how such stipulations are made. (We will look more closely at the nature of the supplement required to insure reference and truth value in [6.1.2](#).)

Glen Helman 25 Aug 2005

1.3.s. Summary

Our study of deductive logic will be guided by a picture according to which language serves to convey information and the information conveyed by a sentence is to be found in the proposition it expresses. This picture is oversimplified and something must be said about three respects in which the actual operation of language is more complex: the existence of **speech acts** whose function is not to convey information, the phenomenon of **deixis** or **indexicality** which causes the proposition expressed by a sentence to depend on the context in which the sentence is used, and the possibility of conveying information beyond the proposition expressed by a sentence through **implicature** and **presupposition**. These three features of language provide the heart of the study of **pragmatics** as distinct from **semantics**. The attitudes we will take to these complexities differ. Regarding the first, we will limit our consideration to the speech act of assertion and to its function of conveying information.

We handle indexicality by treating sentences only within a single context of use and consider only properties and relations of sentences that hold no matter what that context is. Analogous ideas can be used to approach the problem of **vagueness**.

We will consider only what is **implied** by a sentence as part of its truth conditions and not further information that may be **implicated** as conditions for **appropriate assertion** beyond the requirements for truth (and we will use responses to **yes-no questions** as one test for the difference).

Since a **semantic presupposition** is something that must hold in order for a sentence to have a truth value at all, sentences with non-tautologous presuppositions can fail to have truth values. Ideally, we would avoid sentences where such presuppositions appear, but the pervasiveness of **definite descriptions**. Instead, we will treat all terms as if they refer and thus will not attempt to capture semantic presuppositions of sentences containing them.

Glen Helman 25 Aug 2005

1.3.x. Exercise questions

1. For each of the following sentences, give a sentence it implies and a sentence it implicates (but does not imply) in the context described:
 - a. *My plate is clean*, as reported by a small boy who has been told to finish his vegetables by a parent saying, “Clean your plate.”
 - b. *There is a cooler in the trunk*, said in reply to someone’s expressed wish to have a beer.
 - c. *I saw the director’s last movie*, said in reply to someone who asked whether the speaker has seen a certain new movie.
2. Many philosophers would argue that the sentence *I’m Adam*, when true, expresses the same proposition as *I’m me* (*I’m I* if you prefer) or *Adam is Adam*; that is, if it is true at all, it is true in every logically possible world. Tell how the phenomenon of indexicality or deixis could help to explain how *I’m Adam* could be informative even if these philosophers are correct and it expresses a tautology if it is true at all. What information can be derived from a sentence like *I’m Adam*?
3. J. L. Austin, the philosopher who made people aware of the variety and importance of speech acts, suggested a way of identifying them. Look for verbs that can fit in the context *I hereby ...* (e.g., *I hereby assert that ...* or *I hereby apologize*)—that is (in grammarians’ jargon), verbs which can be used in “first person indicative active sentences in the simple present tense” along with the adverb *hereby*. Austin suggested that there are such verbs (he called them **performative verbs**) for most speech acts (and that they number “on the order of 10^3 ”). Find half a dozen as varied in character as possible.

Glen Helman 25 Aug 2005

1.3.xa. Exercise answers

1. The following are perhaps the most likely answers though they are not the only correct ones:
 - a. implies: *No vegetables are on the boy's plate*
implicates: *The boy has finished his vegetables*
 - b. implies: *The trunk is not empty*
implicates: *There is beer in the cooler*
 - c. implies: *The speaker has seen a movie by the director in question.*
implicates: *The speaker has not seen the new movie* [with further implicatures depending on the tone of voice]
2. The truth value of *I'm Adam* depends on features of the context in which it is uttered—specifically, on the identity of the speaker. So, it is not true in some contexts of utterance. A sentence like this can inform us of the identity of the speaker. We derive this information not simply by assuming that the actual world is a world in which the sentence true but by assuming that the sentence has been uttered in a context in which it is true.
3. Of course, if Austin was right, thousands of answers are possible. The most I can do is note a five-fold classification of speech acts (which is due to the philosopher John Searle but based on Austin's ideas) along with examples of performative verbs for each sort of act: **representatives** (e.g., *assert* and *conclude*) commit the speaker to the truth of something, **directives** (e.g., *order* and *ask*) are attempts to get the speaker's audience to do something, **commissives** (e.g., *promise* and *threaten*) commit the speaker to some future action, **expressives** (e.g., *apologize* and *congratulate*) express a psychological state, and **declarations** (e.g., *sentence* and *promote*) effect some change in an institution.