DAG HAUG:

Model-Theoretic Semantics and Models of Semantic Change

What is meaning? And how does meaning change? These are long standing questions of synchronic and historical linguistics. And in order to answer them, linguists have come up with semantic models and with models for semantic change.

What is meaning?

The question must at once be made more precise. Languages have words, and words have meanings – this is what we study in lexical semantics. But languages have sentences too, and sentences also have meanings, conceivably of a quite different kind from the kind of meanings that words have. Many nouns refer to things in the world, and their meaning is a concept which defines the sort of things that they refer to. Verbs, on the other hand, often refer to events, a more abstract concept. But what do sentences refer to? According to one theory, sentences refer to truth and falsehood and their meanings are their truth conditions. To know what a sentence means is to know what the world will have to be like for the sentence to be true. In Tarski's famous formulation: "The sentence 'snow is white' is true if and only if snow is white."

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All this is well and good, you may say, but even if the meanings of words are different from the meanings of sentences, there must still be a connection. How could we understand sentences if not by putting together the meanings of their parts? And indeed it is a central tenet of modern semantics that, as Frege put it, "the meaning of the whole is a function of the meaning of the parts and their mode of combination".

But what are the parts of a sentence? Words, obviously. But there are also intermediate parts of the sentences which are studied in syntax. Not any two words, even adjacent, form a part of a sentence. For example "Dogs bark" is a possible sentence in English, but it is not a part of the sentence "All dogs bark". Instead "All dogs" is a part of "All dogs bark", and it is the part that we usually call the subject.

So sentences are built up of such parts in a way that can be represented as a binary branching tree (Figure 1). The construction of this tree is governed by the rules of syntax, and for every syntactic rule that allows us to put together two units to form a sentence part or a whole sentence, we need a semantic rule that will tell us how the meaning of the combination is derived from its parts.

To express this meaning, the language of set theory has proven useful: we model things as individuals and predicates as sets of individuals: so

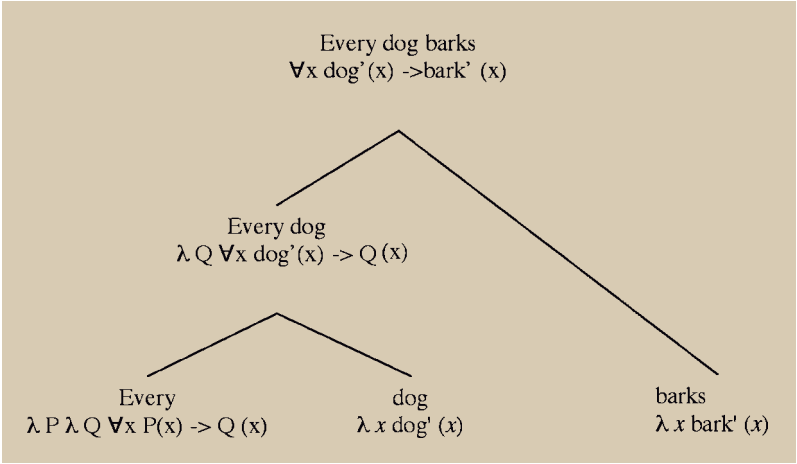

Figure 1. A semantic tree for the sentence 'Every dog barks'.

'Snow is white' is true if and only if the thing that we call snow is in the set of all white things. But how do we know whether the thing that we call snow is in the set of all white things? This is linguistics and not natural science, so we are not going to look out of the window. Actually, we are not interested in whether 'Snow is white' is true at all – we only want to know its truth conditions.

Was that all?

Is this all there is to meaning? Not in our ordinary sense of the word. If I say to someone "My glass is empty", this sentence has a meaning which is derivable from the words 'my', 'glass', 'be' and 'empty'. But what I really mean could well be something like "Could you get me some water?" – a meaning which is not computable from these four words. This is called the pragmatic force of the sentence.

Pragmatic force is exceedingly important in human communication. Uttered in an English pub shortly before 11 PM, the sentence "The place is closing" is less likely to be a mere statement of fact than an invitation to buy another beer before it is too late; or indeed the opposite, a request to drink up and leave. It all depends on the context.

None of these pragmatic implications are directly linked to the literal meaning of "The place is closing" in the calculable way that the literal meaning of "The place is closing" is linked to the meanings of the term "The place" and the predicate "is closing". However, the philosopher Paul Grice has suggested that pragmatic implications arise from the assumption common to both parties in a communicative situation that certain maxims underlie the communication. One of these maxims is particularly important for us, namely the maxim of relevance "Make your contribution relevant!" Consider the following exchange:

A: Can I borrow 50 dollars?
B: My purse is in the hall.

B's answer is not immediately relevant to A's question. So A is led to look for an interpretation that would be relevant, in this case probably something like "Yes, go and get it from my purse which is in the hall".

Semantic change

We said above that the semantic component of a language could be modelled as a set of rules which are paired to the syntactic rules used in building up sentences. For every time a syntactic rule allows us to put together two words or sentence parts, a semantic rule tells us how to derive the meaning of the whole from that of its parts. However, such a view of (sentence) semantics as a set of rules is essentially ahistoric: at some point in time, the set contains a certain rule. Some 200 years later, we may no longer need the same rule in our model of the semantic change; or perhaps the system will contain a similar but not quite identical rule.

For example, in Latin we find sentences like *habeo litteras scriptas* meaning something like 'I have a written letter'. In French we find *j'ai écrit une lettre* which corresponds more or less in meaning to 'I have written a letter' – a quite different concept. In Latin, the speaker would have to have the letter in his possession for the sentence to be true. This is not necessary in the case of the French sentence. Conversely, the French sentence is only true if the speaker wrote the letter himself, whereas the Latin sentence only entails that the letter was in some way written by someone.

So, we could say, the semantic rule governing the composition of 'have' and its object changed from Latin to French. But this is no more than a description. We want to know how and why that happened. And this is where pragmatics enters the scene.

Meaning change through conventionalization of implicatures

In a way, grammar change must be sudden: in the semantic model outlined above, the semantic representation of a certain word is fixed. It may be different at one time from what it is at another, but it does not change gradually from one to another. It may change from A to B, but it is never halfway between A and B. Still we all know that we understand each other across generations: even though I speak differently from my grandmother and though I may have some different semantic representations, we can understand each other. So in a sense, change in linguistic output is gradual.

So change in linguistic output is gradual, but grammar change is sudden. This is so because, as Henning Andersen pointed out more than thirty years ago, learners do not have direct access to the grammar rules of the older generation. They construct their grammar on the basis of the linguistic output they hear.

Let us now look at how this works in semantic change. Take the case of English *will*. This verb is related to German *wollen* 'want' and originally expressed desire as the German verb still does. Nowadays, however, English *will* is a marker of futurity. How did this happen?

When we speak about our own desires, the maxim of relevance will often lead the hearer to conclude that we speak of our intentions: it is often more relevant to speak of our desires if we intend to realise them. So if you tell someone "I want to go now", they will often conclude that you intend to go. This is not, however, the literal meaning of the sentence, and it is an implication that can be cancelled: "I want to go now, but I cannot" is entirely OK.

Pragmatic implications can therefore be cancelled in the context, but if they arise often enough from a certain linguistic construction it is also

possible that they will become conventionalized and actually part of the core semantic meaning of that construction. This is what happened to English *will*: the implication of intention, and later, speaker's prediction became conventionalised and part of the core meaning – which is why you can no longer say "I will go now, but I cannot". The same thing happened to the verb to have in the Latin example above: What is the relevance of the participle 'written' in 'I have a written letter' – letters typically *are* written. Well, the hearer may conclude, the verbal form implies an agent and this is likely to be the speaker himself. And so the implication of coreferentiality between the agent of the main verb 'have' and the underlying agent of the participle 'written' – an essential feature of the perfect construction – arises. And actually this implication arose in a lot of cases, which is why it eventually became conventionalised. On the other hand, the implication "yes" will only arise from the sentence "My purse is in the hall" in very specific conditions – which is why it is not very likely to be conventionalised and why "My purse is in the hall" will probably never become the normal way of saying "yes".