4 Modifiers

The single semantic process which we have employed so far is saturation, the "filling in" of a missing piece of a property or relation. The paradigm case of this is predication. So far, the property or relation which gets saturated has always come from the main predicate of the sentence: a verb, predicate nominal, or predicate adjective. The element saturating it has always been a simple referring phrase, a name. (Though I also used definite noun phases like *the circle*, this was a bit dishonest, since we haven't discussed the meaning of *the* yet.)

In traditional grammar, another basic semantic relation is that of modification. We say that an adjective modifies a noun and that an adverb modifies a verb or sentence. The goal of this chapter is to discuss the nature of modification. An important issue will be whether modification is a completely new type of semantic process or whether it is just another case of saturation, different only in minor ways from predication.

4.1 Adjective + N Combination

As we learned in chapter 3, the italicized words in sentences (1) and (2) are predicates:

(1) Ossie is a *bird*.

(2) Ossie is *tall*.

The meaning of each can be represented by a picture like the kind in diagram 12 (p. 41). However, *tall* and *bird* can come together in a sentence like (3):

(3) Ossie is a *tall bird.*

The phrase *tall bird* is itself a predicate, with *Ossie* as its subject, so what we appear to have here is two predicates being joined to create a new, grander predicate. An *attributive adjective* is one which modifies a noun, as in example (3), while a *predicate adjective* functions as the main predicate in a sentence like (2).

We can visualize the meanings of *tall* and *bird* as in diagram 21. As is clear from the shapes, neither of these properties can saturate the other. Each wants to be saturated by an individual like Shelby or Ossie. Neither can be saturated by another property – metaphorically, neither will fit into the "hole" in the other; they're just too big. We must find some other way to combine them.

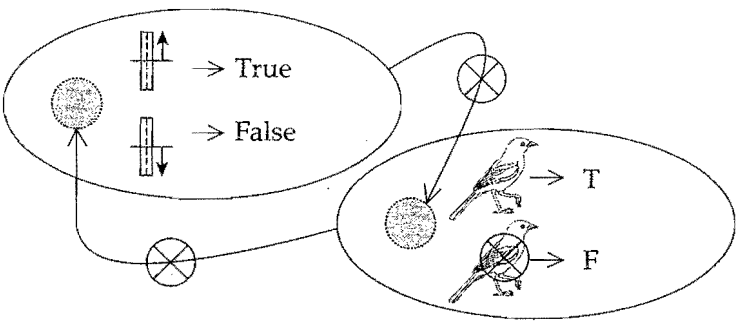

Diagram 21

Sentence (3) tells us that Ossie is a bird, and that Ossie is tall. This tells us that (3) in effect predicates both *bird* and *tall* of *Ossie.* The combined predicate *tall bird* has a meaning which simultaneously allows the subject of the sentence to saturate both of the component properties, those of the adjective and the noun. This can be visualized as in diagram 22. What this diagram shows is that the two original properties are overlaid, one on top of the other, so that their holes are in the same position. This ensures that when an individual (Ossie) is used to saturate one of them, it will simultaneously saturate the other. As a result, we'll have a proposition which is true if both Ossie is tall and Ossie is a bird. Diagram 22 represents in an intuitive and simple way our intuitions about the meaning of the modifier+noun combination *tall bird.*

There is a cost, however, to thinking of modification in this way, at least from the perspective of the formal theory of semantics. The two subpredicates are not brought together by one saturating the other; instead,

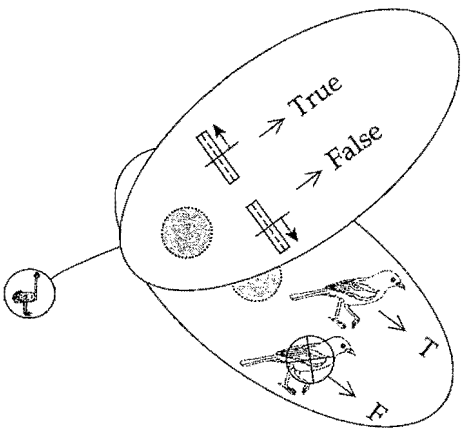

Diagram 22

they are "overlaid," and this is an entirely new process of semantic combination. We might call this new process of combination *modification*.[1] Having two semantic combination processes instead of just one is a major increase in complexity, and before we accept it, we should be quite certain that the extra complexity is justified. In other words, we should ask again whether it might be possible to explain the relationship between an adjective and noun as a case of saturation.

Suppose that instead of thinking of the meaning of *tall* as we have been, we visualize it as something like diagram 23. Here, *tall*'s meaning is a property with a property-sized hole in it. It's a property which can only be saturated by another property. In this case, the property expressed by *bird* is used to saturate it, giving the result in the lower part of the diagram. This combined property still has a hole in it, but this is a small object-sized hole originating with *bird*. Ossie can saturate this combined property, and the resulting diagram then indicates both that Ossie is tall and that Ossie is a bird.

The process pictured in diagram 23 only makes use of saturation as a method of combining meanings. We have both a higher-order saturation, where a property saturates another property, and a regular case of saturation (predication), where an individual saturates a property. There is an advantage here in terms of how we think about compositional meaning, since we can maintain that there is just one means of combining meanings – saturation. However, there are disadvantages as well. For one, the meaning of *tall* as a property which is saturated by another property is now rather more complex and less intuitive than in diagram 22. For another, and more importantly, the meaning of *tall* indicated here would not serve

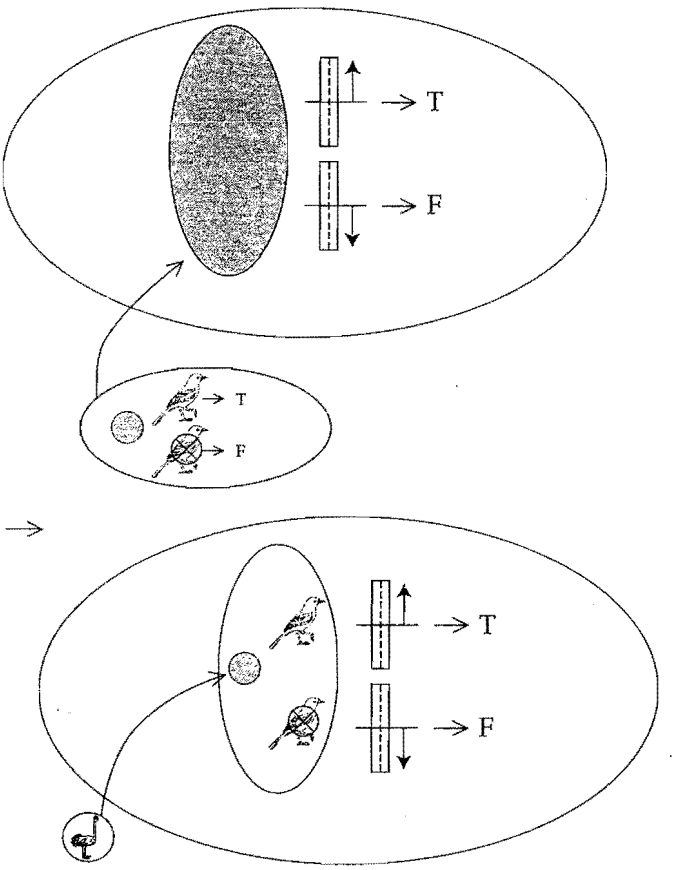

Diagram 23

well for a simple case where it is a predicate adjective, as in (2). In (2), we want to saturate the property indicated by *tall* with Ossie, but if *tall* has the meaning in diagram 23, the two pieces of the puzzle won't fit together. Ossie, the individual, is too "small" to saturate the big hole in *tall*'s property. This means we have three choices:

i Go back to diagram 22 as our way of thinking about modification.
ii Conclude that *tall* is ambiguous, in (2) denoting a regular property, and in (3) denoting a higher-order property.
iii Rethink (2), trying to find a way to let the higher-order version of *tall* work in this case as well. This would mean that the sentence is not a simple combination of subject *Ossie* with predicate *tall*.

The more complex property for *tall* can be made to work in sentence (2) if *is* is given a meaning. What would that be? Does this make sense as a meaning for *is*? Is it worthwhile to overturn the idea that *is* is meaningless?

Sometimes as one studies linguistics, it is easy to get involved in a theoretical debate and lose track of what is precisely at issue. Ultimately it's pointless to think about whether *tall* is a regular property, or a property which can be saturated only by another property, unless we focus on what is significant about this debate from the perspective of what we want to learn about language. There are two important questions to keep in mind here. First, does the choice between approaches have any empirical consequences? In other words, does one approach lead us to expect anything about what sorts of words and constructions human languages will use that the other does not? We'll touch on this in section 4.2, "More Issues with Adjectives." And second, does one approach provide a more intuitively satisfying understanding for how language works than the other? It seems to me that in the present case, the model of diagram 22 is more satisfying; however, this bias could certainly change as we learn more about semantics. If we find lots of other aspects of language that remind us of diagram 23, and very few that remind us of diagram 22, we might well conclude that diagram 22 is a pretty odd way of thinking about adjectives.

4.2 More Issues with Adjectives[2]

Sentence (3) entails both (1) and (2). Because a tall bird is both tall and a bird, the adjective *tall* is known as an *intersective adjective*. The term "intersective" comes from modeling the meaning of predicates as sets. Recall that a predicate can be seen as determining a set for each possible world; just as *is inside the square* picks out a set of things in each possible world (diagram 19), the predicates *tall* and *bird* can each be seen as picking out a set of things in each possible world (the set of tall things and the set of birds, respectively). If we think of the meaning of *tall bird* in the same way, what set will it pick out in each possible world? Answer: the set of tall birds. This is the set of things which are in both the tall-set and the bird-set, in other words the *intersection* of the two sets. (There are also non-intersective adjectives. For example, *Mary is a former teacher* does not imply that Mary is a former, and a teacher. It doesn't even make sense to say that she's a "former.")

Many adjectives are *vague*. For example, we say that Ossie the Ostrich is a tall bird, and that he's tall, and that he's a bird. But we wouldn't necessarily call him tall in all situations. For example, if Ossie is standing among a herd of giraffes, we might find it strange to say that he's tall. Or, if he is tall compared to birds in general, but is the runt of his flock and much smaller than all the other ostriches, we might rather call him short than tall when we're comparing him with his fellow ostriches. But we'd still call him tall when comparing him with other birds. What counts as tall depends what you're comparing with.

When *tall* is combined with *bird* to make *tall bird*, it seems that the preferred comparison is with birds in general. Given this comparison, *tall* describes all things which are taller than the average bird, and its intersective meaning implies that a tall bird is both taller than the average bird and a bird. In principle it should be possible for attributive *tall* to be understood as involving comparison with something other than the set of birds, but it's not clear to me that this is really the case: suppose that Pauline is a horse, shorter than the average horse, and that in order to boost her self-esteem she hangs out with a group of ponies, smaller animals than her. Could I then say (4) to mean that Pauline is a horse, and taller than the ponies she's with?

(4) Pauline is a tall horse.

It doesn't seem so (though it may have yet another meaning: Pauline is a horse, and horses in general are tall). This indicates that when a vague adjective combines with a noun, it is required that the adjective be understood as involving comparison with the other things described by the noun, not with some other set relevant to the conversation. This makes it different from an adjective functioning as the main predicate in a sentence (like (2)), since there the comparison can be with any relevant set of things.

The fact that vague attributive adjectives must imply comparison with the set of things described by the noun they modify has been taken to argue that adjectives are higher-order predicates which can only be saturated by another predicate (diagram 23), rather than being simple predicates (diagram 22). The reason for this is that, if *tall* can mean "tall compared with the other things I am looking at" when it's used as a main predicate, and it is simply overlaid with the noun's property to give the meaning of *tall horse*, compositionality should imply that it can continue to mean "tall compared with the other things I am looking at." So *tall horse* should be able to mean "tall compared with the other things I am

looking at, and a horse" – but, as we've seen, it seems it can't. In contrast, if *tall*'s meaning is a property which is saturated by another property, we have more flexibility. By itself, this meaning of *tall* can't function as the main predicate of a sentence, since it can only be saturated by a property, not by a simple individual like Pauline, Shelby, or Ossie. So, the meaning of *Pauline is tall* is not directly relevant to the meaning of *Pauline is a tall horse*. We can say that *tall* has a meaning which is saturated by a property P, and then means "is a P, and is taller than the average P." We might picture this as in diagram 24. When the property for *bird* is used to saturate this property, this says to select the average bird and make that your basis for determining what counts as tall. In light of this, *tall bird* describes anything which is a bird, and which is taller than that average bird.

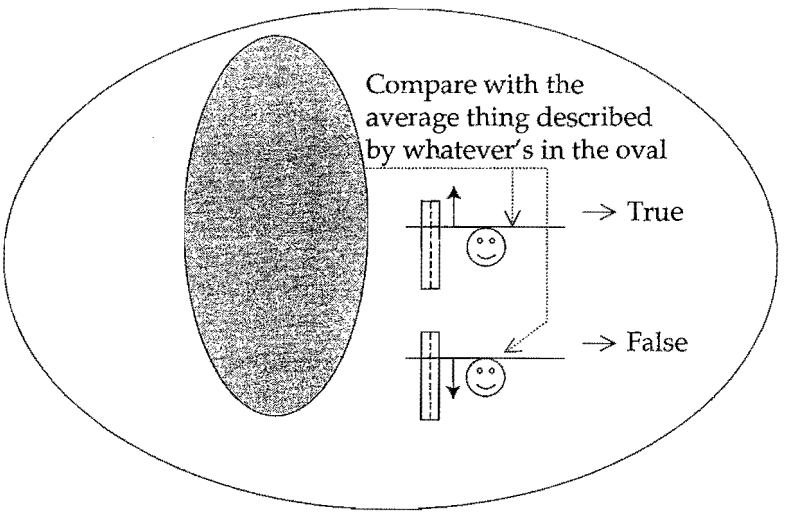

Diagram 24

Here are a few adjectives whose meanings are a bit more complex than those we're focusing on in the text: *possible* (as in *a possible solution to the problem*), *mere* (as in *a mere semanticist*), *former* (as in *a former teacher*), and *fake* (as in *a fake gun*). Do these adjectives tend to provide an argument for one of the two views about adjectives' semantics that they combine by modification or by saturation?

If vague attributive adjectives must be understood as having this kind of complex meaning, there are a few open questions. First, what about non-vague intersective adjectives like *dead*? It seems that what counts as dead doesn't depend on what you're comparing with. Thus, the argument that *tall* has a higher-order meaning doesn't apply to *dead*. As far as we can tell, it could have a simple predicate meaning, and could modify a noun by the overlaying strategy. However, do we want to say that *dead* and *tall* combine with nouns using totally different semantic processes? And second, how are we going to understand uses of *tall* as a predicate adjective, e.g. *Ossie is tall*? If *tall* can only be saturated by another property, how is it able to combine with *Ossie*? We must either say that *tall* is ambiguous, sometimes saturated by properties and sometimes by individuals, or that the structure of *Ossie is tall* is not what it seems. If it's ambiguous, we would hope to have some mechanism (in the semantics literature, called *type-shifting*)[3] for constructing one meaning from the other, rather than saying, implausibly, that the two meanings are totally unrelated; metaphorically speaking, we could imagine that we convert the basic picture for *tall* in diagram 21 into that in more complex one in diagram 23 or 24 whenever we find ourselves in need of the latter, fancier meaning. If we take the alternative approach and think that the structure is not what it seems, we might think that there is a hidden noun present, so that *Ossie is tall* should be thought of as *Ossie is (a) tall (thing)*. In that case, there would be no such thing as a predicative use of *tall*; what appears to be a predicative use is actually an attributive use with a hidden noun. Yet another possibility is that *is* isn't meaningless, contrary to what we've assumed so far. Rather, we could hypothesize that it has a meaning that allows *tall*'s property, which wants to be saturated by another property as in diagrams 23 and 24, to be combined with an individual, Ossie.

All of these possibilities are reasonable, and I can't tell you which one is right. More research among those semanticists who study adjectives is needed. As someone being introduced to semantics for the first time, you should think of the above discussion as showing you what an open issue in semantic theory looks like. Semantics, and linguistics more generally, are full of open issues like this one. If you are a young student, you needn't worry that the job of figuring out how linguistic meaning works is going to be all finished before you get to join the fun!

4.3 Relative Clauses as Modifiers

Relative clauses can function as modifiers in the same way as adjectives can. In example (5), *dog* and *which Shelby saw* are both predicates, and they