Semantics

Can colorless green ideas sleep furiously?

At some level, the sentence in the title of this knowledge giveaway is OK; at another, however, it is wildly wrong. At the level that it is OK –the syntactic level– it is the equivalent of "Colorful red umbrellas moved playfully", with a subject noun modified by an adjective and a verb modified by an adverb. However, the sentence does not make sense because things logically cannot be colorless and green simultaneously, ideas cannot sleep and nothing can sleep furiously (can it?). Such sentences are grammatically correct but semantically anomalous. So, it would seem that the structure of sentences and their meaning are two distinct things, representing two different levels of language processing.

How about the following phrases, what do they mean?

* a criminal lawyer
* a civil engineer
* a moral philosopher
* an old friend

1. If a criminal act is an act which is criminal, wouldn't we expect a criminal lawyer to be a lawyer who is criminal and shouldn't a civil engineer always be civil? Of course, we might have these meanings in mind when we use these phrases but usually we do not. What's going on here?

Well, let's take our last conclusion as an assumption: the structure and meaning of sentences are in some sense independent of each other. Given the fact that structures like those above are the only way to express the meanings they express, this assumption seems a bit bizarre, but let's see if there is anything to it. Wouldn't it be interesting, if true? It would mean that one part of the brain deciphers syntax while another deciphers semantics!

The structure of "criminal lawyer" is crim-in-al law-yer. It would seem logical that the different meanings of these phrases would be triggered by different structures, so that, let's say, crim-in-al law-yer would mean 'criminal lawyer' in the normal sense and, switching the components, crim-al-in law-yer would mean 'a lawyer who is criminal'. But that is not the way language works because it is not the way the brain works. The brain, you see, is capable of carrying out operations in several different areas of itself simultaneously. (It is a parallel processor, not a finite state device, like most computers, that can only process one thing at a time.) So the semantic operations on the meaning of the phrases above may be quite different from the operations on the structure. That is apparently what is going on here: one structure allows two or more semantic interpretations.

To understand this, let us begin with the meaning (not the structure) of "criminal lawyer". Let's begin assuming that a lawyer is:

Lawyer: a person who practices law.

Notice that there are three basic components of this meaning: PERSON, PRACTICE, LAW. Now, let's say that even though the structure of "criminal" can only modify lawyer as a whole, the meaning of "criminal" may modify any one of these semantic concepts. It would follow that criminal lawyer may mean:

'a [criminal person] who practices law'  
'a person who [criminally practices] law', or  
'a person who practices [criminal law]'.

In fact, all of these meanings can be attributed to "criminal lawyer." The same explanation (THEORY) applies even to "old friend". An "old friend" may be 'a friend who is old' (an old member of a friendship) or 'a member of an old friendship'.

So, it must be true: the mental rules for forming the structure of phrases are wholly independent and different from those rules which compose the meanings of phrases. Rather wild variations occur, for instance: "an occasional boy walked by". Are we talking about a boy who is occasional? Or does "occasional" semantically modify "walked by" even though it syntactically modifies "boy"? Just the opposite mismatch is possible, too; in the sentence "Mary worked happily all her life", the adverb "happily" which syntactically modifies "worked", semantically modifies "Mary". Work can't be happy or unhappy, only people. Whatever the rules of semantics are, they are separate from those of syntax (and vice versa).

What all this means is this. There is a syntactic processor in our brains and a distinct semantic one. The syntactic processor puts adjectives together with nouns and verbs in grammatically sound structures but does not know what their meanings are. We know that because it puts some adjectives together with nouns and verbs they don't make sense with. Structural or syntactic rules must therefore be autonomous of those which determine meaning.

The semantic processor in the brain doesn't know anything about the structures in which adjectives, nouns, and verbs occur but does know about their meanings. In the semantic component any word may modify another so long as the two make sense together. 'Make sense' is the rule of semantics. While "occasional boy" is OK syntactically (adjective + noun is a proper construction for English), it doesn't make sense semantically, so the semantic faculty looks for another word the adjective makes sense with, i.e. "walk". "Criminal lawyer" is structurally sound (and it makes too much sense). "Criminal" makes sense if it modifies "person" or "law" contained in the MEANING of "lawyer", not in its structure. So semantic rules operate on semantic features even though they are structurally (physically) invisible and inaudible.

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