Chapter 9. Finding The Right Tone: Sound Meaning

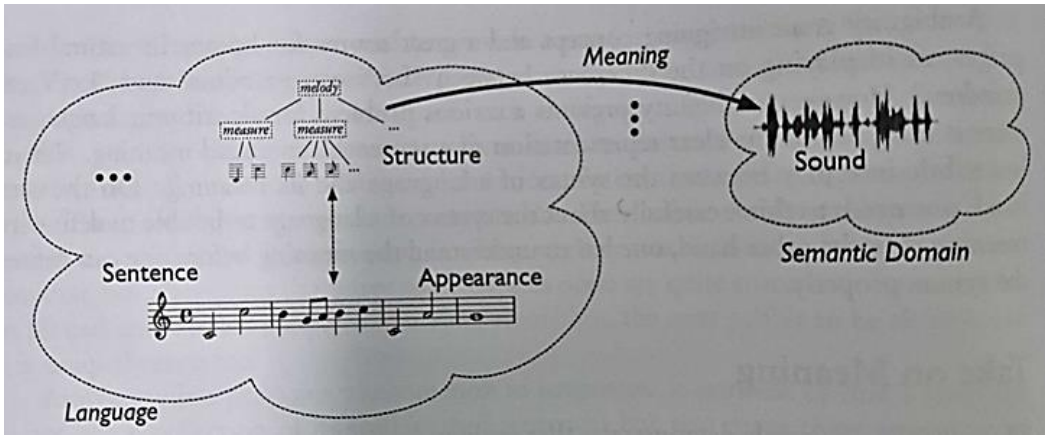
[That Doesn't Sound Right; first two paragraphs]

The language for music notation can be [ ] by a fairly simple grammar. But even for such as simple language it is not clear which grammar rules to use. One problem that can plague a langue is that of ambiguity, which means that one sentence can have more than one meaning. Ambiguity can creep into a sentence in two different ways. First, the basic words or signs of a language can be ambiguous, a phenomenon called *lexical ambiguity*. Second, a particular combination of words in a sentence can be ambiguous, even though the individual words themselves are not. [ ] *grammatical ambiguity*. Consider, for example, the sentence "Bob knows more girls than Alice." It could mean that Bob knows more than one girl, or it could mean that he knows more girls than Alice does.

A grammatical ambiguity [ ] when a grammar can generate more than one syntax tree for a given sentence. To continue with the music example, consider the following part of "Over the Rainbow". Curiously, the score does not contain any bars, which [ ] this sentence to be ambiguous, since it is not clear which note, the first or the second, should be emphasized when playing it.

[Take on Meaning, seventh paragraph]

The major [ ] of a language is the communication of meaning, but invented languages have no a priori obvious semantics. Therefore, for a language to be useful, it [ ] to be assigned a semantics. Since most languages [ ] an infinite number of sentences, we cannot simply list all sentences and their meanings. There must be some other systematic ways of defining the semantics of a language. This question ultimately boils down to finding an algorithm for defining the meaning of individual sentences. Such algorithmic denotational semantics definition for a language consists of two parts. [ ] part is a mapping of terminal symbols to basic elements of the semantic domain. In this case this means [ ] individual notes [ ] sounds of a particular pitch and duration. [ ] [ ] part is given by rules that say for each nonterminal how to construct its meaning from the meaning of its children in the syntax tree. In this example, there are three nonterminals. The rule for note is trivial, since each note nonterminal has exactly one child, which means that its sound should be identical to that of its child. The meaning of measure is obtained by concatenating the sounds of its children in the order they appear. Finally, the meaning of melody is obtained in the same way as for measure, namely, through the concatenation of the sounds obtained as meaning for the melody's measures.



Sentences To Memorize

1. Ambiguity in a grammar can cause a sentence to have different abstract syntax trees.
2. A grammatical ambiguity occurs when a grammar can generate more than one syntrax tree for a given sentence.
3. Playing a music piece is actually a form of translation from one language into another.