

Note on the infinitude of human languages.

In human languages, there is no longest sentence, hence, **there are an infinite number of sentences**. And the human brain is finite, so the brain of a speaker must possess some sort of computational procedure. [Note, by the way, that we assume that every sentence is of finite length. Sentences are **indefinitely** long, **not infinitely** long. More on this as we go along.] Given any sentence, no matter what its length, we can always construct a longer one. For instance, given a coordination, like “Mary and John”, we can always add another conjunct. Each time we do, we get a longer sentence, but we never get an infinitely long sentence. Consider an analogy to the natural number system. No matter how big a number you give me, I can give you back a bigger one by adding 1. So the set of natural numbers is infinite in cardinality (size). But no matter how many times you add one, you never get to infinity. Another way of saying this is infinity isn't a number; it's a cardinality. We will see that none of the computational procedures we will consider are capable of generating infinitely long strings of symbols.