∞ : a quick guide to infinity

Mathematicians do not use the word *infinity* much. They speak of "infinitely many" and "infinitely (that is, infinitesimally) small" more often. The word *infinite* simply means "not finite", the latter being the word from which we get the familiar word *definite*. A finite collection of objects has a definite quantity; a finite distance has a definite extent. To both of these, we can attach numbers. For the infinite, this is not so.

Note that *infinity* is not a number. This is illustrated by the following:

For any number n, there is a number n+1.

Clearly there can be no largest number, and therefore ∞, which by definition is larger than all numbers, cannot itself be a number. The same kind of argument applies to smallness of numbers (excluding 0):

For any number n, there is a number n/2.

Thus, the *infinitesimal*, that which is smaller than all non-zero numbers, cannot itself be a number.

All these ideas are useful in mathematics for studying spaces and algebras. There are two important notions to remember about them: (1) they are ideas, in that they exist only in our minds, and (2) no one has discovered anything in nature to correspond to these ideas.

There is, so far as we know, no such thing as an infinite extent in the cosmos. Nor is there known to be an infinitesimal extent in the particle physics world. Both are also true of time. Time and space are infinitely divisible in our geometry studies, and may be so in reality, but no one has demonstrated this to be true, and it may be false.

Even numbers themselves are not native to nature: they are extremely simple ideas that we use to organize our thoughts about natural phenomena. They have not been shown to have independent existence. Were all people to suddenly disappear, there could not be any such thing as a *number* without anyone to think it.

While it may be useless to ask the world to be careful in its use of such slippery and ephemeral ideas, one who is pondering these matters should be cautious in drawing conclusions, for there are many pitfalls. This is particularly true in evaluating Lewis's timelessness hypothesis for God. We are the ones living on a line (time), trying to discover what life off our timeline would be like.