

THE LAW OF THE EXCLUDED MIDDLE

Talking points:

1. One challenge to the law of the excluded middle occurs when we consider things that happen by degrees. The sorites paradox from ancient Greece illustrates this. *Sorites* is from the Greek word *soros*, meaning *heap*. The paradox goes as follows: one grain of wheat does not make a heap, and adding a single grain to the one grain does not suddenly make a heap. Adding another grain does not suddenly make a heap, and so on. In other words, there is no point at which, by adding just a single grain, a collection of grains of wheat suddenly goes from being a non-heap to a heap. Therefore, there can never be such a thing as a heap of wheat. This, of course, is absurd. As far as the law of the excluded middle is concerned, the proposition “This is a heap of wheat” does not suddenly go from being false to being true. Yet this is what the law of the excluded middle demands: a proposition is either true or false (not true or false by degrees). Perhaps one might stipulate that a heap consists of, say, 31 grains or more of wheat. But 31 is an arbitrary number. Why not 29 grains? A similar argument to the sorites paradox can be used to show that all men are bald. A man with a single hair is bald, and adding one hair does not make the man go from being bald to being non-bald, and adding another to the two does not make the man go from being bald to being non-bald, and so on. So a man with a thousand hairs is bald! The moves in these arguments can also be reversed to show that a single grain is a heap or a man with a single hair is not bald. For example, 1000 grains of wheat minus one grain is still a heap, 999 grains minus one grain is still a heap, and so on, down to a single grain. A number of sophisticated responses have been made to the sorites paradox and its implication for the law of the excluded middle. One response is the development of a completely different logic, called *fuzzy logic*, which places truths of propositions on a continuum from “definitely so” to “definitely not so” rather than as “true” or “false.”
2. Interestingly, there are propositions for which the law of the excluded middle fails. Consider the proposition “This proposition is false.” Is this proposition true or false? If it is true, then, by its own claim, it is false, and if it is false that “This proposition is false,” then this would make it true (which makes it false, etc.). It is impossible for this proposition to obey the law of the excluded middle. We note, however, that this proposition refers to itself and this is what causes the problem. Any proposition, or set of propositions, that refers to itself is in danger of violating the law of the excluded middle. Consider how the following set of propositions violates the law of the excluded middle:

Proposition A: Proposition B is true.

Proposition B: Proposition A is false.

Do we conclude from these examples that the law fails? We could take the position that propositions that refer to themselves are exempt from the law, and that such propositions are atypical (see the fallacy of accident in Chapter 2, SE p. 57).

Questions for discussion:

1. Does the sorites paradox undermine the law of the excluded middle?
2. Given that the law of the excluded middle fails for some propositions that are self-referential, does this imply that the law fails completely? Or should we treat self-referential cases as an aberration?

