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Vagueness, lecture 1: The sorites paradox

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> It is perfectly obvious, since colours form a continuum, that there are shades of colour concerning which we shall be in doubt whether to call them red or not, not because we are ignorant of the meaning of the word "red", but because it is a word the extent of whose application is essentially doubtful. [Russell 1923]

1. What are vague predicates?

- Vague predicates admit *borderline cases* (individuals to which it seems impossible to either apply or not apply the term).
- Vague predicates exhibit an *absence of sharp boundaries*: the transition (between e.g. redness and non-redness) is continuous, i.e. there is no sharp boundary between the extension and the anti-extension.
- Vague predicates give rise to an *instability* in both subjective and intersubjective judgements about borderline cases.
- Vague predicates are susceptible to *sorites paradoxes*: a predicate is vague if one can use it to construct a sorites-style argument.

2. What vagueness is not

- Vagueness can appear even when we seem to have all the relevant information that would settle the question.
- Vagueness can be distinguished from *relativity*. Consider the property of being above average age. I am above average age in this room, but below average age in Germany.
- Vagueness can also be distinguished from *ambiguity*. Ambiguous terms can have precise meanings, although the mere use of the term does not fix which of those meanings is intended. One can think of ambiguity as an indeterminacy of *intension*, while vagueness is an indeterminacy of *extension*.

3. Why does vagueness matter?

- Pervasive phenomenon of our language: many, perhaps most of the terms we use in everyday language are vague. So, perhaps, are many scientific terms.
- Vagueness is not limited to our descriptions of the world, but reappears when we try to theorise about vagueness. "Vague" is itself a vague term! This has led some to think that vagueness is a deep phenomenon.

- Moreover, sometimes vagueness is *desirable* (in language and in thought): vague properties can be simpler to work with (e.g. "red" vs. light having a specific wavelength), and may actually fit the world better than precise ones (ontic vagueness).

4. The sorites paradox

Suppose $H(n)$ means that n grains of sand form a heap. Clearly, $\neg H(1)$: 1 grain of sand is not a heap. And $H(1000000)$: a million grains of sand do form a heap (just take a bigger number if you think a million is too small). Finally, adding 1 grain of sand does not change a non-heap into a heap: for all n, if $\neg H(n)$ then $\neg H(n+1)$. But then it follows that $\neg H(1000000)$: a million grains of sand does not form a heap, contradicting our premise.

- The principle that adding a single grain of sand doesn't change a non-heap into a heap is known as the principle of *tolerance*.
- Sorites paradoxes can always be run both ways: instead of starting with a non-heap and adding individual grains until we get a number of grains that is both a heap and not a heap, we can start with a heap and keep removing grains until we get our contradiction.

5. Possible responses to the paradox

1. Reject one or more of the premises.
    - *Supervaluationism*
      According to supervaluationism, there are many different ways of making a vague predicate precise, called "sharpenings". Supervaluationism provides a semantics for vague terms which identifies truth with truth on all sharpenings, and falsity with falsity on all sharpenings.
    - *Epistemicism*
      According to epistemicism, all properties, even vague ones, have sharp boundaries—but in the case of vague properties, we don't (and indeed can't) know where these boundaries lie.
2. Reject the reasoning of the argument.
    - *Degrees of truth*
      One response to the sorites paradox is to think that it's *less true* that (e.g.) 5000 grains form a heap than that 10000 grains do. Degrees of truth theories try to make this intuitive response precise via many-valued or fuzzy logic.
3. Accept the conclusion of the argument.
    - *Nihilism*
      Vague expressions are empty; vaguely drawn distinctions do not genuinely distinguish. *Ideal language theories* like Frege and Russell's are a kind of nihilism.

References

B. Russell. Vagueness. *The Australasian Journal of Psychology and Philosophy*, 1:84–92, 1923.