A Dimensional View towards Vagueness [1]

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We should see *vagueness* from a *dimensional* perspective. I argue that my solution is good but do not claim that others are wrong. Rather, my dimensional view provides a formal platform on which discussions make sense.

Vᴀɢᴜᴇɴᴇss ᴀɴᴅ sᴏʀɪᴛᴇs ᴘᴀʀᴀᴅᴏx ʀᴇᴠɪsɪᴛᴇᴅ. Most verbal expressions are vague. You need to face vagueness at least when you want to analyze languages via logic. An ordinal predicate such as "is bald" or "is a heap" leads to a well known paradox called *sorites paradox*.

Wʜᴀᴛ ɪs Sᴏʀɪᴛᴇs ᴘᴀʀᴀᴅᴏx [3] ?

Obviously bald case: $M \vDash B(0)$. A man with no hair is surely bald [4].

Obviously non-bald case: $M \vDash \neg B(2,000,000)$. *A man with 200000 hairs is surely* not *bald.*

Tolerance Principle*: If $M \vDash x \sim_B y$ and $M \vDash B(x)$, then $M \vDash B(y)$. If two things x and y are indifferent (i.e. similar) to each other with respect to a property B, then $B(x)$ promises $B(y)$.* [5]

Bridge: $M \vDash \exists 0 \exists 1, ..., \exists i_{\in I}, ... \exists 2,000,000 : 0 \sim_B 1 \sim_B ... \sim_B 1,999,999 \sim_B 2,000,000$. *There exists a stream of similarity relation from a small enough (0) to a large enough (2,000,000).*

Unwelcome conclusion $\vDash \neg B(2,000,000)$. *A man with 20000 hairs turns out to be bald.* ∎

Mᴀɴʏ sᴏʟᴜᴛɪᴏɴs ʜᴀᴠᴇ ʙᴇᴇɴ sᴜɢɢᴇsᴛᴇᴅ for sorites paradox. To name a few popular ones: *Epistemicists* (e.g. Williamson) points out that tolerance assumption is questionable: i.e. there exists a threshold but we have epistemic limitation to know where it is. *Supervaluationists* (e.g. Fine) rather revises the *logic* working behind it, accepting truth-value *gap*.

Sᴇᴇ ᴛʜɪɴɢs ᴅɪᴍᴇɴsɪᴏɴᴀʟʟʏ. We are already familiar with the dimensional perspective. We see things not directly in a three-dimensioal structure but in a two-dimensinoal structure (as our retina does).

Formalization.

Lᴇᴛ ᴜs ᴅᴏ sᴏᴍᴇ ʙᴀsᴇʙᴀʟʟ.

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[3] Also known as paradox of heaps, paradox of baldman or *little-by-little argument*. Although each of these clauses seems to be plausible, combining them leads to a contradiction.

[4] M is an arbitrary model. $M \vDash \phi$ is read as ϕ holds under a model M. We employ a language which only contains a baldness property B. $B(x)$ is read as "x is bald".

[5] With B a property, $x \sim_B y$ iff $\vDash B(x) \Leftrightarrow \vDash B(y)$ read as "x is similar to y with respect to B-ness". Its negation is defined as follows: $x \nsim_B y$ if and only if $\vDash B(x) \nLeftrightarrow \vDash B(y)$.

Return to Sorites.

References