

Vagueness as a Cognitive Phenomenon

Vagueness – understood as the fact that some of our utterances do not have a clear truth-value – is mostly viewed as a genuine linguistic phenomenon. Thereby, it is widely assumed that the vagueness of sentence-truth-values can be reduced to the vagueness of the predicates used in the according sentences. Although there are theories of vagueness that essentially take into account the epistemic situation of the subjects in a situation, these accounts still seem to presuppose that each individual has a clear-cut (non-vague) belief (e.g. Raffman 1996): Vagueness is assumed to be based on imperfect *common* knowledge (e.g. Williamson 1994). In this talk, I would like to defend the thesis that vagueness of predicates is, in the first place, a genuine mental phenomenon (it is vagueness of concepts understood as mental particulars), such that linguistic expressions themselves can be precise and exact in expressing these concepts although the vagueness of the expressed concepts leads to not well defined truth-values of the according sentences.

I will argue for my thesis in two steps: 1) I will give an account of why vagueness of concepts arises on the basis of poor information and time pressure in normal everyday situations. 2) I will argue that the vagueness of concepts has the additional benefit of ranking the possible inferences that can be drawn from a certain categorization. These two steps will support the view that (mental) concepts are indeed vague, and that they are so independently of a putative vagueness of objects or properties (as defended e.g. by Schurz 2001). This line of thought makes it then questionable whether we need an additional “linguistic” source of vagueness to explain the phenomena – explaining vagueness only on the level of (mental) concepts is certainly the more parsimonious way.

However, first of all I will introduce the distinction between perception-based concepts and theoretical concepts. Perception-based concepts categorize objects according to different perceptual properties of the objects. Thus, perceptual concepts can be understood as “clouds” in a multi-dimensional feature-space. In contrast, theoretical concepts are based on “mini-theories”, i.e. sets of sentences which define the concept. For example, the concept ELECTRON is defined by sentences like “it has a negative charge”, “it has this and that mass”, etc. In general, for every perception-based concept a definition can be found that provides us with a theoretic concept. Often, language knows only one expression for a perception-based concept and the according theoretical concept. This is most obvious in seemingly self-contradictory sentences like “This pistol is not a pistol”. The first occurrence of “pistol” refers to a perception-based concept, which picks out things that look like pistols (e.g. toy pistols),

whereas the second occurrence refers to the theoretical concept, which requires the thing to fulfill sentences like “it can shoot”. In this paper, I will confine the discussion to perception-based concepts.

Very rarely we can obtain information about all relevant perceptual properties of an object through perception at once. Usually, some properties of the objects are hidden, and the perceptual signals are noisy. At the same time, the environment often requires very quick reactions to stimuli – in other words: objects have to be categorized under time pressure in order to react appropriately in time. Thus, the poor information cannot be enriched by further investigation. It is hence necessary for the perceiver to come up with a good categorization on the basis of incomplete knowledge of the relevant properties of the object. However, if our concepts would have clear cut boundaries that do not overlap, we would need to have all relevant information in order to decide which concept should be applied to the object in question. This problem can be solved with vague concepts that allow for a categorization even if some of the relevant properties cannot be determined – they do so because each relevant property is not (necessarily) a necessary nor sufficient condition for the category (this is one reading of the prototype theory). Hence, even if information about some of the relevant properties is missing, the object can still be reliably categorized and appropriately acted upon.

However, fast reliable categorization on the basis of poor information is not the only advantage of vague concepts. Moreover, the falling under a concept has certain implications, i.e. concepts stand in inferential relations to one another. If concepts were not vague, each categorization would allow for the same inferences without any preference. Vague concepts, however, allow to rank the strength of the possible inferences: On the one hand, the distance from the classified object to the center of the concept “cloud” in the feature space can be determined. The bigger the distance, the more unlikely the inferences are valid. For example, the inference from categorizing a penguin as a bird does not warrant the inference that it can fly, while categorizing a robin as a bird makes the validness of the inference much more likely. This is due to the fact that robins are about in the center of the concept cloud of BIRD, whereas penguins are far away from it. On the other hand, the ratio of the available properties to the relevant properties can be determined to evaluate the strength of possible inferences. The evaluation of inferences is in turn important for cognitive economy: not every possible inference has to be drawn, but the perceiver can instead concentrate on the best inferences and hence optimize her actions without further (time-taking) processing.

Vagueness of concepts arises because of the need to make reliable categorizations under time pressure. It has the additional advantage of automatically ranking the possible inferences that can be drawn on the basis of categorizations. In this way, the poorness of information is exploited to the advantage for the perceiver: not only information about the object is extracted, but simultaneously, the (inferential) consequences of the categorization are ranked. Theoretical concepts are “defined” by sentences. Thus, theoretical concepts are vague to the degree their “definitions” involve perception-based concepts. While the vagueness of (mental) concepts is able to explain the vagueness-phenomena on the linguistic surface without presupposing other sources for perceptual concepts, it has to remain an open question whether there is an additional source of vagueness in theoretical terms.