SOLVING THE HEAP

ABSTRACT. The present offers a pragmatic solution of the Heap Paradox, based on the idea that vague predicates are “indexical” in the sense that their denotation does not only depend on the context of their use, but it is a function of the context. The analysis is based on the following three claims. The borderlines of vague terms are undetermined in the sense that though they may be determined in some contexts, they may differ from one context to the next. Vagueness serves the important communicative function, enabling speakers to identify entities as objects (as things we can talk about) in terms of some quantitative differences between the “object” and its background in the context. Thus, in some contexts we can naturally partition the group of men uniquely so as to distinguish the bald from the not-bald. Whether a man with a given hair number is among the bald in a given context depends not only on his own hair number but also on the hair number of others in that context. This provides the background for the claim that when we assert that John is bald, we presuppose that there is a unique demarcation to the bald in that context. I consider the truth of the Paradox’s statements in contexts where the presupposition is true and in contexts where it is false. The analysis yields that the contradiction is avoided because though each of the statements is often true, never are all the sentences in the Paradox true together.

In this paper I wish to present a pragmatic solution to the Heap Paradox. A version of the Heap runs as follows:

Base Case: All persons with 0 hairs are bald.
Inductive Step: For any n, if all persons with n hairs are bald, then so are all persons with n + 1 hairs.
Conclusion: For any n, all persons with n hairs are bald.

On the other hand,

Counter argument: I am a person with a finite number of hairs, m, and I am not bald.
Contradiction.

This is a Paradox rather than a mere contradiction or a fallacy, because there are general grounds for accepting the underlying
arguments. The interest in the Paradox arises because of the vast amounts of vague terms in natural language. The “Inductive step”, which is the most vulnerable step in the argument, appears to capture a basic feature of vagueness, the indeterminacy of the borders of the extension of the term. The argument in general arises within the assumptions of two valued classical logic. Thus the Paradox appears to point out that classical logic is flawed, or at least that it does not apply to vague terms, and therefore to large parts of natural language.

In general a solution to a paradox should avoid the contradiction by uncovering the fallacy involved and revising the relevant theories, while justifying the revision on grounds that are independent of the paradox. Here we will present the solution itself, which is based on a more general theory, to be described in details elsewhere. The solution we seek for the Heap is one that would satisfy the following conditions.

a. The solution should account precisely for vagueness, employing a minimal revision of classical two valued logic.

b. It should account for the indeterminacy of the borderline of vague terms, and the fact that vague terms often admit of quantitative comparison, e.g., that someone is balder than another.

c. Vagueness in language, is a useful feature of natural language that adds to its expressive power. A solution for the paradox should explain the function of vagueness.

The most common solutions, the epistemic, supervaluation, and fuzzy logic differ from each other in many ways, yet they all share the approach of treating vagueness as a common failure of natural language, as a failure to speak precisely, and hence they do not address the condition (c) above, which the present solution attempts to satisfy. The solution offered here assumes that the meaning of vague terms is determined by their use. I will present the theory rather briefly and outline a formal semantics.

The present analysis of vagueness involves different pragmatic considerations. The first consideration involves the indeterminacy of the borderlines of a vague term. There are contexts, the Sorites contexts, where there is a range of entities that differ in their having more or less of the property denoted by the vague term, and the change is gradual and uniform. In these contexts there are different possible ways to demarcate the term, and there is no sufficient