

Vagueness and hysteresis: a case study in color categorization

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Abstract. This paper presents the first results of an experimental study concerning the semantic status of borderline cases of vague predicates. Our focus is on the particular case of color predicates (such as ‘yellow’, ‘orange’, ‘blue’, ‘green’), and on the influence of context in the categorization of color shades at the border between two color categories. In an unpublished study, D. Raffman and colleagues found that subjects have no difficulty in categorizing the same color shade as ‘blue’ or ‘green’ depending on the direction of the transition between the two categories, suggesting a phenomenon of hysteresis or persistence of the initial category. Hysteresis is a particularly intriguing phenomenon for vagueness for two reasons: i) it seems to comport with the tolerance principle, which says that once applied, a category can be extended to cases that differ very little ii) it seems to suggest that borderline cases are cases of overlap, rather than underlap between semantic categories (see Raffman 2009, Egré 2011, Ripley 2012). In our first study, we probed for hysteresis in two different tasks: in the first, subjects had to perform a task of color matching, namely to decide of each shade in a series between yellow and orange (respectively blue and green) whether it was more similar to the most yellow or to the most orange kept on the display. In the second task, subjects had to decide which of the two color labels ‘yellow’ or ‘orange’ was the most suitable. Shades were presented in three different orders, random, ascending from yellow to orange, and descending. While we found no order effect in the perceptual matching task, we found an effect of negative hysteresis in the linguistic task in each color set, namely subjects switched category at a smaller position rather than at a later position depending on the order. In a second study, we used the same design but asked subjects to report agreement or disagreement with various sentential descriptions of the shade (viz. ‘the shade is yellow/not yellow/yellow and not yellow’). No order effect was found in that task. These findings raise two particular issues concerning the boundaries of vague semantic categories, which we discuss in turn: the first concerns the interpretation of negative, as opposed to positive hysteresis. Another concerns the sensitivity of order effects to the task.

This is a joint work with Vincent de Gardelle.