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## Reply to Paul Égré's Comments on *Vagueness Through Definitions*

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The remarks made by Paul Égré show the necessity of emphasizing the distinction between concepts and features as well as the difference of treatment this distinction leads to. Features, as such, borrow their sense from the context they are used in: it is only in the shadow of this context that their meaning can be grasped. When a feature is considered relatively to a given concept, like 'to have wings' in the context of being an animal, or 'to be red' in the context of being an apple, the resulting sharpening of its meaning renders possible the use of ordered scales to measure the strength with which this feature applies to the objects of the universe. On the contrary, it is meaningless to attribute a numerical degree or a rank to evaluate the categorial membership attached to a vague concept when this vagueness is qualitative. A consequence of this fact is that the categorial membership order associated with a vague concept is generally not total, even when this concept is grasped through a set of defining features.

However the temptation of quantitatively evaluating categorial membership is great, as it offers the possibility of using the whole apparatus of numerical calculus to treat problems linked with Perception and Cognitive Psychology. In this perspective, it may appear desirable to have at one's disposal a way of transforming membership comparison into membership evaluation. The notion of membership distance  $\mu_\alpha$ , evoked in Section 4.3, provides an answer to this problem, but this solution has to be taken as a fair approximation of a agent's judgment. Other solutions exist, like the Condorcet method evoked by Égré, or the Borda-Hampton method, which attributes to an object  $x$  the membership degree  $\sum \rho(\gamma)\delta_\gamma(x)$  in which  $\rho(\gamma)$  denotes the rank of the feature  $\gamma$  and  $\delta_\gamma(x)$  the strength with which this feature applies to  $x$ . These solutions, though, present several drawbacks. In particular, they all consider that the salience order among the features is *ranked*, so that a degree of importance can be attributed to each defining feature of a concept. This is not the perspective I have adopted in this paper, working on the more general case of an arbitrary strict partial salience order.

Altogether, and except for the case of quantitatively vague concepts, no numerical tool can adequately account for categorial membership. In a sense, this negative result is reassuring: it illustrates the fact that there exists some categories for which the notion of membership degree is simply meaningless.