

Stretchable two–dimensional scaling

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(joint work with Adolfo Sánchez)

In voting theory, unimodality is a transitivity condition for the aggregation of preference orders through the majority method. Unimodality can also be seen as an extension of the Coombs multidimensional unfolding model when only one dimension is considered: points on the real line still correspond to both the stimuli and the individuals but, unlike the Coombs model, in which the position of points is fixed, each individual’s order is assessed once parts of the real line are arbitrarily “stretched”, i.e., the position of points is changed while preserving their natural order on the line. Here we propose a stretchable model for multidimensional scaling and prove that, in two dimensions, some instances (called here omnipotent) might lead to the induction of all possible preference orders. Our main result is the full characterization of omnipotence in this sense.