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Perceiving style at different levels of information

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Abstract

If two painters paint the same scene, the appearance difference can be referred to as style difference. The distinguishing features result from artists' use of composition, color, brushstroke etc. We are interested in how people perceive different depiction styles, when they are presented with different levels of information. Whole paintings contain mid-level information (depicted scenes, etc.) and low-level information (brushstroke, colors, etc.). Square cut-outs of single objects contain only low-level information. The same cut-outs in grayscale contain low-level information but without colors. We collected 42 digitized oil paintings as stimuli, the creation years varied from 15th to 21st century, and their location of production varied from southern Spain to the northern Netherlands. All paintings contain at least one apple. We gathered similarity judgement data using a triplet comparison method from three online experiments, where observers were presented the whole paintings (condition 1), square cut-outs of painted apples (condition 2) and the same cut-outs in grayscale (condition 3). 20 observers completed each experiment (60 observers in total). We applied soft ordinal embedding to achieve multidimensional embeddings. We reached a 3D space for condition 1 and 3, and a 4D space for condition 2. Condition 2 has less information than condition 1, but has one more dimension, suggesting that different criteria might be involved. Condition 3 has one less dimension than condition 2, suggesting that color is one of the attributes for style perception judgement. In addition, having the same dimensionality, around 64% of the raw data was in line with the 3D embedding in condition 1 and 58% in condition 3. This difference suggests that although the whole scene and a grayscale cut-out both need three dimensions to describe their style differences, the implicit style criteria for grayscale cut-outs are apparently more ambiguous than those used to judge the whole paintings.