Preference Asymmetries for Color Pairs: Image-based vs. Surface-based Area
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Background

General Question:
Does the spatial organization of colors influence preference for color pairs? If so, what are the relevant color and spatial factors?

Itten (1973) theorized that colors should be combined such that the ratio of their areas is inversely proportional to the ratio of their "intensities" (Goethe, 1810):

<table>
<thead>
<tr>
<th>Color</th>
<th>Intensity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yellow</td>
<td>9</td>
</tr>
<tr>
<td>Orange</td>
<td>8</td>
</tr>
<tr>
<td>Red</td>
<td>7</td>
</tr>
<tr>
<td>Green</td>
<td>6</td>
</tr>
<tr>
<td>Blue</td>
<td>5</td>
</tr>
<tr>
<td>Violet</td>
<td>4</td>
</tr>
<tr>
<td>Cyan</td>
<td>3</td>
</tr>
<tr>
<td>Green-blue</td>
<td>2</td>
</tr>
<tr>
<td>Green-blue</td>
<td>1</td>
</tr>
</tbody>
</table>

"Intensities" correspond more to yellowness/blueness (r = .88) than to lightness/darkness (r = .52).

Schloss and Palmer (2011) provided weak evidence for preference asymmetries:

Preference asymmetry:
Greater preference for one color pair over another pair, when the two pairs only differ in the spatial assignment of the colors.

People prefer warmer, lighter figures on cooler, darker grounds, but only 4% of the variance in pair preferences was explained by these two factors.

Are these robust differences? What factors influence them?

Preference Asymmetries in Figure-Ground Pairs

Are preference asymmetries robust?
Prefer for yellower, lighter figures on bluer, darker grounds:
Prefer for yellower, lighter figures on bluer, darker grounds:

Effects of Area for Mosaic Configurations

Is surroundsness required for preference asymmetries?
Preference for yellower, darker small regions with blue, lighter large regions:

Summary and Conclusions

Summary
Preference asymmetries exist: people prefer pairs with yellower, lighter figures on blue, darker grounds.

Preference asymmetries operate on surface-based representations, after amodal completion.

Surroundness does not influence the yellowness-blueness effect. However, it modulates the lightness-darkness effect:
Figure-ground: preference for lighter figures on darker grounds
Mosaic: preference for darker, smaller regions next to lighter, larger regions

Possible Explanations
Phenomenological: More "intense" regions need to be smaller for pairs to feel balanced, and yellower regions are more intense (Itten, 1973).

Ecological: Pairs that are associated with positive things in the world are more preferred (Ecological Valence Theory: Palmer & Schloss, 2010), and yellower, lighter figures on darker blue grounds are reminiscent of the sun in the sky.

Current research testing how shape modulates preference asymmetries suggests that introducing "sun-like" imagery makes the previously irrelevant redness-greenness dimension become important.

References and Acknowledgments


Acknowledgments:
No other images, charts, or tables were used to help with this study. The research was funded by the National Science Foundation grant SBE-1157460 to Stephen Palmer, a gift from Google, and Amy’s Natural Frozen Foods.