

EFFECTS OF PATTERNED BACKGROUNDS ON COLOR

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Purpose: To measure the effects of complex backgrounds on color appearance.

Methods: Subjects set white points of a square test patch to define the achromatic loci. The effect of background on color appearance is measured by comparing achromatic loci on patterned backgrounds consisting of two or more vertical regions of varying widths and different colors. Achromatic loci were obtained for a variety test patch positions for several background configurations. By adjusting the widths of the background regions and the spatial position of the test, we controlled the local and global mean of the background.

Results: The measured achromatic locus differed strongly as a function of the local background color. Within each color region, however, the achromatic locus remained the same. This constancy persists as long as the test patch is entirely within a single color region of the background, even when (1) the areas of the background regions were varied, thus changing the global mean of the background; (2) the position of the test patch is varied relative to the boundaries of the background regions, thus changing the local mean of the background. The results suggest that neither global mean nor local mean of the background predicts color appearance. Transition between two achromatic loci occurs when the test patch overlays the boundary between two background color regions. The transition seems to vary smoothly between the two different achromatic loci as the position of the test-patch crosses from one region to the other.

Conclusions: We conclude that region and boundary segmentation processes play a significant role in governing adaptation and color appearance.

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